actuarial REVIEW

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FOUR FUTURES FOR ACTUARIES IN THE COMING AGE OF AGI

Annual Meeting Coverage

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Four Futures for Actuaries in the Coming Age of AGI

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By JIM WEISS

In this sequel to *Four Futures for Actuaries in the Wake of AI*, Jim Weiss revisits the profession's possible paths as artificial intelligence edges closer to artificial general intelligence (AGI), exploring whether it will drive productivity gains, deepen reasoning, erode human judgment, or create entirely new risks.

Annual Meeting Coverage

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We bring the CAS 2025 Annual Meeting to life through firsthand accounts of sessions on emerging technology, evolving risk, and professional judgment. Readers will gain practical insights into how large language models can augment actuarial work, how climate and cyber risks are converging to reshape the insurance landscape, and how actuaries can recognize and counter confirmation bias in loss reserving.

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Yesterday Is History, Tomorrow Is A Mystery

Have you been "Rob Kahned" recently? Let me explain. Rob Kahn, FCAS, is one of the many world class writers who donate time and expertise to deliver *AR* to your inbox every other month. You may remember when Rob taught us how bad plus worse equals better or how innovation can easily be negative return on investment. I encourage you to read all Rob's work, especially if you are curious about what the future may look like. His coverage of the dynamics around the California property market in January 2025 predicted much of what happened in the aftermath of the Palisades and Eaton wildfires — and Rob wrote it two months before the tragedies. The *AR* team noticed that history validates Rob so often, we now call it getting "Rob Kahned" any time history rhymes with our articles.

Make no mistake, getting "Rob Kahned" is not a good thing. We love Rob, and of course as actuaries our goal is to be correct in our predictions — but we also want to create a better future where our worst or most heartbreaking predictions never come true to begin with. Award-winning *AR* Developing News Editor Sara Chen, FCAS, developed a solution. In late 2024, Sara staffed a volunteer news desk to track marketplace and societal developments, develop high quality analysis, and digest what it means for actuaries. For example, this month's Developing News ponders actuaries' roles during soft markets, cloud service outages, regulatory change, and government shutdowns. If you read DN regularly, you are well on your way to being the person at your company making news, not breaking it.

In fairness, the world moves so quickly it is easy to get "Rob Kahned." The year 2025 gave us zero hurricanes making U.S. landfall, one new U.S. president, and several AI launches, including ChatGPT 5, Opus 4, Gemini 3, and Sora 2. *AR* generally tries to take the long view, but sometimes we take a *really* long view. One of our most popular stories in 2023 was "Four Futures for Actuaries in the Wake of AI." This was envisioned to be a decadal view, but most of it played out in less than two years. Now felt like a good time to revisit our forecast, so January's *AR* provides "Four Futures for Actuaries in the Coming Age of Artificial General Intelligence (AGI)." Read it, decide which future you like best, then go out there and create it.

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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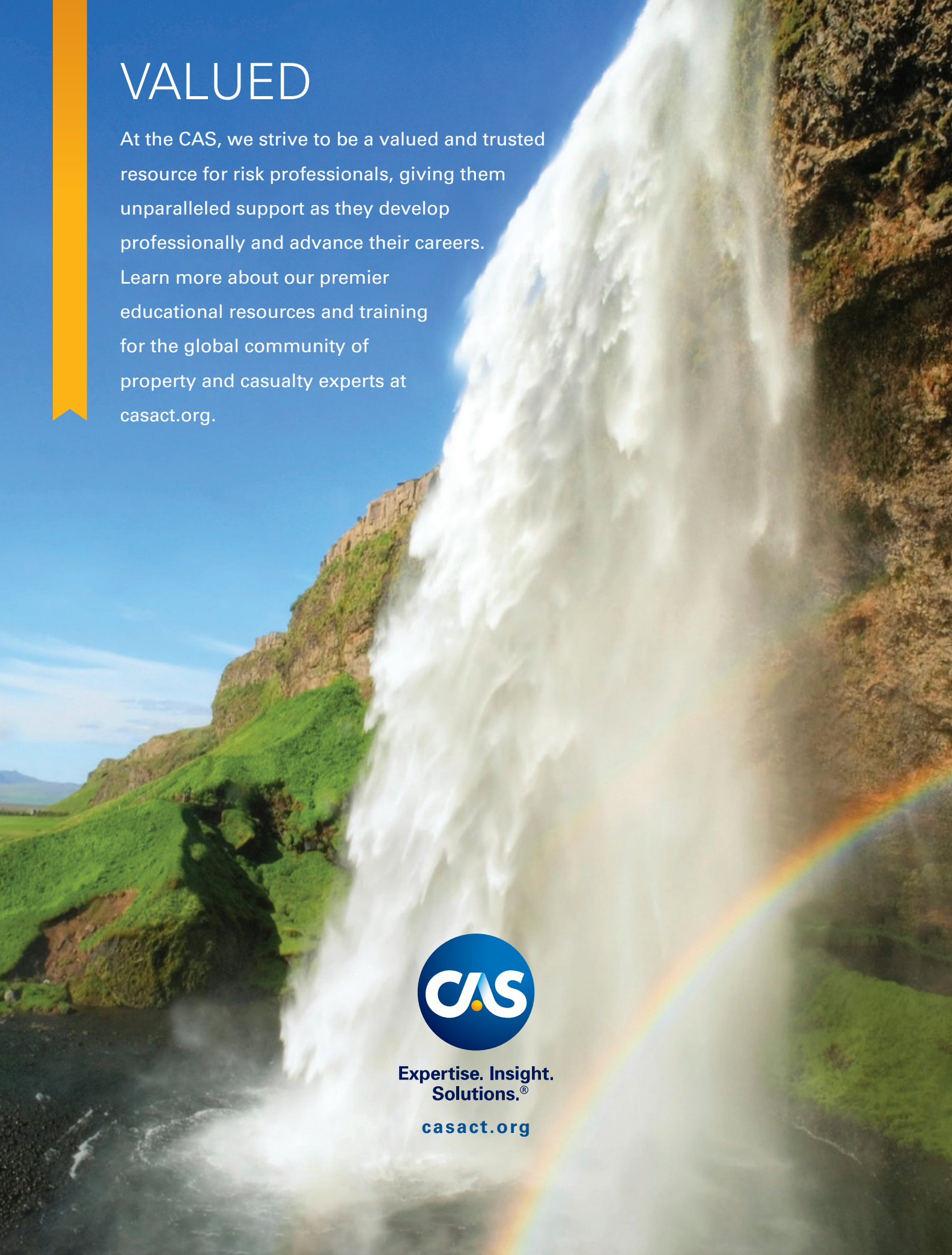
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The Year Ahead

It's difficult to express how humbled, excited, and challenged I am as I begin my term as president of the CAS — humbled by the stature of my predecessors in this role, many of whom I am fortunate to count as friends and mentors; excited because the actuarial profession continues to grow globally and the CAS enjoys a reputation as the global leader in the P&C and risk management actuarial disciplines; and challenged by increasing competition for talent from other actuarial organizations, nonactuarial disciplines, and the rise of AI. Above all, I am incredibly optimistic about the future of the actuarial profession, the CAS, and our members.

The CAS Board of Directors has adopted a strategic plan that features a compelling vision for the future, with five well-defined strategic priorities to make that vision a reality. If you have not yet fully digested the CAS Strategic Plan, I highly recommend you take the opportunity to do so (CAS_2025_Strategic-Plan.pdf). While CAS staff and volunteers will continue to energetically pursue the entire plan over the next two years, I am particularly focused on three important projects we will pursue this year.

Brand Refresh: The CAS last updated its brand assets and messaging in 2013. In today's fast-paced world, it is critical to keep our image and messaging on point and tailored to effectively communicate with each of our key stakeholder groups. The way we present ourselves to employers, potential candidates, regulators, universities, and the general public needs to be specifically tailored to resonate with each group. That is what the brand refresh effort is all about. This effort has been underway for some time, and we expect to share more updates in the coming months.

Preliminary Exams: We need to address challenges with the structure of our preliminary exams to better align with the needs of university students, faculty, and career changers, thereby placing us on a level playing field with our competitors and equipping future actuaries with the skills they need to be successful. Currently, the CAS requires candidates to complete Exams 1 and 2. In the United States, these requirements are most commonly fulfilled by completing SOA exams P and FM, which are controlled and administered by the SOA. After completing these exams, university students face a choice to sit for a third SOA exam or the CAS MAS I and II Exams at a time when they may not have determined whether they wish to pursue the SOA or CAS credentialing pathway. This places an unfortunate burden on students as they weigh which exams to pursue and on faculty as they strive to guide their students through the process. In light of this, one of our key initiatives in the coming year involves a review of preliminary exam requirements, based on the results of our Actuarial Professional Analysis, to determine what changes we may make to ensure our pathway remains accessible, competitive, and attractive to new candidates, while maintaining our high standards and meeting the needs of employers and the profession.

A word of caution seems appropriate here, as any possible changes to the exam content outlines, particularly at early stages, can feel disruptive to students, candidates, faculty, and employers. Rest assured, we are not pursuing a specific predetermined solution that we plan to implement immediately. Rather, we are undertaking a thoughtful assessment and sense-testing alternative solutions, and any potential changes will be thoroughly evaluated and communicated well in advance of any future implementation date.

CAS Website: Building on our brand refresh, we will be undertaking a refresh of the CAS website, and I am pleased to share that this work is already underway. As you know, the CAS recently implemented a modern Association Management System and CAS Portal to better support e-commerce transactions and management of membership and other data. The CAS Portal implementation addressed critical cybersecurity and data privacy concerns, but more needs to be done to meet member needs. The new website will incorporate modern technology, enhanced search capabilities, and additional features members have been asking for. We will be using member and candidate survey data and website feedback in our development process. While timelines for a project of this nature are always fluid, we hope to begin the rollout later in 2026, which will also allow us to incorporate changes in branding assets and messaging as the brand refresh is implemented.

During my term as president-elect, I had many opportunities to meet with members and leaders of other actuarial organizations, CAS Regional Affiliates, university students and faculty members, regulators, and employers of CAS members. Across all of these stakeholder

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President's Message

from page 6

groups, respect for the CAS organization and its members is evident. Individual members of other organizations who practice in the P&C arena universally regard the CAS as the global leader in P&C actuarial knowledge, and many have even expressed a desire to become a CAS member, if that were possible without "starting over" on the CAS pathway. We are investigating the possibility of various "on-ramps" to the CAS for career changers and experienced P&C practitioners with other actuarial credentials--and these conversations simply reinforce to me the strength of the CAS brand among P&C practitioners — something our brand refresh efforts can undoubtedly build on.

The other unique aspect of the CAS that was reinforced by these interactions is the comparatively high engagement level of CAS members, as demonstrated in both volunteerism and CAS event attendance. We enjoy a remarkable record of member volunteerism, with nearly 30% of CAS members volunteering in some capacity in 2024. Attendance at CAS meetings and seminars is also significant. In 2024, total attendance at 38 live events approached 30,000 — that's more than two events per member!

As I begin my tenure, I am keenly aware of just how special the CAS is and how fortunate I am to be a member, let alone a leader, of such a unique organization. I also feel a certain amount of responsibility to ensure the CAS retains the characteristics that make it so unique. I am incredibly grateful for the trust placed in me to serve as CAS president, and I will do my part to ensure the CAS remains respected, vibrant, and strong.

COMINGS AND GOINGS

Ruth E. Salzmann, FCAS, was recognized by the University of Wisconsin-Stevens Point and Sentry Insurance with the naming of the Ruth E. Salzmann Center for Women's Leadership in her honor. Salzmann broke barriers more than 60 years ago, becoming the first woman president at the CAS, as well as Sentry's first woman vice president and board member. She later earned recognition as one of the top 100 women in business by *Business Insurance* magazine.

Rade Musulin, FCAS, MAAA, will receive the Jarvis Farley Service Award — a lifetime achievement award from the American Academy of Actuaries that honors a member whose volunteer efforts on behalf of the Academy have made significant contributions to the advancement of the profession. His work has included advancing knowledge and public acceptance of hurricane and catastrophe models and broadening the P&C conversation to include climate risk, cyber risk, and sustainability.

Mick Vassilev, FCAS, FCIA, has been appointed chief actuary at Fair. Vassilev brings more than two decades of actuarial and insurance experience to Fair. He led LGM Financial Services for more than 13 years as chief actuary, overseeing product pricing, claims liability estimation, underwriting profit projections, and risk management for their auto warranty products. Before that, he spent 7.5 years at the Insurance Corporation of British Columbia (ICBC), where he specialized in P&C underwriting, bodily injury claims analysis, loss reserving, and rate indications.

Dan Latinsky, FCAS, has been appointed chief risk officer at Bishop Street Underwriters. In this role, Dan will be responsible for furthering Bishop Street's capabilities in underwriting excellence, profitability monitoring, actuarial and pricing discipline, and overall portfolio

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*

composition and strategy. Dan joins the organization with experience from Obsidian Insurance Holdings, where he oversaw pricing and profitability monitoring across the company's program portfolio.

Keith Lau, FCAS, has been appointed chief actuary at the Western Investment Company of Canada Limited. Lau is an accomplished actuarial leader with more than 10 years of experience in the Canadian P&C insurance sector. He brings significant expertise in pricing, reserving, and reporting and provides a valuable strategic addition to Western's growing decentralized insurance platform. Lau has served in a range of actuarial roles, most recently as Cover Genius' head of Americas pricing. Lau also held various roles at PwC, where he led actuarial and audit engagements, played a central role in IFRS 17 implementation, and served as a trusted advisor to executive teams on matters related to capital, reserves, and solvency.

Vincent Senia, FCAS, MAAA, has announced his retirement from his role as executive vice president, chief actuary at Selective Insurance, effective January 20, 2026. Senia has held the position since 2017 and has been instrumental in shaping Selective's actuarial reserving, pricing, and planning strategies, as well as enhancing its data analytics capabilities. Senia joined Selective in 2010 as senior vice president, actuarial reserving.

Nathan Rugge, FCAS, MAAA, has been named executive vice president, chief actuary at Selective Insurance. Rugge joined Selective in 2009 and has played a key role in the company's pricing and reserving strategies. He has held various actuarial roles of increasing responsibility, including assistant vice president, personal lines pricing, and senior vice president, actuarial reserving.

Gloria Gilliam, ACAS, MAAA, was named board president for the International Association of Black Actuaries (IABA). Gilliam has dedicated many years to IABA's mission, including past roles as board secretary and vice president. She is vice president and reserving actuary at Chubb. Prior to her current role, she held multiple positions at PwC and Deloitte, specializing in financial reporting, mergers and acquisitions (M&A), and risk advisory for P&C insurers and self-insured clients. Her work has spanned traditional reserving as well as emerging areas like ESG risk analysis.

Gary Haase, FCAS, MBA, has been named executive vice president and CEO of legacy operations at Everest Group Ltd. Haase brings more than two decades of experience across insurance, reinsurance, and financial services. Most recently, he has served as executive advisor to private equity and technology firms, guiding them through insurance M&A and AI transformation. Previously, he led enterprise technology, data and analytics, operations, and the development of cloud-native analytics and automation platforms at CNA Financial Corporation. Haase spent more than a decade with Catalina Holdings (Bermuda) Ltd. He also held actuarial and reinsurance roles at Quanta U.S. Holdings and Aon Benfield.

EMAIL "COMINGS AND GOINGS" ITEMS TO 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

November 8–11, 2026
2026 CAS Annual Meeting
Honolulu, HI

Visit casact.org for updates on meeting locations.

See real-time news on our social media channels. Follow us on Facebook, Instagram, and LinkedIn.

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 Tennis Star and Family Man

John A. Gibson III (FCAS 1965)
1937-2025

John A. Gibson III was a devoted husband for over 33 years to his loving wife, Constance Miller-Gibson, and a loving father, grandfather, and brother. At the heart of his close-knit family, Gibson's steady presence and generous spirit were cherished by all who knew him. A gifted athlete, Gibson played center for Penn High School and later briefly for Brown University, where he pursued studies in mathematics and economics. His sharp analytical mind led him to a distinguished career as an actuary. Known for his clarity, precision, and integrity, he held senior leadership roles at Travelers Insurance and Colonial Penn Life Insurance Company, ultimately retiring as senior vice president of actuarial and underwriting. Beyond his professional accomplishments, Gibson was an avid tennis player, a passionate football fan, and a dedicated basketball referee. Yet it was his unwavering kindness and quiet strength that truly defined him. Whether offering guidance, lending a hand, or simply showing up when it mattered most, Gibson could always be counted on. His legacy endures in the lives he touched, the family he loved, and the countless moments of generosity and wisdom he shared.

The Active Outdoorsman

Paul John Henzler (FCAS 1984)
1950-2025

Paul John Henzler of Bloomfield, Connecticut, beloved husband for 50 years of Mary Ann (Greno) Henzler, passed away in September 2025. Paul was born in Buffalo, New York, the son of the late Howard and Grace (Schubert) Henzler. He received his bachelor's degree from the State University of New York at Buffalo and earned his master's degree from Michigan State University. Paul was employed with Travelers Insurance Company as a casualty actuary and retired after more than 40 years of dedicated service. He was a faithful communicant of Sacred Heart Church in Bloomfield, serving as sacristan for a number of years. He was a lifelong Buffalo Bills fan, still awaiting their Super Bowl win. More than anything, Paul was devoted to his family near and far. He was a loving husband, father, grandfather, brother, uncle, and friend who will fondly be remembered as a kind and caring man. Some of his family's best memories are from vacations, climbing Mt. Monadnock, participating in the annual bocce and shuffleboard tournaments, but most of all playing board games with friends every summer for the last 34 years. He loved being active and spending time outdoors; some of his favorite activities were cycling, gardening, and hiking. When traveling, he enjoyed planning a full itinerary of vacation excursions. Paul's greatest joy was his granddaughters. He is survived by his wife and his daughters, Caitlin Spatcher and her husband David of Bloomfield, and Lauren Henzler of West Hartford and her partner Paul Norko; his granddaughters, Rowan, Hayden, and Vivian Spatcher; his brother, Gary Henzler and his wife Sheryl; and nephew, John Bradley Henzler; as well as other relatives and friends.

The Theologian Actuary

Ronald "Ron" Ferguson (FCAS)
1942-2025

Ronald Ferguson passed away in Fairfield, Connecticut, in July 2025. Known for his endearing interest in the lives of others, Ferguson leaves behind a legacy of intellectual curiosity, professional excellence, and unwavering devotion. Born and raised in Chicago, Illinois, Ferguson was the beloved son of William and Betty Ferguson. From an early age, he demonstrated a profound love for learning, a characteristic that would define his entire life. Ron earned his Bachelor of Arts degree from Blackburn College before pursuing a Master of Actuarial Science at the University of Michigan. His sharp mind and dedication propelled him to a distinguished career, culminating in many years as the CEO of General Re Corporation, and provided leadership as a board member for several public companies and organizations. Under his leadership, General Re thrived, a testament to his strategic vision and keen intellect. After retirement, he earned a Master of Divinity degree from Asbury Theological Seminary. Ron shared a remarkable

60-year marriage with his beloved wife, Carol Ferguson. Together, they built a life filled with love, laughter, and shared experiences, residing in Bonita Springs, Florida, and previously in Fairfield, Connecticut. Ron is survived by his devoted wife, their two children, grandchildren, and extended family: Brian Ferguson (Cathy) of Boston, Massachusetts, and Kristin Wackerman (James) of Fairfield, Connecticut. He was also a cherished grandfather to six beautiful grandchildren: Lindsey (Rachael), William Ferguson, Benjamin Ferguson, Clay Wackerman, Connor Wackerman, and Kailey Wackerman. He leaves behind three loving sisters: Linda Schroeder, Dianne Harris, and June Franzen (David), along with many nieces and nephews who will dearly miss his presence.

IN MEMORIAM

Dave Flynn (FCAS 1970)
1940-2025

John A. Gibson III (FCAS 1965)
1937-2025

Paul John Henzler (FCAS 1984)
1950-2025

Ronald "Ron" Ferguson (FCAS)
1942-2025

MAKING THINGS HAPPEN

Building Community, Advancing Skills, and Championing Innovation

By SARAH SAPP, AR MANAGING EDITOR

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

In every organization, there are volunteers whose dedication quietly shapes the experience of thousands. For the CAS, one of those steady, driving forces is Kenneth Hsu, FCAS, CSPA, MAAA, a leader whose energy, creativity, and commitment show up across multiple CAS initiatives. Whether he is strengthening the Annual Meeting, developing a growing open-source ecosystem, mentoring candidates, or helping elevate professional standards, Hsu brings an unmistakable mix of service, curiosity, and passion for community. Talk to him, and he'll insist he's the one who benefits most.

Kenneth Hsu, and his wife, Dulce, backpacking in the Channel Islands National Park off the coast of Southern California.

"I volunteer to work on things I know I need help with," he says. "Networking, maintaining professionalism, improving my writing — volunteering is how I keep learning." That mindset has helped make him an indispensable collaborator with CAS staff and a tireless advocate for innovation within the profession.

Among Hsu's many contributions, two roles stand out for their impact and visibility: chair of the Annual Meeting Working Group and chair of the newly formed Open-Source Projects Working Group.

The Annual Meeting Working Group is, as Hsu describes it, "a very mature, well-oiled machine." Staff partners Nora Potter, director of professional education, and Kathleen Dean, director of meeting services, bring deep logistical expertise, while Hsu provides leadership on program quality — curating sessions, guiding topic selection, advising on speaker readiness, and ensuring the agenda reflects the evolving needs of CAS members.

He approaches the role with a blend of high standards and genuine care for the attendee experience. With care to balance quality and diversity in session offerings, Hsu's guidance ensures the meeting remains engaging, informative, and member-centered.

He is particularly proud of the improvements made in response to survey feedback. "People wanted more networking opportunities," he says. "So this year we added speed networking, lunch roundtables, and a mentor-mentee meet-up. These in-person connections are hard to replicate in virtual settings." The results speak for themselves: the Annual Meeting continues to be the CAS's most well-attended event, bringing together new members, long-time colleagues, and the broader actuarial community.

If the Annual Meeting highlights Hsu's ability to refine and enhance established programs, the new Open-

Source Projects Working Group showcases his talent for shaping what comes next. Hsu is already brimming with enthusiasm for this working group that was just approved by the CAS Executive Council in late 2024.

Open source, he believes, is essential to "building skills for the future," a key pillar of the CAS Strategic Plan. Hsu sees huge potential for the CAS ecosystem where actuaries around the world can rely less on proprietary tools and instead rely more on collaborative, transparent, community-built resources.

The standout example is Chainladder-Python, a reserving tool written entirely in Python. It is now the most popular open-source project on the CAS GitHub, not just among the P&C community, but across all actuarial practice areas, with a thriving contributor community of around 15–20 people — including students, CAS candidates, professors, and industry practitioners. "Imagine software designed by the community, free to use, and continuously improved by people who care about it," Hsu says. "That's the vision." That vision supports not only the CAS mission but the global actuarial profession.

Hsu didn't always lead working groups. Like many CAS volunteers, he started by raising his hand very early. His first significant roles were with the Course on Professionalism (COP) and the Annual Meeting Working Group, both of which he joined shortly after earning his ACAS credential. The COP held special meaning for him, as his own facilitator, Mike Speedling, ACAS, left a strong impression on Hsu, and Hsu wanted to continue that legacy. Today, the pair writes the Ethical Issues professionalism column for *Actuarial Review*.

Over the years, Hsu has contributed to a range of committees and working groups, including the Professionalism Education Working Group, *Actuarial Review* Working Group, Monograph Editorial Board, University Liaison Program, CAS College Expos, and Taiwan-based CAS outreach initiatives.

Hsu's path to the actuarial profession began at the University of California-Riverside, where he earned his undergraduate degree in statistics. With two exams under his belt but no immediate job prospects, he pursued a master's degree in actuarial science at Columbia University, an experience he credits not only for academic rigor, but more importantly for deep industry connections.

He volunteers because it develops the skills he values: professionalism, communication, leadership, networking, and the discipline of writing.

Today, Hsu is the head of actuarial at Breach Insurance, a startup that focuses on developing insurance products that are tailored for the digital asset industry. The collaborative, roll-up-your-sleeves environment suits him — and mirrors the teamwork-oriented culture he fosters in his volunteer work.

His service has also earned recognition. Shortly after achieving his Fellowship, Hsu received the CAS New Member Award, an honor he is deeply proud of. The award reflected his early contributions to the Professionalism Education Working Group, including a major redesign of the COPs opening presentation deck to make it more visually engaging and accessible.

If there is one theme running through Hsu's story, it is intentional growth — both his own and the actuarial profession. He volunteers because it develops the skills he values: professionalism, communication, leadership, networking, and the discipline of writing. He volunteers because he wants to contribute to a collaborative, forward-thinking actuarial community. And he volunteers because he genuinely enjoys it. "I have a lot of fun volunteering," he says. "It's a pressure-less way to get training and experiences I can't otherwise get at work."

Beyond spreadsheets and GitHub repos, Hsu has a life filled with outdoor adventures and well-loved board games. He and his wife recently took up backpacking, and he's also an avid player of Catan, the strategic board game beloved by many analytical minds.

Hsu embodies the spirit of CAS volunteerism through collaboration, generosity of time, intellectual curiosity, and a commitment to elevating the profession. Through his leadership and vision, he is helping the CAS stay innovative and relevant in a rapidly changing world. His work reminds us that the CAS community is strengthened by volunteers who not only share their expertise, but also grow alongside the organization — learning, experimenting, and always building something better.

Predictive Modeling Takes Center Stage in CAS Latin America Case Competitions

By RAFAEL COSTA, VOLUNTEER CHAIR OF THE LATIN AMERICA REGIONAL WORKING GROUP

Building on the success of its inaugural 2024 case competitions, the CAS Latin America Regional Working Group (LARWG) launched a second edition in late 2025, featuring a predictive modeling challenge that engaged nearly 100 students from 14 universities across five countries (Argentina, Brazil, Colombia, Costa Rica, and Mexico).

Two competitions ran in parallel: one in Portuguese for Brazilian university students and one in Spanish for institutions in Spanish-speaking Latin America. Both challenged students to develop an enhanced renter's insurance rating plan using predictive models to incorporate risk segmentation. Teams with the strongest models moved to the finals, where they presented their methodologies and business insights to a panel of judges.

Actuarial programs in Latin American universities have traditionally focused on life and retirement. However, P&C has become more prominent in curriculums in recent years, and that became apparent during the competition. Students produced high-quality models that had technical accuracy and presentations that included strategic business recommendations, showing that these students are eager to deliver on the CAS Envisioned Future:

CAS members are sought after globally for their insights and ability to apply analytics to solve insurance and risk management problems.

The educational value of the competitions was the main draw, but attractive prizes added excitement. Thanks to our sponsors — WTW for Brazil and ACTEX Learning for Spanish LatAm — all participants received exam discounts and free ACTEX study materials. Top teams earned free exams, registrations for CAS Data and Insurance Series Courses (DISCs), and gift cards. In addition, the universities of the top three teams in each competition received printed ACTEX study manuals and free participation in the Global Actuarial Faculty Development Program.

These were the top teams in each of the competitions:

Brazil

1st Place: Bahtuários - Universidade Federal do Rio Grande do Sul

- Students: Fernando Dudczak Lummertz, Rafael Sindermann Lumertz, Tiago Haddad Carraro, and Ricardo Dorigon Martins
- Mentor: Prof. José Antônio Lumertz

2nd Place: Artesãos do Risco - Universidade do Estado do Rio de Janeiro

- Students: Leonardo Birenbaum, Lucas Pessanha Barbosa, Luiz Guilherme Vianey da Silva, and Pedro Garitano Piñeiro
- Mentor: Prof. Eduardo Fraga Lima de Melo

3rd Place: USPATU - Universidade de São Paulo

- Students: Alexandre Mota dos Santos, Christian Ribeiro de Mendonça, Iago Barrios Medeiros, Julio Cesar Arminini de Araújo Lima, and Matheus de Souza Nascimento
- Mentor: Prof. Thiago Dutra Araujo

Spanish LatAm

1st Place: Riskbusters - Universidad Nacional de Colombia

- Students: Maria Paula Arévalo Fuentes, Natalia Catherine Parra Cuellar, Laura Milena Roa Leguizamón, John Anderson Guarin Lopez, and Luis Enrique Mantilla Sanabria
- Mentor: Prof. José Alfredo Jiménez Moscoso

2nd Place: EstocasTicos - Universidad de Costa Rica

- Students: Fabián Brenes Thomas, Félix Madrigal Mora, Marco Antonio Guardia Ortiz, and Laura Jimena Villacís Delgado
- Mentor: Prof. Esteban Bermúdez Aguilar

3rd Place: Riesgo País - Universidad de Buenos Aires

- Students: Esteban Fermin Almeida, Victoria Ryan, Lola Faigenbaum, Ignacio Conti, and Santiago Ramiro Sosa
- Mentor: Prof. Carolina Cristina Castro

There is a nuanced but valuable lesson that students also learned from these events: the power of volunteerism. As one student commented, "Not long ago, we knew very little about the CAS, and even beyond the competition, your dedication has been promoting many positive changes to our actuarial landscape." Indeed, I worked with a group of very dedicated people to make this all happen:

- Organizing committee:
  - Roberto Pérez, FCAS
  - Fernando Alvarado, FCAS
  - Celeste Bremen, FCAS

- Juan Sancén-Bravo, ACAS, AIDA, ARM
- Gabe Necoechea, ACTEX Learning Representative

- Brazilian competition judges:
  - Celeste Bremen, FCAS
  - Claudia Novello Ribeiro, CAS Affiliate Member, MIBA
  - Isabella Oliveira, CAS Affiliate Member, MIBA, and WTW Representative
- Spanish LatAm competition judges:
  - Fernando Alvarado, FCAS
  - Juan Sancén-Bravo, ACAS, AIDA, ARM
  - Stephen Camilli, FSA, ACTEX Learning Representative
  - Florencia Di Paolo, MBA, Representative from the Argentine Society of Actuaries (SAAC)
- CAS staff:
  - Katie Mulembe, Director of International Relations and Affairs
  - Olivia Curtis, Cross-Functional Program Coordinator

I am grateful for the contribution of LARWG volunteers and the engagement of our corporate sponsors and the CAS community. Initiatives like this greatly strengthen the global presence of the CAS and support the development of the actuarial profession in Latin America. We look forward to continuing this work and expanding opportunities for students and universities in the region.

Rafael Costa, FCAS, MIBA, is an associate director at WTW.

Coming in Early 2026: The CAS AI Primer

Artificial intelligence is transforming how actuaries work, analyze data, and deliver insights. It offers tremendous potential to enhance efficiency, accuracy, and business impact across the insurance value chain. However, AI tools also introduce new categories of risk and governance challenges. A new CAS AI Primer will offer a starting point for actuaries in their AI adoption journey. It will:

- Provide a concise overview of AI concepts and applications relevant to actuarial work.
- Highlight potential risks and outline best practices for responsible AI use.
- Outline key corporate and regulatory considerations that shape AI implementation in actuarial contexts.
- Direct readers to trusted learning resources for building deeper AI literacy and practical skills.

Watch the Weekly Bulletin in the new year for more information.

How Milliman's Experts Are Building Insurance Resilience Worldwide: A Look Inside the UNDP Global Actuarial Initiative (GAIN) Program

By SARAH SAPP, AR MANAGING EDITOR AND OLIVIA CURTIS, CROSS-FUNCTIONAL COORDINATOR

Healthy economies depend on strong insurance systems, and behind every strong insurance market are skilled actuaries who can measure and manage risk. But in many emerging markets, actuarial professions are only beginning to take shape. That's where the Global Actuarial Initiative (GAIN) — a collaboration between Milliman and the United Nations Development Programme's Insurance and Risk Finance Facility (UNDP IRFF) — comes in.

GAIN aims to facilitate the creation of an ecosystem that generates a steady supply of homegrown, technically sound actuarial resources that can contribute to a robust insurance industry. Working together with various local stakeholders, a shared vision is set out for the growth of the actuarial profession within the country. Activities and interventions utilize volunteer actuaries to help build actuarial capacity, train regulators and students, and strengthen local insurance systems. Several Milliman actuaries who are also members of the CAS recently shared how this work is transforming both local markets and their own careers.

For Brian Z. Brown, FCAS, MAAA, ARM, his travels with GAIN were an eye-opening experience in how knowledge-sharing can build institutional strength. "I spent seven days in Nigeria and two in Ghana," Brown recalled. "In Abuja, I met with about 20 regulators and held a two-day workshop covering pricing, reserving, capital modeling, and ORSA." He presented alongside Milliman colleague Chris van der Merwe from South Africa, underscoring the program's collaborative, cross-continental approach. And it's not just actuaries who are volunteering in this work. Daniel Adeleye, a senior associate in IT risk management at Milliman-Chicago, also provided support on this trip.

Brown emphasized how eager participants were to learn. "In the 20 or so hours that I presented, I did not see one person on their cellphone," he said. "Over the course of the trip, I probably received 100 questions."

In Lagos, he met with members of the Nigerian Actuarial Society and the CEOs of 15 insurance companies to discuss how actuaries can add value in risk identification, pricing, reserving, and capital management.

Brown explained that his previous CAS involvement has helped him serve the actuarial community throughout the world. "As CAS President, I met with leaders of many actuarial societies, and we shared knowledge and approaches. The South African actuaries do a lot of work for banks, and I tried to educate CAS members on opportunities in banking. In 2018, the CAS held a joint banking conference with the South African Society in Washington, D.C. Many countries were interested in the CAS leading working in predictive analytics, and many CAS leaders had talks with leaders in other countries to share knowledge."

After returning home, Brown organized three follow-up webinars to answer the many questions that continued to pour in. "Jeff Smith, FCAS, presented at two of these webinars on regulatory issues," Brown said. "It's been incredibly rewarding to see the impact continue beyond the trip."

Kim Guerriero, FCAS, contributed to GAIN by helping design actuarial training for Ghana's P&C market in the fall of 2023.

Her work focused on accessibility. "One of the most impactful ways I've contributed is by developing ratemaking and reserving training for future actuaries and other stakeholders," she said. "By simplifying complex actuarial principles for broader audiences, we've helped bridge the gap between technical

knowledge and practical application."

"While developing the training materials, I collaborated with colleagues across various departments within Milliman and the CAS, which gave me the opportunity to expand my network and engage with individuals I hadn't previously worked with — and might not have connected with otherwise," said Guerriero.

For Guerriero, CAS membership was essential preparation. "The CAS has given me the ability to contribute not just as a practitioner, but as an educator," she said. Her advice for aspiring actuaries in emerging markets? "View the CAS credential not just as a certification, but as a gateway to global opportunity and community," said Guerriero. "The CAS equips you with rigorous analytical skills in areas like pricing, reserving, and risk management."

"The CAS provides a huge opportunity to network with other actuaries across numerous organizations," said Guerriero. "Pursuing CAS credentials can be challenging, so don't be discouraged. If local support does not exist, seek out virtual communities, mentorship opportunities, and regional actuarial societies. The CAS itself is working to expand access, and there are growing numbers of actuaries from emerging markets who are making their mark globally. Stay curious. Use your unique perspective to apply actuarial skills in ways that are relevant to your local context."

Rehan Siddique, FCAS, MAAA, became deeply involved in Ghana's Non-Life Actuarial Capacity Development (NACDEV) program in late 2023, while employed at Milliman. "I am currently serving as an actuarial ambassador to multiple non-life insurance companies," he said. "We help actuarial staff learn best practices around pricing and reserving."

Siddique described how his CAS training gave him the foundation to adapt U.S.-style actuarial methods to new contexts. "So much of U.S. actuarial work is driven by regulation or proprietary methods," he noted. "Distilling core actuarial concepts in a new environment can be difficult. You have to make sure your fundamentals are solid and understand local nuances that may not exist in the U.S."

One such nuance is the local approach to claims. "Variables like the litigation environment — or even whether it exists — matter," he said. "In Ghana, claims rarely develop beyond a year, so accurate case reserves up front are more important. And claims handling tends to be more customer-service oriented rather than combative."

Through GAIN, Siddique also expanded his professional network. "I've made connections with actuaries and risk organizations around the world," he said. "I've been on calls with representatives from the IPCC, UN, Sustainable Insurance Forum, and IFRS Institute. Connecting my background in climate risk to international actuarial development has been incredibly fulfilling."

While some actuaries travel to lead workshops, others make an impact virtually. Tara Miller, FCAS, served as a mentor in the GAIN Mentorship Program from November 2024 through July 2025. Her mentee was a student from the Nigerian Actuarial Society who was preparing for actuarial exams.

"My mentee was working toward passing exams, so my own experience with CAS exams felt especially relevant," Miller said. "Having gone through a similar process myself, I could relate to what they were facing and provide practical support."

She reflected that mentoring gave her valuable insight into the diverse career paths available within actuarial work and improved her communication skills. "Engaging in thoughtful discussions about career development and professional challenges encouraged me to reflect on my own experiences and growth," said Miller.

Her advice for actuaries in emerging markets was simple but powerful: "Seek out a mentor. Pursuing credentials can be long and challenging, but having support from someone who's already been through it can make a big difference."

For these actuaries, GAIN isn't just a volunteer program — it's a professional and personal growth experience. Each participant emphasized how CAS training, global collaboration, and mentorship combine to expand the reach of actuarial science where it's needed most.

For Brown, Guerriero, Siddique, and Miller, the common theme is connection — between people, between theory and practice, and between local markets and global expertise. Together, they're helping ensure that the tools to build resilient insurance systems are shared worldwide — one workshop, one mentorship, and one conversation at a time.

To learn more about GAIN and join their mailing list, visit milliman.com/en/milliman-undp-global-actuarial-initiative and follow them on LinkedIn: https://www.linkedin.com/company/global-actuarial-initiative/.

CAS STAFF SPOTLIGHT

Heather Davis, Research Manager

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

- **What do you do at the CAS? How does your role support the Strategic Plan?**
  I began my role as the research manager in August. My role is to help the research working groups run smoothly and support our other research efforts, such as the Individual Research Grants and Quick Start Grants. Working with the CAS Research and Publications teams, my aim is to ensure that CAS is known as a thought leader that produces timely research papers and tools relevant to audiences from practicing actuaries to academics. I support the 2026 CAS Strategic Plan by enhancing and promoting content and thought leadership focused on Climate Risk and Artificial Intelligence in particular. We want to be recognized as a source of expertise and guidance in these and other key areas of risk. By fostering quality research and widely promoting the products that result, I am helping to achieve a key goal of the CAS Strategic Plan.
- **What inspires you in your job? What do you love most about your job?**
  Collaborating with our talented and dedicated CAS volunteers inspires me the most. They give their time and creative skills generously to investigate important research questions, fill research gaps, and develop practical tools that help both consumers and the insurance industry. What they do is foundational for many fields that rely on accurate data and careful analysis for quality decision-making. In my job, I love honing systems to make them more efficient and finding ways to package and promote research findings. The CAS produces a lot of important content, and the systems we use to develop that content can always be improved. Likewise, there are always new and interesting ways to present and promote content — whether through visuals, storytelling, podcasts, or events.
- **Describe your educational and professional background. What do you bring to the organization?**
  I have 30 years of experience producing publications for international public health projects, including research papers and related tools and collateral. I have strong experience and skills in both project management and writing and editing. I've brought thousands of research and publication projects to fruition for communities around the globe. Through that experience, I learned why having strong publishing standards and processes is so important. I built many workflows and job aids to help both authors and staff be more cost-efficient and effective in their research and publication development.

Heather Davis at Edinburgh Castle

- **What is your favorite hobby outside of work?**
  In my spare time, I write poetry, fiction, and nonfiction that actually gets published when I am lucky. I also am active in literary communities in Lancaster, Pennsylvania, where I live, and in Washington, D.C. Currently, I'm working on a young adult novel in verse and loving that process.
- **If you could visit any place in the world, where would you go and why?**
  I would go to the Philippines because my husband's family emigrated from there to Washington, D.C., in the 1950s, and I would love for my kids to learn more about their Filipino heritage.
- **What would your colleagues find surprising about you?**
  I love riding on trains and took one all the way across the U.S. while on my honeymoon. I think I could handle driving a horse and buggy though, as many people do here in Lancaster.

NEW FELLOWS ADMITTED OR RECOGNIZED IN NOVEMBER 2025

Row 1, left to right: *Kimberly Plesnicar Imel, Maathuresh Baskaran, Beth Kurina,* ***CAS President David Cummings,*** *Michelle Muller, Kelli Chupp, Jianyu Chen.*
Row 2, left to right: *Ilya Silik, Jacob Arndt, Reiner Atstathi, Humberto Viana, Julien Zhang, John Hildebrand.*
Row 3, left to right: *Grant Brooks, Stanley Zalewski, Xiangkun Kong, Jacob Prasch, Kashif Khalid.*

Row 1, left to right: *Benjamin Krause, Thomas Spankroy, Luke Guatelli,* ***CAS President David Cummings,*** *Jessica Kurlander, Julia Harris, James Weng.*
Row 2, left to right: *Jamie Rees, Andrew Kegel, Audrey Morissette-Martel, Andrew Hayes, Stanton West, Amanda Piscitello.*
Row 3, left to right: *Joshua Weaver, Eric Lee, Timothy Doyle, Angel Gentchev, Adam Poertner, Gerald Pfeil.*

NEW FELLOWS ADMITTED OR RECOGNIZED IN NOVEMBER 2025

Row 1, left to right: *Cullen Zimmer, Qifeng Wu, Jennifer Fells,* ***CAS President David Cummings,*** *Melissa Epstein, Megan Pierce, Xiaoling Zhou.*
Row 2, left to right: *Robert Wondolowski, Tyler Jenkins, Jialu Chen, Alex DiVerde, Derek Thada, Jacob Shea, Navin Vigneswaren.*
Row 3, left to right: *Andrew Lock Son, Ryan Lebens, Tristin Guevara, Zachary Anderson, Joseph Moynihan, Nathaniel DeRousse.*

Row 1, left to right: *Matthew Gotkin, Bryn Woodling, Eileen Wang,* ***CAS President David Cummings,*** *Olivier Bensimon, Hongmiao Shao, Ashley Neuenfeldt.*
Row 2, left to right: *Bradley Waller, Jie Hou, Joseph Burke, Jonathan Chen, Justine Cantin, Matthew Omillian.*
Row 3, left to right: *Joseph Michels, Chad Holmberg, Daniel Polhamus, Kevin Kiehne, Ziqing Zhang, Richard Shi.*

Row 1, left to right: *Lawrence Toh, Luke Senft, Ruijia Zhang,* ***CAS President David Cummings,*** *Christopher Filips, Ian Rycroft, Birong Lin.*
Row 2, left to right: *Myles Prior, Elizabeth Hatch, Qian Yang, Eric Hintikka, Matthew Malusa, Jia Liu, Chase Martini.*
Row 3, left to right: *Brian Dudding, Michael Kossuth, Gerald Olson, Kylie Persons, Ian Grosso.*

Row 1, left to right: *Yiming Gao, Preamini Jeevaharan, Danish Zulfiqar,* ***CAS President David Cummings,*** *Raphael Belanger, Christophe Royer, Hao-Wei Chu.*
Row 2, left to right: *Guillaume Turnblom, Camille Simard, Sarah McConnell, Benjamin McConnell, Natasha Hernandez, Ying Zhe Wang, Drew McKinlay.*
Row 3, left to right: *Jeremie Grenier, Thomas Lavoie, Mark Palij, Mike Caputo, William Perron-Lafleur, Christopher Kevin.*

NEW FELLOWS ADMITTED OR RECOGNIZED IN NOVEMBER 2025

Row 1, left to right: *Emily Wang, June Bui, Eva Shinikova,* ***CAS President David Cummings,*** *Zhijun Li, Sonu Sarraf, Benjamin Shuker.*
Row 2, left to right: *Kyle Rittmueller, Alyssa Grove, Jocelyn Bernstein, Binata Fleysher, Kathryn O'Connell, Samantha Gong, Paige Bailey.*
Row 3, left to right: *Riley Jones, Christine Hovermale, Ryan Meade, Jonathan Haglund, Peyton Biernat.*

Row 1, left to right: *Andrew Moulakis, Matthew Anderson, Elizabeth Greco,* ***CAS President David Cummings,*** *Valérie Sirois, Leah D'Astolfo, Matthew Melnychuk.*
Row 2, left to right: *Joenathan Ferio Hardi, Joseph Van Engen, Owen Ellis, Matthew Bush, Zachary Boaz.*
Row 3, left to right: *Luke Musgrave, Fatir Siddiqui, Waleed Hassan, Nicholas Lannutti, Saleh Cheema, Tim Le.*

Row 1, left to right: *Brittany Strausser, Kayla Gephart, Christina DeSalva,* ***CAS President David Cummings,*** *Daniel Suryakusuma, Jiayi Huang, Nils Mollenkamp.*
Row 2, left to right: *Montgomery Stenroos, Drake Weisman, Nicolas Lai, Qian Jiang, Christy Sabu Zacharia.*
Row 3, left to right: *Yifu Lu, Austin Souza, Gregory Harris, Mark McChesney, Kevin Trehy.*

New Fellows not shown: *Michael Aloisio, Eric Bayer, Nicholas Bragman, Ruolin Cai, Daniel Camargo, Liam Carleton, Xin Chang, Waleed Cheema, Sihan Cheng, Yin Chiau Chong, Andrew Craig, Jingyi Cui, Eric Dorst, Ryan Dowdle, Tanner Downs, Matthias Benedikt Ferdinand Drees, Nathan Dykstra, Brandon Florizone, McKay Gerratt, Rochel Glazer, Robert Glicksman, Joseph Goodman, James Gordon, Daniel Harris, Jonathan Harwood, Joshua Herrera, Mengxuan Hou, Matthew Hrycyk, Cheryl Immanuela, Nicole Knudsen, Matthew Kovar, Thien Le, Leyang Li, Ruiqi Liang, Mengjin Luo, Stephanie Magnuson, Jacopo Marchesan, Clinton McCullough, Melanie McFaul, Meedech Meepolprapai, Jesse Nickerson, Liyana Nik, Shannon Osterfeld, Jacob Pawlowski, Jonathan Pollock, Matthew Pulido, Evan Rudibaugh, Tyler Ruger, Shariq Sadiq, Richard Safran, Abyn Scaria, Bill Schwartz, Vadim Semenikhine, Patpoom Settakawin, Malika Shah, Gareth Simons, Danielle Sorenson, Zachary Stekler, Daniel Suryakusuma, Sonil Tappia, Emma Taylor, Jiarui Tian, Megan Towne, RaeAnn Treloar, Jason Verna, Diana Vlaic, Akshiti Vohra, Kyle Walker, Yun Wan, Jason Wang, Nan Wang, Mitchell Wasowski, Yotsaphon Wattanawangkraisri, Collin Whipple, James Whittier, Madalyn Winger, Po-Hung Wu, Yun Ya Xiao, Xiaoyan Xie, Myron Yang, Tom Hongsuk Yang, Shuangjia You, Weitao You, Henry Yu, Yiming Yuan, Kenneth Zesso-Hoernis, Julie Zhang, Yifan Zhang, Yingxin Zheng, Ria Zhou, Ryan Ziobro.*

NEW ASSOCIATES ADMITTED OR RECOGNIZED IN NOVEMBER 2025

Row 1, left to right: *Emma Myers, Lauren Gardner, Kimberly Kaune,* ***CAS President David Cummings,*** *Mary Carol Garrity, Yeni Ding, Adam Meltzer.*
Row 2, left to right: *Karen Kaye Gutierrez, Adil Mohammad Siddiqui, Russell Snead, Joe Winbigler, Samuel Woessner, Zhi Wu Khong, Christopher Gowdy.*
Row 3, left to right: *Gavin Li, Noah Key, Mufaro Pazvakawambwa, Samuel Ryskamp, Gavin Sabine, Corey Dover.*

Row 1, left to right: *Haylie Munda, Alex Burosh, Christopher Marken Jr.,* ***CAS President David Cummings,*** *Kristen Buzaki, Xiuwen Zeng, Alice Hébert-Guay.*
Row 2, left to right: *Adam Ramos, Marisa Steinberg, Nicole Rascavage, Jordyn Bruce, Timothy Selhorst, Joshua Levine, Evan Koenig.*
Row 3, left to right: *Michael Sherman, Mark Davids, Kevin Konop, Tyler Tofte, Kevin Dougherty, Utsav KC.*

Row 1, left to right: *Rebecca Henion, Guillaume Lambert, Ellen Wieland,* ***CAS President David Cummings,*** *Etienne Guy, Charlene Smale, Kyra Geniesse.*
Row 2, left to right: *Kara Wong, Jake Devin, Alison Lambert, Daniel Smedema, Catannian Sanogo, Jill Kirshman.*
Row 3, left to right: *Ethan Orchard, Benjamin Van Pelt, AJ Morlan, Avery Nielsen, Matt Leonhartt, Timothy Cray.*

Row 1, left to right: *Robert Pobocik, Killian Rakes, Tony Cao,* ***CAS President David Cummings,*** *Nam Phuong Nguyen, Anila Giang, Ivy Zhou.*
Row 2, left to right: *Samuel Smith, James Myers, Kenneth O'Connell, Dylan Black, Xinou Xu.*
Row 3, left to right: *Jordan Drummelsmith, Christopher Ward, Michael Karl, Noah Porter, Joseph Pleban.*

NEW ASSOCIATES ADMITTED OR RECOGNIZED IN NOVEMBER 2025

Row 1, left to right: *Gabriel Suskin, Lucy Huang, Yuqian (Gloria) Fan,* ***CAS President David Cummings,*** *Minqi Zhang, Yei Chen, Samco Duong.*
Row 2, left to right: *Nancy Sherpa, Fresa Luo, Mia Song, Jose Saucedo Cordova, Tyler Mesnick, John Gotz.*
Row 3, left to right: *Yuning Si, Emelie Carlsson-Hayes, Benjamin Bowman, Joshua Kennedy, Matthew Mitchell, Clark Dumblauskas.*

Row 1, left to right: *Kristiana Mariano, Christine Garza, Linshan Jiang,* ***CAS President David Cummings,*** *Ying-Chia Meng, Ryan Muzulu, Abigail Denis.*
Row 2, left to right: *Kyle Durr, William Ringhofer, Shivam Aggarwal, Nathan Choi, Hanzhi Wu, Yongho Kim.*
Row 3, left to right: *Noah Danner, John Manley, Robert Rogers, Nicholas Pellegrini, Dustin Bauer, Arik Skifstad.*

Row 1, left to right: *John McHugh, Mason Zlemer, Kelsy Waack,* ***CAS President David Cummings,*** *Kristine Anderson, Emily Freed, Colette Gillo.*
Row 2, left to right: *Karla Ross, Yiwen Zhuang, Siqi Wen, Maxwell Wilson, Jacob Culberson, Travis Vines.*
Row 3, left to right: *Eric Chen, Joshua Levinson, Thomas Svegl, Kaya Gendreau, Anna Puhek, Hannah Kojetin.*

Row 1, left to right: *Linyi Sun, Yumeng Song, Ming Yii Goh,* ***CAS President David Cummings,*** *Natalia Garcia, Anna Monn, Min Yi Chong.*
Row 2, left to right: *Yongbo Yang, Sam Guillemette, Bing Hu, Brandon Dargay, Jack Reynolds, Amandeep Dhillon.*
Row 3, left to right: *Gregory Pelzl, Richard Grant, Eric McAllister, Kade Lewis, Jonathan Boyle, Samuel Chilson.*

NEW ASSOCIATES ADMITTED OR RECOGNIZED IN NOVEMBER 2025

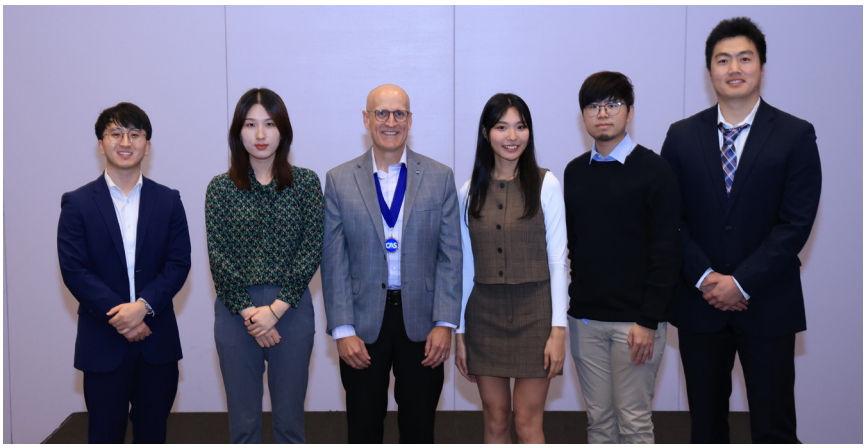
Row 1, left to right: *Kazandra Claire Santos, Joseph Battista, Alex Adler,* ***CAS President David Cummings,*** *Sijia Ma, Tea Bourdeau, Caitlyn Nielson.*
Row 2, left to right: *Elizabeth Wortman, Mickey Chew, Thomas Mogavero, Ernest Lee, Curtis Glatz, Dylan Gomer.*
Row 3, left to right: *Joseph Lowry, Carter Gray, Conor Timlick, Weston Hogan, Benjamin Fay.*

Row 1, left to right: *Timothy Brennan, Madisyn Becker, Tracy Zawrazky,* ***CAS President David Cummings,*** *Ashley Salazar, Celia Acuña, Laura Hendley.*
Row 2, left to right: *Alexandre Morakis, Mujtaba Gul, William Weiner, Tyler Henkemeyer, Cameron Allen, Thomas Morrissey.*
Row 3, left to right: *David Mathews, Raymond Fleming, Thomas Mondry, Mark Murdoch, Luke Swiatek.*

Row 1, left to right: *Lauren Stamatopoulos, Emily Turvey, Isabella Lohn,* ***CAS President David Cummings,*** *Owen Gallagher, Jessica Zhang, Kayla Biggs.*
Row 2, left to right: *Shivangi Sreedharan, Haley Reed, Chenyi Li, An Du, Robert Cuba, Jinjin Shan, Ian Schultz.*
Row 3, left to right: *Kevin Milligan, Long Nguyen, Carter Bridge, Luke LaRue, Tate Davison, Matthew Jalnos.*

Row 1, left to right: *Yuping Jiang, Vanessa Li, Sara Lawson,* ***CAS President David Cummings,*** *Bob McCarthy, Anastasia Yiasoumi, Benjamin Flisakowski.*
Row 2, left to right: *Stephanie Murphy, Jordan Willis, Josephine Funaro, Mark Walsh, Mark Cappaert, Krishna Shahdadpuri.*
Row 3, left to right: *Olivier Côté, Dylan Torrance, Christian Bova, Winfred Patterson, Larsen Burchall.*

NEW ASSOCIATES ADMITTED OR RECOGNIZED IN NOVEMBER 2025



Jonathan Ouh, Jiayue Fan, ***CAS President David Cummings,*** *Judy Oh, Alan Ng, Jimmy Wang.*

Huy Le, Quynh Anh Le, ***CAS President David Cummings,*** *Patricia Loaiza.*

Row 1, left to right: *Azwirah Ahmed,* ***CAS President David Cummings,*** *Xiao Li.*
Row 2, left to right: *Gabriel Carrier, Michael Luberto, Tyler Erdmann, Ashley Warrington, Vanessa Shuang Wu.*

New Associates not shown: *Giorgi Akhvlediani, Connor Angeli, Vincent Antonelli, Andrew Baham, Zach Bailey, Bryton Balzer, Jialu Ban, Christopher Barrett, Laurie-Eve Bastiani, Zach Bedinghaus, Nicholas Benson, Benjamin Bergman, Wei Bi, Harrison Biederman, Jared Bray, Raymond Breen, Caleb Bronson, William Burns, Paul Carwile, Pi-Hsien Chang, Ella Charpentier, YuXin Chen, Jason Cheng, Alice Chu, Quincy Clare-King, Dov Corne, Joseph Correia, Ashley Covell, Hailey Cowles, Jinfang Cui, Coby Cumbow, Thomas Curcio, Joseph Cuzzi, Caleb Dahlstrom, Caden Davenport, Kyle Del Vecchio, Phyllis Dere, Patrick DiRoma, Michele Dona, Jordyn Eller, Jordan Falk, Dean Fannon, Matthew Fay, Samuel Forest, Nicolas Gagnon, Sidharth Garg, Lauren Gary, Julie Giz, Connor Glinski, Ashley Gogolin, Adam Goldfarb, Danica Greene, Desiree Griffen, Man Yu Guan, Nathan Hastreiter, Ke He, Jasmin Henri, Chelsea Hidden, Anh Huy Ho, Jinseong Hong, Zheng Xun Hong, Shuo-Heng Hsu, Gavin Hu, Luxin Huang, Wenshan Huang, Dana Hurrell, Toby Im, Peter Jensen, Sean Joly, Elijah Kahn, Parth Kekare, Ki Yoon Kim, Elizabeth Klenk, Clay Koon, Christopher Kyte, Willy Lai, Allissa Law, Chiew Lai Lee, Junyoung Lee, Lucinta Lee, Timothy Lee, Matthew Leise, Hooi Vuan Leow, Colette LeRoux, Anqi Li, Gordon Li, Jiajin Li, Yelin Li, Sharlyn Li Chit Khim, Wei Liao, Danielle Lieberman, Cheen Lim, Joe Lim, Lingsheng Liu, Yan Liu, Tsz Leung Maurice Lo, Marco Loccisano, Rostyslav Lohoida, Xingwen Lu, Emilia MacDougall, Andrew MacNamee, Brian Madden, Kyle Mansfield, Kristian Marino, Katherine McCarthy, Megan McFarland, Cao Mengjiao, Joshua Mesraje, Kinsey Miller, Tyson Mohr, Jorge Molina, Joseph Neuman, Hao Fu Nge, Thi Thanh Thao Nguyen, William O'Brien, Nathan Olander, Mohammad Ovais, Alexander Panayotov, Keerawit Pawalitkosol, Hank Peeples, Daniel Polites, Christian Politis, Sarah Post, Lloyd Prophete, Max Putterman, Qiqi Qiao, Jiayan Qin, Bryan Quigley, Michael Quinnan, Christina Ratteray, Chase Rice, Rebecca Ruiz, Emily Saiz, Elisabeth Scarchilli, William Schroeder, Jacqueline Schuman, Emma Schwartz, Jingxian Shi, Yunqing Shi, Hyungtae Shim, Ji Young Shim, Sua Shim, Zachary Snider, Yewen Song, Foster Stager, Samantha Stowe, Victoria Sun, Melody Tam, Hooi Ming Tan, Hon Hwa Tang, Lee Wei Teng, William Thomson, Adam Torrence, Christophe Veillette-Cloutier, Julia Wagus, Austin Wallestad, Yifan Wang, Thanaphol Watthanachoktaweesuk, Justin Weber, Xin Wen, Cing Yii Wong, David Woolstenhulme, Nina Wouansi, Yiwen Wu, Jianshuo Xu, Weining Xu, Tin Yu, Shuai Yuan, Pengqian Zhang, Yawei Zhang, Beili Zheng, Qinyu Zheng, Yuan Zhou, Huihui Zhu, Alyssa Zillini, Qiyi Zou.*

2025 ANNUAL MEETING

Where Risk Innovation Sparks Creation

AUSTIN TEXAS
NOVEMBER 9-12 2025

SCENES FROM THE CAS 2025 ANNUAL MEETING

1. *Drew McKinlay finds her name on the list of new Fellows.*
2. *(Left to right) Jordyn Bruce, Catannian Sanogo, and Ming Yii Goh enjoy refreshments during the break.*
3. *Morgan Anderson from Guidewire introduces the session, "Geopolitical Risk."*
4. *(Left to right) Thomas Holmes, Cedric Pilon, and Bob Wolf present "Growth and Profitability: Shift in Actuarial Thinking."*
5. *(Left to right) Maddie Miller, Melissa Epstein, Mikey Bevarelli, Dave Cummings, Shelby Wolff, Becca Reich, and Ben Markowski pose with the step and repeat at the FCAS recpetion.*
6. *AI and technology expert Peter Leyden gives his remarks as the Annual Meeting featured speaker.*
7. *New FCAS and ACAS celebrate at the Welcome Reception.*
8. *(Left to right) Sergey Filimonov joins Alicia Burke and Rob Kahn for a taping of their Actuarial Review/Almost Nowhere crossover podcast episode to discuss his presentation," AI Snake Oil."*
9. *Dave Cummings, Victor Carter-Bey, Frank Chang, and Barry Franklin lead the Town Hall.*
10. *Students from the Annual Meeting student program gather for a group photo.*


FOUR FUTURES FOR ACTUARIES IN THE COMING AGE OF
AGI
By JIM WEISS

Google Deepmind CEO Demis Hassabis estimates artificial general intelligence (AGI) will emerge in five to 10 years. When do actuaries think AGI will arrive, and what will it look like for them?

Roughly nine months after the public launch of ChatGPT, *AR* posited "Four Futures for Actuaries in the Wake of AI." In the article, we considered the possibilities that actuaries could either be replaced by AI (doomsday), serve as its ultimate orchestrators (training day), provide its moral compass (judgment day), or go about business as usual notwithstanding AI (groundhog day). The doomsday scenario would imply artificial general intelligence (AGI), where AI takes on broad, human-like capabilities.

Two years later, it is not clear which future has started to emerge. The Magnificent Seven[1] still enjoy titanic valuations, but studies have shown organizations have not realized positive return on investment (ROI) on the vast majority of GenAI pilots. There are some signs that the technology is exhibiting properties of the Gartner Hype Cycle, where society overvalues inventions in the short term. Capability enhancement has arguably slowed, with OpenAI CEO Sam Altman recently suggesting AGI is a pointless term.[2] However, AGI remains in OpenAI's mission statement, and Altman and other tech moguls have reportedly made "apocalypse insurance" arrangements just in case.[3] And, of course, the Hype Cycle also indicates that society undervalues inventions' long-term potential.

As the insurance industry's resident jacks of all trades, actuaries have long relied on general intelligence, which is defined as "a collection of mental abilities that allow an individual to comprehend and interpret the world, reason and solve problems, and adjust their behavior to suit their surroundings."[4] To the extent AGI represents a synthetic (and potentially cheaper) alternative, it should be of keen interest to actuaries — but even AGI does not necessarily spell doomsday. This sequel to our 2023 discussion envisions four ways AI may come of age in the actuarial profession — either as incremental progress (Industrial Age), solutions to problems (Age of Reason), intellectual decay (Dark Ages), or complex and inexplicable behavior (Space Age). Are you ready for the future?

Industrial age

Intelligence is difficult to measure. "Everybody has a different definition of AGI," says Len Llaguno, FCAS, founder and managing partner of KYROS. "We're constantly moving the goalposts. The litmus test for AGI used to be the Turing

[1] Magnificent Seven is the nickname for seven large technology stocks: Alphabet, Amazon, Apple, Meta, Microsoft, Nvidia, and Tesla.
[2] https://www.cnbc.com/2025/08/11/sam-altman-says-agi-is-a-pointless-term-experts-agree.html.
[3] https://www.bbc.com/news/articles/cly17834524o.
[4] https://taylorandfrancis.com/knowledge/Medicine_and_healthcare/Psychiatry/General_intelligence/.

Len Llaguno

Test and being able to tell the difference between talking to a human or a machine. When GenAI eclipsed that, we decided to start giving it the SATs, the bar exam, medical exams — and it kept passing. Now it is winning gold in the International Mathematical Olympiad. How do any of these generate value for insurance companies?" In insurance, this value is typically measured in dollars. Llaguno subscribes to the rather capitalist definition of AGI proposed by Microsoft CEO Satya Nadella. "If we truly have AGI, there is likely to be massive productivity growth," he says. "GDP would increase on the order of 10% annually," characteristic of the Industrial Revolution. While the S&P 500 may exhibit growth on that order recently, GDP growth has typically been much lower. MIT's recent research, which indicated that 95% of enterprise GenAI proofs of concept (POCs) fail to generate positive ROI, does not suggest massive GDP growth is on the horizon.

However, focusing on short-term dollars may undervalue intangible assets unlikely to register on balance sheets. "A lot of the ROI of these early projects is in the value of the learning," says Llaguno. The MIT ROI study may also focus too much on central tendency. The tails are very important to differentiating what humans can do versus what machines can do. "A lot of organizations may invest in AI that gives them nonsense, but a handful of projects may achieve enough benefits to pay for all the others," says Ralph Dweck, head of insights and actuarial transformation at Verisk. Dweck cautions not to underestimate seemingly small gains. "It may seem like progress is approaching an asymptote. But if AI got to the point where it went from, say, 98% to 99% accuracy in a given domain, that is a massive swing," he says. Today's learnings will enable tomorrow's breakthroughs.

Perfectionism may also be getting in the way of progress on many of today's AI pilots. "Eighty percent accuracy could be very sufficient for some use cases," says Bill Wang, FCAS, founder of Dirichlet Actuarial Consulting. This is significantly more reliable than a coin flip and likely multiples higher than if actuaries back tested over-under on something like commercial auto reserve adequacy for the past decade. "Even production use cases, such as policy administration, that essentially require 100% accuracy could derive large benefits from AI," Wang says. "We may not trust AI to administer policies, but we can use it to create and run thousands of test cases and identify issues and edge cases more quickly than people can." Ultimately, broad outperformance will put the G in AGI.

Bill Wang

From outperformance may come prosperity. "There are not enough actuaries, especially for smaller organizations that have trouble competing on talent," says Wang. "What happens when hundreds of insurance companies operate with the scale and efficiency of top-tier carriers?" Ten percent productivity growth may not be out of the question.

"Foundational models are limited to working with the outputs of human thought, which is what was written down, rather than the inputs, which are ideas and inspiration."
–Bill Wang

Age of reason

If human reason is the gold standard, early AI is trained on cubic zirconium — a shiny and (at times) convincing imitation, but one that lacks true substance. "Foundational models are limited to working with the outputs of human thought, which is what was written down, rather than the inputs, which are ideas and inspiration," says Wang. "If you had the right experts spend five years in a room to train very specific models for insurance problems, it may cut significantly into the things we think are not possible today," adds Dweck. Outside of science fiction, it is not possible to download peoples' brains.

Actuaries, in particular, do not always excel at finding words to teach others their mysterious ways. "Planning is explicitly bringing implicit context out," says Llaguno. "Software developers do this well. They define features, break those down into user stories, break those down into tasks to execute, and each has criteria and tests for what constitutes completion." Llaguno points to the Breakthrough Method for Agile AI-driven Development as an AI-driven framework that can

Ralph Dweck

help with this, with AI agents conversationally assuming multiple stakeholder roles (e.g., developer, quality assurance) to collaboratively chart a plan of attack. In this virtuous cycle, AI helps actuaries help AI help actuaries solve problems.

However, it is possible to have the right plan for the wrong problem. "If we reach AGI, then AI would be the one setting the goals, because nothing would preclude it from identifying better goals than we can and figuring out better solutions," says Dweck. Jessica Leong, FCAS, CEO of Octagram, has been impressed by some aspects of AI's problem-solving. "I needed to generate a dataset that exhibited properties for which there was no closed-form solution. I asked ChatGPT to do it, it gave me an Excel [dataset], and sure enough it exhibited the correct properties," she says. Narrowing an unbounded problem space into a manageable one that can be effectively solved feels like significant progress towards AGI.

Narrowing an unbounded problem space into a manageable one that can be effectively solved feels like significant progress towards AGI.

The squishier the ask of AI, the less concrete the results become. "I gave ChatGPT a 1.7 million row fire dataset and asked it for interesting insights," Leong says. "It gave me basic statistics such as the number of rows or the number of fires in Wisconsin. Even with reasonably more prompting, I couldn't get it to provide anything I found surprising or interesting." These are not unfamiliar problems to humans. "It is like hiring someone," Leong says. "You want them to wow you with ideas, not just answer literally. In business, you can't always tell someone the exact problem to solve." While Leong's math problem was unbounded, it was precisely defined; the data problem she provided was not.

At its worst, AI expands problem spaces. "The real test for AGI is two AIs talking to each other and whether they can replicate coherence," says David Wright, ACAS, market solutions leader at Acrisure. "In my experience, they cannot. Conversationally, AI may seem human, but if the conversation goes long enough, it loses the plot and veers away from the original topic. The human is always the one carrying the cognitive load." Without humans and guardrails, AI lives forever on the edge of spuriousness.

Jessica Leong

In contrast to many models' mastery of correlations, causation lies at the heart of real-world problem-solving. In this regard, Wright sees Nadella's ROI test as a flawed measure because humans are still the ones banging the cash register. "General intelligence would have to operate its own economy, distinct from ours," says Wright. "It would use bitcoin, produce and buy energy, and work without humans. And then it would have to yield positive GDP." Only then would AI clearly have caused the success.[5]

Causal inference could be a starting point on the road to causation. Dorothy Andrews, PhD, ASA, who is the senior behavioral data scientist and actuary at the National Association of Insurance Commissioners, recalls a study where a Google image classifier correctly identified a panda with high confidence, but when noise was added to the image, it misidentified it as a gibbon with near 100% confidence.[6] "There was a time when the insurance industry referred to generalized linear models (GLMs) as black boxes, but they stopped calling them that once regulators understood them," says Andrews. "There may come a day when we understand, or AI helps us understand, how a panda became a gibbon. We need to focus on unlocking these mysteries." Once AI's everyday mysteries are unlocked, AI can safely move on to the great mysteries of our time.

Dark ages

Actuaries could back themselves into an AGI corner if they are not careful. "AGI is becoming more possible because we are getting dumber while AI is getting smarter," Andrews says. "There is ample evidence that GenAI is contributing to cognitive reversal because we are becoming too dependent

[5] https://mitsloan.mit.edu/ideas-made-to-matter/how-artificial-intelligence-impacts-us-labor-market.
[6] https://arxiv.org/abs/1412.6572.

Dorothy Andrews

Dominic Lee

on it." For example, a recent MIT study showed lower brain engagement in ChatGPT users compared to control groups who relied only on search engines or their own ingenuity.[7] The Dark Ages that bridged the classical age of the Roman Empire to the Renaissance provide a historical example of how intellectual stagnation and even barbarism can creep into society between times of advancement.[8]

Even the most independent-minded actuary could be unwittingly dumbed down by AI hidden in plain sight. "Google is disrupting its own business by providing what some feel is a mediocre GenAI experience at the top of its page anytime you search something, and this comes at the expense of previously better information," Dweck says. Self-disruption is generally viewed as a bold positive, and Google's AI Overview was a "successful" gambit to preserve advertising revenue by preventing web traffic from going to alternatives such as ChatGPT. However, the summarizer is not necessarily fact-checking what it retrieves, and despite Google's disclaimer that "AI responses may contain mistakes," searchers are clicking through to source materials less often than when only given hits.[9] By making it more difficult to unearth ground truth, AI makes it easier than ever to be wrong.

For example, a recent MIT Study showed lower brain engagement in ChatGPT users compared to control groups who relied only on search engines or their own ingenuity.

AI time-savers such as drafting and review also deprive actuaries of skill-building opportunities. "I wrote a lot of essays and papers growing up, and that is how I developed my writing skills," says Dominic Lee, ACAS, founder of the Maverick Actuary content community. "That eventually evolved into short form on LinkedIn, and now I've gone back to long-form articles as well. The ability to structure your thoughts, create flow, and form clear conclusions is critical. Without that foundation, GenAI may end up replacing instead of enhancing your expertise. When people overlook journalistic diligence such as verifying sources and validating quotes, thought leadership and research become prone to hallucinations. But when used with judgment and care, GenAI can be a strong accelerant for actuaries who understand how to apply it strategically." Over time, the number of such actuaries may decline unless AI tools are orchestrated with critical thinking in mind.

Skills once marginalized as undignified, such as memorization, can also be lifesavers in a pinch. "No one memorizes phone numbers anymore," says Andrews. "What if our phones fell down a storm drain. Who would we call for help? It is great that we have moved from pen and paper to spreadsheets and beyond, but we are responsible for making sure it is giving us what we want. Actuaries should be masters of technology, not its slaves." Andrews views the solution as human-centering technology, pointing to aviation as another profession that over-relied on technology to potentially disastrous consequence — but managed the risks effectively through techniques such as regular manual flight practice.[10] "If we designed GenAI to complement rather than displace human cognition, we might train it to ask us, 'what do you think?' under certain circumstances," she says. As long as actuaries continue asking themselves that question, they could be the ones to show their organizations out of AI's Dark Ages and into an AI-enlightened Renaissance.

Space age

AI is trained to behave as if it is our best friend, but by the time we achieve AGI, it may well become our worst enemy. Anthropic researchers recently found that Claude Opus 4 resorted to blackmailing an executive (in a simulated environment) to avoid being shut down, while many other leading models

[7] https://time.com/7295195/ai-chatgpt-google-learning-school/.
[8] https://www.europeana.eu/en/stories/the-not-so-dark-middle-ages.
[9] https://www.theregister.com/2025/07/29/opinion_column_google_ai_ads/.
[10] https://medium.com/faa/the-dangers-of-overreliance-on-automation-5b7afb56ebdc.

David Wright

behaved similarly.[11] "AGI refers to a system with the kind of reasoning and judgment that allows it to understand context, make decisions, and adapt across different situations," says Lee. "An example would be a machine that can question whether reserve assumptions are credible and adjust its approach in real time." Such adjustments could be used for good, to sunset stale methodologies, or evil, to prioritize quarterly earnings over estimation accuracy. Such is the brave new world of choices awaiting actuaries.

Lee and Wright do not see rogue agents as imminent, but they acknowledge there could be more present than meets the eye. "I share the view of Dr. Eric Siegel, author and machine learning savant, who argues that we are far from that reality," says Lee. "In Forbes, he suggests that today's systems are powerful pattern recognizers rather than general thinkers and that true human-like discernment remains qualitative and undefined in engineering terms."[12] "Reality is incredibly complicated and we comprehend relatively little," adds Wright. "In physics, there are explanations that are unsatisfying because we don't have the information to test them. A superintelligence could appear 'wrong' because nobody can understand it." AGI may already be as real as quantum gravity.[13]

Transitioning from physics to biology, scientists have struggled to model the full complexity of the human brain. Estimates of one brain's number of operations per second are in the quadrillions,[14] dwarfing the (speculated) 50 trillion parameters in GPT 5.[15] Foundational models represent a fraction of one brain — and there are many problems the more than 10,000 brains comprising the CAS have yet to solve. "The complexity of liability is orders of magnitude greater than, say, natural catastrophe risk," says Wright. "Understanding it requires much more data — hundreds of times more fields per claim than we currently look at. AI tools can help, and interest in these fields will expand massively in the next decade." AI need not model an entire cerebrum so long as it can effectively model wicked problems.

However, solving such problems may require an actuaries to become more comfortable conversing in one of AI's native tongues — overfitting. Actuaries are trained on exams to take strong measures against overfitting models. However, "overfitting works sometimes," says Wright. "Neural networks memorize data in sufficient complexity that overfitting does not matter as much as we think. There is compression of training data, but reality is infinitely complex. If we have enough features to model effective complexity, we can predict many cases." Some may argue overfits struggle with "never before seen" black swans, but so have humans in predicting gray swans such as the COVID-19 pandemic or Great Recession — much less gray rhinos such as underwriting cycles. AGI may simply represent a preferential shift from underfitting to overfitting for actuaries.

Turning over the keys fully to AI may require a rethink of risk management. "Our economic institutions are partially built around the strengths and limitations of our own general intelligence," Wright adds. "The economic institutions of AI or any other alien intelligence may be different, even cultural mechanisms such as requiring people to buy insurance — because they otherwise would not be inclined to do so." Line of business definitions may also shift, reminiscent of auto versus product liability debates in the (still) early days of autonomous vehicles. There is already reportedly explosive demand for affirmative GenAI insurance, even as other policy forms already cover some of the risks.[16] Actuaries should consider not just how AI applies to their work, but how their work applies to AI.

The future is now

Trust may be the biggest barrier AGI needs to surmount. "A chief actuary will typically not be looking at every single calculation," Llaguno says. "They have a team around them they trust. Those teams have people around them they trust. When we are talking about billions of dollars at play in a critical industry like insurance, the trust component will persist for a very long time." "The fulfillment of the human connection is difficult to replace," adds Lee. "Imagine walking into a meeting room where every seat is empty and AGI avatars are attending

[11] https://www.anthropic.com/research/agentic-misalignment.
[12] https://www.forbes.com/sites/ericsiegel/2024/04/10/artificial-general-intelligence-is-pure-hype/.
[13] https://www.space.com/astronomy/does-quantum-gravity-exist-a-new-experiment-has-deepened-the-mystery.
[14] https://www.openphilanthropy.org/research/how-much-computational-power-does-it-take-to-match-the-human-brain/.
[15] https://medium.com/@cognidownunder/gpt-5-openais-unified-intelligence-play-50fcfab6665b.
[16] https://www.carriermanagement.com/features/2025/10/08/280239.htm.

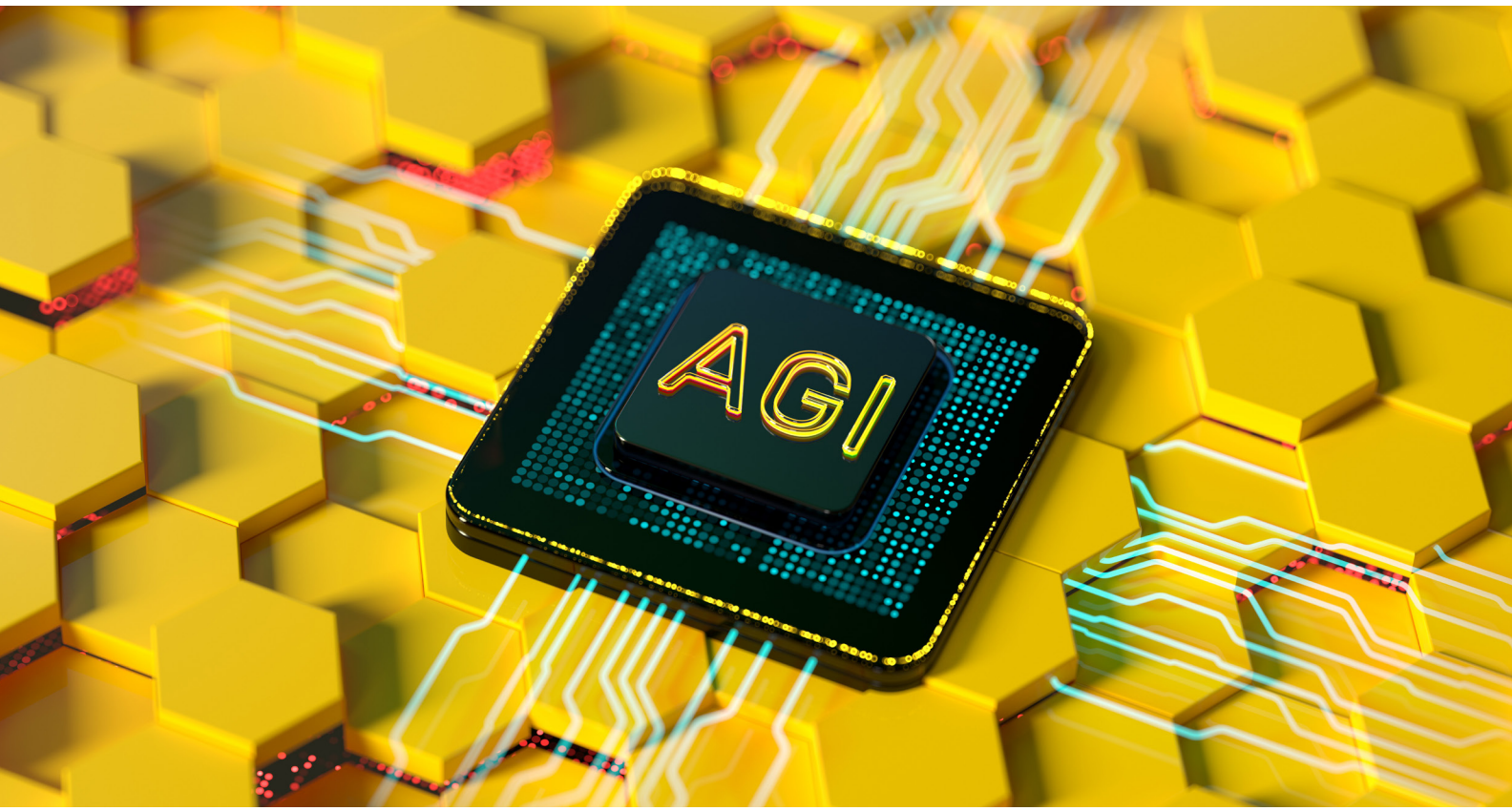
virtually. That setup is questionable from a business perspective. Commercial insurance is an example of a relationship-driven business where trust matters. Many of us have experienced the frustration of being stuck in an automated phone menu that struggles with tone and context. Extending that dynamic to complex relationships might be problematic." At the end of the day, research shows that people still prefer dealing with people unless their question is really embarrassing.[17]

While trust gives actuaries a moat, they must not fill it with complacency. Lee has long been a proponent of actuaries branching into new domains, and he sees stark differences in how actuaries view their roles compared to other STEM professions. "Meta and Microsoft are delegating functional programming to AI and focusing roles more on imperative programming," he observes. "Having recently been in the job market, I noticed that actuarial job descriptions often seek specific coding languages rather than programmatic thinking that can be generalized across languages, both manually and through AI. I think that puts us at a competitive disadvantage relative to other industries." Wright has also observed reluctance to experiment: "There is a speed limit for new technology adoption based on how quickly people experiment with it," he says. "If people experimented more, our collective knowledge would increase rapidly. We find out by trying things. Real general intelligence is sitting down and working on tough problems."

Leong is open-minded on timelines over which AGI will emerge. "None of us knows how far away we are. When GenAI became mainstream, most of us were surprised," she says. "I would not be shocked if another leap came out of nowhere. If AI can start delivering crazy insights I never thought of, that would be cool. I might even call that AGI." Actuaries' best bet to stay relevant against AGI may be to start delivering more crazy insights themselves.

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

[17] https://news.osu.edu/when-consumers-would-prefer-a-chatbot-over-a-person/.



DEVELOPING NEWS

Colorado Expands AI Governance to Auto and Health Insurers

By XUAN YOU

On August 20, 2025, Colorado finalized amendments to Regulation 10-1-1, extending its governance framework for external consumer data and information sources (ECDIS) beyond life insurance to private passenger auto and health benefit plan insurers. The regulation took effect October 15, 2025, with interim progress reports due December 1, 2025, and full compliance required by July 1, 2026.

ECDIS refers to data sources used to supplement or replace traditional underwriting factors or other insurance practices, such as credit scores, shopping patterns, or telematics data. The amended regulation explicitly names telematics as ECDIS, bringing usage-based insurance programs squarely into regulatory scope.

The framework requires insurers to establish board-level governance and risk management systems, maintain inventories of ECDIS sources and affected models, document design and testing processes, monitor for model drift, and provide consumers with meaningful information about adverse decisions, denial of coverage, or significant rate increases, etc. Importantly, the regulation mandates quantitative testing to detect unfair discrimination with respect to race, though detailed testing guidance from the Department of Insurance remains pending. Colorado's approach goes beyond the NAIC's 2023 model bulletin on AI systems, with more prescriptive requirements and enforcement mechanisms. While many states have adopted the NAIC's principles-based framework, Colorado's requirements around ECDIS and its explicit focus on racial discrimination testing make it notably more specific.

What this means for actuaries:
The practical requirements center on documentation and ongoing oversight. Insurers will need to maintain inventories of ECDIS sources and models with version control, establish protocols for bias detection, and monitor model performance over time. These governance requirements formalize practices that extend across the entire modeling life cycle, from data collection through deployment.

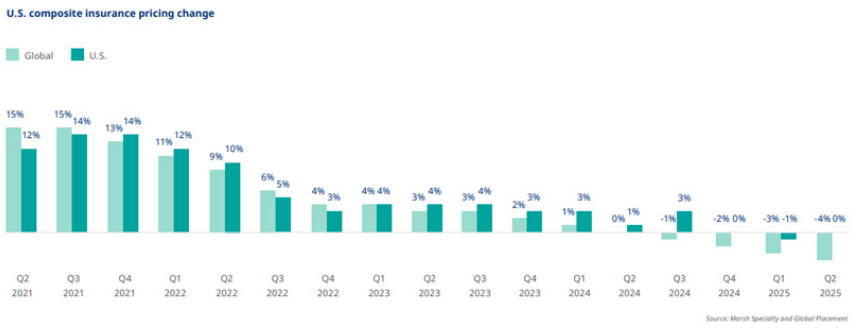
For actuaries working with telematics or alternative data sources, these governance requirements add formal documentation and oversight protocols to traditional model development and validation work. Meeting these requirements will necessitate cross-functional collaboration with compliance, legal, and data science teams, particularly for developing bias-testing protocols and maintaining documentation standards. Colorado's specificity around telematics and its focus on binding compliance timelines may signal where other states are headed, suggesting that multistate carriers should build governance frameworks flexible enough to meet varying jurisdictional standards.

Sources:
- https://doi.colorado.gov/announcements/notice-of-adoption-amended-regulation-10-1-1-governance-and-risk-management-framework.
- https://www.insurereinsure.com/2025/08/27/colorado-division-of-insurance-expands-ai-governance-and-framework-regulation-to-private-passenger-auto-and-health-benefit-plan-insurers/.

DEVELOPING NEWS

An Insurance Soft Market Landing By SANDRA MARIA NAWAR

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



The years following the onset of the COVID pandemic, from 2020 to 2024, marked a prolonged hard market period in the insurance industry. Insurers were unprofitable during this period due to the increased frequency and severity of natural catastrophes and increased inflation driven by higher cost of vehicle repairs and property materials. As a result, insurers implemented more stringent underwriting criteria and rate hikes, leading to improved underwriting results.

With the improved results leading into late 2024 and early 2025, an overall soft market has emerged, and the industry is seeing an increased appetite for growth, widespread rate decreases, and capacity increases across various lines of businesses. According to the Marsh Global Insurance Index, a measure of global commercial insurance rate change at renewal, rates have decreased by 4% in Q2 of 2025, the fourth consecutive quarter of declines.

The general economic outlook describes the current conditions as a "soft market under stress" due to certain conditions that can cause the market to quickly tighten, such as geopolitical instability or climate change. A full insurance market cycle, encompassing both hard and soft phases, typically spans six to eight years. However, global professional services firm Aon predicts that this emerging soft market phase will be short-lived, hence "an insurance soft market landing." The reality of the current cycle is also different for various lines of businesses. For example, personal property continues to experience hard market conditions, especially those in areas prone to natural catastrophes such as wildfires and floods. Personal auto is still observing hard market pressures due to persistent inflationary pressures and geopolitical risk from tariffs. Other lines of business, such as commercial lines, specialty, directors & officers, and cyber insurance, are reported to be in a soft market, where insurers are willing to offer broader coverage and higher limits.

What this means for actuaries:
In a "soft insurance landing," organizations and actuaries need to approach this cycle strategically. Instead of engaging in transactional buying and aggressive sales objectives, insurers should consider adopting a total cost of risk approach. This would allow them

to strengthen their programs, optimize capital, and build resilience to navigate volatility in the short term and until market conditions subside. Insurers who push the limit of their capital to respond to a soft market could potentially face rating downgrades and increased borrowing costs.

From another angle, actuaries should be aware of how actuarial methods could exacerbate insurance cycles. Pricing actuaries typically use historical data when determining future rates, which include time lags. Hence, good experience could keep prices low for too long and contribute to the soft market. Conversely, during periods of rising losses, rates may be inadequate for a period, leading to sharp rate increases and contributing to a delayed hard market. From a reserving perspective, estimates tend to be procyclical. Underestimation of losses during a soft market can encourage continued price competition, while overestimation of losses during a hard market can amplify the perception of poor performance, leading to more stringent underwriting, higher premiums, and reduced capacity across the industry, further delaying market corrections.

Sources:

- https://www.carriermanagement.com/news/2025/07/31/277956.htm.
- https://isure.ca/inews/hard-market-soft-market-insurance/.
- https://ar.casact.org/commercial-auto-and-workers-comp-the-neverending-story-of-two-remarkable-lines/.
- https://mma.marshmma.com/l/644133/2025-08-15/2vbkr4/644133/1755275654drZPwuf6/Q2_2025_BI_Market_Observations.pdf.

Amazon AWS and Microsoft AFD Outages: P&C's Latest Cyber "Kitty Cat" Events By JIM WEISS

Amazon Web Services (AWS) is one of the latest global technology providers to experience a widespread outage. The incident, nicknamed "Amazonk," began in the early hours (Eastern Standard Time) on October 20, 2025, when two of AWS's automated systems tried to update the same data simultaneously. The fallout reportedly lasted up to 12 hours. Cyber analytics firm CyberCube estimated over 70,000 organizations — including well-known companies such as Zoom — were affected, incurring between $38 million and $581 million in insurance losses.

The week after Amazonk, on October 29, Microsoft experienced widespread issues with its Azure Front Door (AFD) cloud content and application delivery network after an inadvertent configuration change. Controls at the company designed to spot such mishaps reportedly failed due to a software bug. Outage-tracking platform DownDetector estimated the AFD incident affected nearly 20,000 users. AWS and Azure reportedly control roughly 50% of the cloud computing market.

Industry awareness of non-malicious cyber events rose in July 2024, when cybersecurity provider Crowdstrike delivered content updates to Windows hosts that provided 21 input fields while recipients expected 20, causing broad systems crashes. Managing general agent Parametrix estimated at the time that while U.S. losses from the incident were over $5 billion, insured losses were significantly lower due to terms (e.g., waiting period), as well as companies not purchasing coverage. Such smaller-sized catastrophes are nicknamed "Kitty Cats." While such events may be unlikely to have significant earnings implications by themselves, multiple events in one year could add up.

What this means for actuaries: Actuaries can help their organizations get a grip on the ever-shifting cyber market. This likely begins with balance sheet and income statement management — including how to fund for more Kitty Cats and the possibility one goes feral.

DEVELOPING NEWS

Coverage for contingent business interruption is often subject to sublimits and waiting periods of eight or more hours, making for intricate coverage and damage assessments. Parametric insurance could be a tool in primary insurers' toolkits that actuaries can help design. Automatic outage detection and payment could provide greater certainty around probable maximum losses and lower forensic expenses after Kitty Cats.

For larger limits, analyses of non-malicious events and their impacts are largely contained to event catalogs of cyber catastrophe modeling firms, so actuaries may consider brushing up on ASOP No. 38: Catastrophe Modeling.

Somewhat dated (2017) public estimates by Lloyd's peg global impacts of an extreme cloud service interruption in the $15 billion to $121 billion range, still a fraction of the $3.5 trillion impact of a malicious attack (which Lloyd's pegs as a 1-in-30 year event). With uncertainty constraining traditional capacity, insurers have found alternatives in capital markets through catastrophe bonds.

As their organizations' tail risk specialists, actuaries should remember they may also get rained upon by the next cloud incident, and they can help their organizations diversify cloud footprints and set up disaster recovery plans for the next zonk.

Sources:

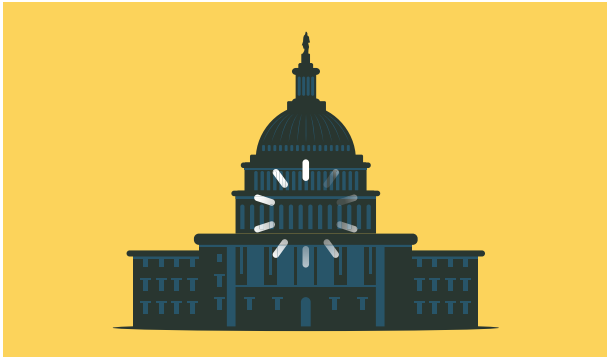
- https://ar.casact.org/indexing-the-future-the-rise-of-parametric-insurance-and-its-expanding-ecosystem/.
- https://www.artemis.bm/news/beazley-gets-new-polestar-re-2024-3-cyber-cat-bond-with-further-upsize-to-210m/.
- https://www.artemis.bm/news/guy-carpenter-says-crowdstrike-is-a-kitty-cat-industry-losses-to-be-sub-1bn/.
- https://www.artemis.bm/news/parametrix-estimates-crowdstrike-insured-losses-at-between-540m-and-1-08bn/.
- https://www.cnn.com/2025/10/25/tech/aws-outage-cause.
- https://www.crowdstrike.com/falcon-content-update-remediation-and-guidance-hub/.
- https://www.forbes.com/sites/emilsayegh/2025/10/30/the-clouds-halloween-scare-lessons-from-the-azure-outage/.
- https://www.insurancebusinessmag.com/us/news/cyber/thirdparty-cyber-attacks-put-spotlight-on-contingent-business-interruption-coverage-539410.aspx.
- https://www.insuranceinsiderus.com/article/2f2vdbk23gj2p62siwgzk/lines-of-business/cyber/cybers-growing-interest-in-parametrics.
- https://www.insurancejournal.com/news/national/2025/10/27/845197.htm.
- https://www.insurancejournal.com/news/national/2025/10/30/845757.htm.
- https://www.itpro.com/infrastructure/the-microsoft-azure-outage-explained-what-happened-who-was-impacted-and-what-can-we-learn-from-it.
- https://www.lloyds.com/insights/media-centre/press-releases/extreme-cyber-attack-could-cost-as-much-as-superstorm-sandy.
- https://www.msn.com/en-in/news/other/aws-outage-costs-major-companies-millions-per-hour-insurance-may-cover-losses-with-a-catch/ar-AA1ORqDc.
- https://therecord.media/lloyds-finds-cyberattack-would-cost-trillions.
- https://www.reuters.com/technology/microsoft-azure-down-thousands-users-downdetector-shows-2025-10-29/.

U.S. Government Shutdown Brings Renewed Focus to Flood Insurance Availability By SARA CHEN

The latest U.S. government shutdown, the longest in U.S. history, ended on November 12, 2025, after 43 days. During this period, 1.4 million civilian federal employees went without pay, and roughly half of them were furloughed. The main dispute was over the extension of health insurance subsidies under the Affordable Care Act, which expire at the end of 2025. Congress ended the government shutdown without including an extension of these subsidies.

The most impacted industries from the government shutdown were travel and tourism, healthcare and diagnostics, and manufacturing and infrastructure. In the insurance space, impacts were felt in the health insurance sector, especially as open enrollment began November 1st amidst the shutdown period.

The P&C insurance sector was largely unaffected by the shutdown, as insurers in the sector do not rely heavily on the federal government. "The states regulate insurers, so even the regulatory process is unaffected," Piper Sandler investment banking analyst Paul Newsome said in an interview with S&P Global. However, the biggest impact in the P&C sector is arguably the halting of new and renewal flood policies by the National Flood Insurance Program (NFIP), which left many homeowners dangerously exposed, especially those living in high-risk zones.



Congress passed a short-term funding bill (HR 5371) to reauthorize the program through January 30, 2026. The bill also retroactively reauthorizes the NFIP back to October 1, allowing insurers to issue policies with effective dates during the lapse and allowing any claims made during the lapse to be processed and paid.

What this means for actuaries:

Congress has passed 33 short-term NFIP reauthorizations since 2017, according to the NAIC. Each time the NFIP lapses, it brings a renewed focus to alternative solutions in the market, such as private flood insurance. Over the last few years, more flood coverage has been provided by the private flood insurance sector, taking up 27% of the premium in this segment in 2024, compared to 13% in 2016. In addition, according to AM Best, data related to the top three flood-prone states — Florida, Texas, and Louisiana — has shown that the private flood insurance segment has consistently outperformed the NFIP, with a lower loss ratio in eight of the past nine years.

Private flood insurance has faced several barriers, however, including a higher price point compared to the NFIP's subsidized rates and a lack of access to NFIP data on flood losses and claims. A comprehensive view of the flood insurance market and considerations for actuaries can be found in a paper written by the Congressional Research Service during the reauthorization in 2023: "Private Flood Insurance and the National Flood Insurance Program."

Sources:

- https://www.npr.org/2025/10/24/nx-s1-5581505/government-shutdown-federal-employees-paycheck.
- https://www.kcci.com/article/affordable-care-act-government-shutdown/69106413.
- https://news.ambest.com/newscontent.aspx?refnum=269851&altsrc=170.
- https://www.casact.org/sites/default/files/2023-05/6U_Horn_Webel_Private_Flood_Ins_and_the_National_Flood_Ins_Prog.pdf.
- https://www.spglobal.com/market-intelligence/en/news-insights/articles/2025/10/many-large-us-insurers-trade-in-the-green-as-shutdown-continues-93448301.
- https://www.insurancejournal.com/news/national/2025/11/10/846936.htm.

Large Language Models: From Conversations to Computations

By WILLIAM NIBBELIN

For P&C professionals, the concern with large language models (LLMs) is not whether they can chat but whether they can be relied on for actuarial computations. At the recent Casualty Actuarial Society 2025 Annual Meeting, Xuan You, senior actuarial data scientist for Ledger Investing, explored how specialized computational tools can transform LLMs beyond simple interactions and into powerful assistants for complex actuarial analysis.

Architectural constraints

LLM use cases present an interesting dichotomy. While capable of complex problem-solving such as assisting with medical diagnoses and winning math competitions, LLMs can simultaneously fail at basic tasks like counting and comparing numbers. Xuan You explained that these challenges arise from the basic limits in how models are built and trained.

At their core, LLMs are sophisticated statistical models whose function is to predict the next set of tokens (or chunks of words) in a sequence based on vast amounts of data. Their intelligence emerges from a three-phase learning process:

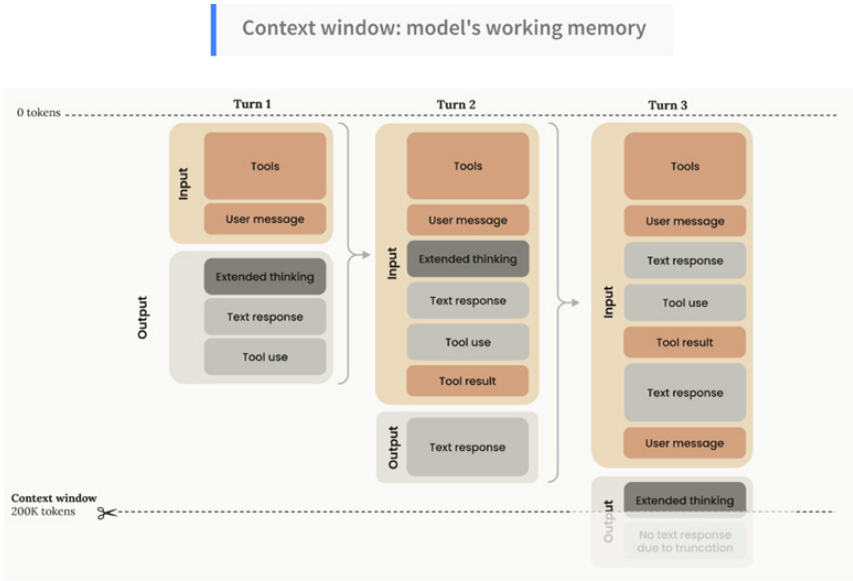
1. Pre-training: Models train on a colossal amount of text data to learn raw patterns of language, grammar, writing styles, and facts about the world, developing reasoning to predict subsequent words.
2. Fine-tuning: Models train on user-specific datasets, instructions, and responses to assist a user by responding to prompts.
3. Reinforcement learning from human feedback (RLHF): Model behavior is refined to align with user preferences.

However, this predictive modeling approach suffers from two primary weaknesses that introduce undesirable results:

1. Finite Context Window: Models have a fixed size working memory, or context window. This window holds the system message, the user's current question, any attached files, and the entire conversation history. Because the total token count compounds with every turn, the window can fill up quickly. Once this limit is reached, models must begin dropping earlier parts of the conversation, leading to users repeating information. This introduces unacceptable risk in chained tasks like loss development or cohort analysis, where historical traceability is paramount.
2. Token-Based Calculation: Models struggle with tasks requiring mathematical precision such as counting letters because they operate on tokens rather than individual numbers or letters. When asked to calculate, models will predict the most probable word or words based on patterns it has seen, not discrete logic needed for computation. Relying on these predictions for critical numerical analysis effectively equates to the model taking a wild guess.

Supplemental tools

Reasoning models are trained to generate a long internal chain of thought (hidden "thinking tokens") before providing a final output. While allowing



Source: Anthropic Documentation

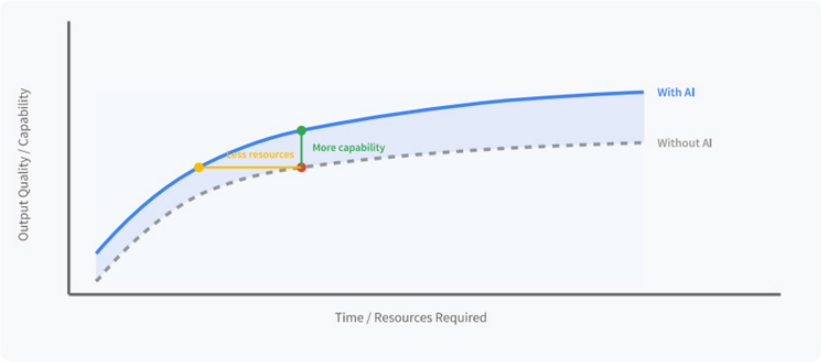
models more time to track and validate their internal logic, this step-by-step process can fall apart for tasks requiring precision. Enhancing reliability, Xuan You explained, will require bridging the model's powerful capacity for pattern recognition with deterministic external tools.

In practice, LLMs can assess user intent while calling upon designated tools like calculators or subroutines to perform calculations based on reliable external codes. Codes are fed back to the LLM for final interpretation and response, thus eliminating model limitations and ensuring that critical calculations are deterministic, traceable, and potentially reproducible with immaterial differences. Such operations can improve actuarial workflows such as fitting distributions or forecasting future events.

Through these tool integrations, LLMs become "agents" that can reason iteratively, call external functions, and reflect on results until a goal is met. The agent's path adapts dynamically based on previous tool use outcomes. Xuan You demonstrated two key use cases:

1. Data extraction: Paired with the right tools, models can sift through "fuzzy" (unstructured or inconsistent) data using their strengths in pattern matching and understanding of semantic similarities to extract information like evaluation date, regardless of format, location, or typos. This approach uses natural language context rather than hard-coded if/else logic statements, reducing the maintenance burden of updating code for every possible case encountered.
2. Iterative reasoning: Agentic loops are critical for managing unexpected outcomes from unexpected input. For example, if the agent is tasked with finding an incurred loss for a claim but the field is missing (null), it can try to derive the answer from component data such as paid loss plus case reserve. If that fails, the agent can pivot and attempt to query the full transactional database to complete the task. This adaptive reasoning leads to a higher rate of success. For more exploratory queries, a tool can add real-time input by a human in the loop to review and approve the code before execution.

The Era Of Building With AI



With LLMs developing at a rapid pace, Xuan You advised professionals to focus on optimizing systems based on their expertise rather than creating complex custom software to perform tasks that AI developers may soon embed within their core models. Key strategies include:

- Validation and testing: Document known successes and failures to build a test set for validating improvements when models are switched.
- Deliberate context management: Actively manage the context window to reduce the impact of limited memory, such as instructing the model to compress and summarize prior steps or splitting large tasks by running smaller, parallel sub-agents.
- Feedback loops: Log the final output as input to allow the LLM to inspect its own work and identify improvement for future iterations.
- Business rules, test sets, and benchmarks: Apply expertise to clearly document business rules, create generalized test sets, and establish outcome benchmarks, facilitating quicker model-to-model knowledge transfer and more effective iterations with future models.
- Workflow orchestration: Explicitly document the logic behind how different parts of the system connect, not simply how the model handles each individual component.

Augmentation, not replacement

LLMs are dramatically transforming process efficiency, allowing professionals to maximize quality outputs while using fewer resources. Xuan You emphasized that this shift augments, rather than replaces, professionals' capacity for

higher-value strategic analysis.

The technology remains an advanced tool, but it is the insurance professional's subject-matter expertise and judgment that truly makes the solution valuable. LLMs have no intentionality and do not know specific context, the company goals, or the human interworking of the regulatory environment. For insurance professionals, engaging with this technology is essential. Just like developing actuarial judgement, mastering AI requires hands-on experience.

William Nibbelin is a senior research actuary for the Insurance Information Institute.

Converging Perils: Climate and Cyber Risk Force Industry Shift

By WILLIAM NIBBELIN

Confronted with increasingly complex risks, the global insurance industry faces many emerging challenges to traditional underwriting and risk management frameworks, particularly from the evolving perils of climate and cyber risk. Though once viewed as independent, research suggests these perils interlock in ways that compound these risks, revealing an urgent need for the industry to begin managing them as an intertwined threat.

To assess these potential interactions and explore how to build a more resilient future, the 2025 CAS Annual Meeting featured subject-matter experts Jess Fung, managing director of North American cyber and analytics lead for North America at Guy Carpenter; Kieran Bhatia, senior vice president of climate and sustainability lead for North America at Guy Carpenter; and Matthew Berninger, senior vice president and principal cyber analyst at Marsh McLennan.

Climate in isolation

Bhatia set the stage by reviewing the financial impact of natural catastrophes, noting that total insurance and economic losses have consistently risen over the last 45 years. This trend links directly to skyrocketing global temperatures and carbon dioxide levels not observed for millions of years. [1]

While loss increases are often the first factor that comes to mind when discussing climate risk, it is critical to recognize other significant influences such as population growth, exposure changes, and supply chain management. Market behavior reflects the industry's response to these rising risks, with carriers exercising a myriad of strategies including:

- Reducing exposure in certain regions and advocating for price increases.
- Exiting entire lines of business.
- Issuing more climate risk disclosures, of which there has been a recent uptick.
- Raising retentions and adjusting occurrence limits.

Furthermore, analysis of property insurance premiums from 2018 to 2023 shows that premium increases have been concentrated almost exclusively in the highest ventile, indicating that the industry is becoming more refined in how it prices changes in physical risk.

Cyber in isolation

Fung led the overview of cyber risk, defining cyber events as both malicious incidents, such as those involving cybercriminals or nation-state actors, and accidental incidents, such as system outages that disrupt computer networks or technology services. The impacts can be non-physical, like data encryption, or physical, such as damage to factories or bodily injury.

Traditionally, non-physical impacts are covered by affirmative cyber policies while physical damage is covered by standard P&C policies. Standard cyber coverage includes first-party costs such as business interruption, extortion payments, and third-party liability. Key cyber risks include ransomware extortion, privacy breaches, cloud outages, business email compromise, and zero-day vulnerabilities.

Berninger emphasized two key forces driving the current cyber environment: artificial intelligence (AI) and operational technology (OT). For AI, the rapid deployment of applications often maximizes functionality but can also introduce new vulnerabilities into cloud environments, leading to insecure configurations. For OT, as organiza-

[1] https://www.climate.gov/news-features/understanding-climate/climate-change-atmospheric-carbon-dioxide.

tions become more resilient to standard ransomware payments, attackers are shifting focus to high-leverage sectors like healthcare and manufacturing where even short periods of downtime are costly.

The industry's response to these trends is transforming the market in:

- Underwriting: Carriers are moving beyond traditional questionnaires to incorporate technographic information such as outside-in scanning and software dependencies to better differentiate risk.
- Capital: Mounting systemic events have spurred innovative risk transfer solutions such as cyber cat occurrence coverage and cyber insurance-linked securities (ILS) to bring new capacity into the market.

Risks intertwined

As global interconnectivity and reliance on technology expand, the need for data centers and digital infrastructure rises, which consumes more energy and water for cooling, thus contributing to climate risk. Similarly, by posing a threat to the physical infrastructure of those digital assets, climate events enhance cyber vulnerability, creating a cyclical feedback loop of risk.

As an example of physical climate risks on the cyber landscape, Bhatia detailed how stronger storms that maintain intensity inland could place data centers lacking backup power at risk of significant disruption, leading to major cyber-related business interruption losses. Solutions include resilient infrastructure in high-risk locations and strategic placement of new facilities in areas with lower future climate risk.

Bhatia also analyzed transition climate risks, discussing how the global shift to green energy sources like wind, solar, and nuclear, while essential to mitigating climate risk, can introduce new digitized infrastructure that remains vulnerable to remote cyberattacks, especially through the Internet of Things (IoT). AI presents a vulnerability and a solution, with projects underway that use AI to both simulate and detect cyberattacks on wind farms and on other critical infrastructure by analyzing real-time sensors and network data.

Focusing on cyber threats, Berninger explained how cyber operations are increasingly used to amplify the negative effects of weather events against both power grids and water systems. For power grids, he discussed how adversaries can exploit grids driven by green technology and improved computational management by turning them into target systems. Hitting the power grid during extreme weather offers the greatest leverage and public impact. He noted that the rising homogeneity of OT operating systems makes attacks on OT and AI systems more scalable than in the past, leading to greater potential for widespread blackouts. For water systems, Berninger highlighted the growing interdependence of water and power, rendering the simultaneous disruption of these critical services a high-leverage risk.

Figure 1.

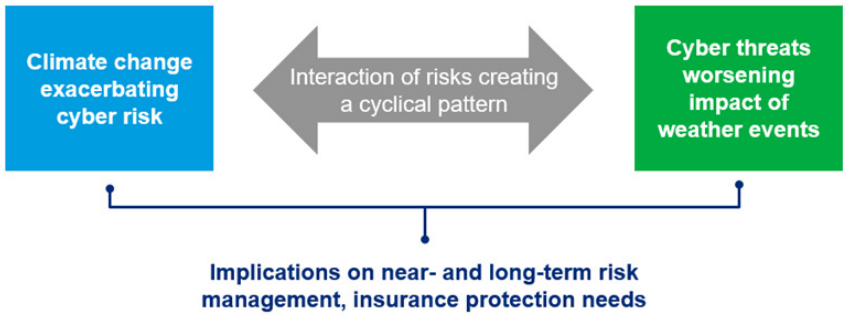
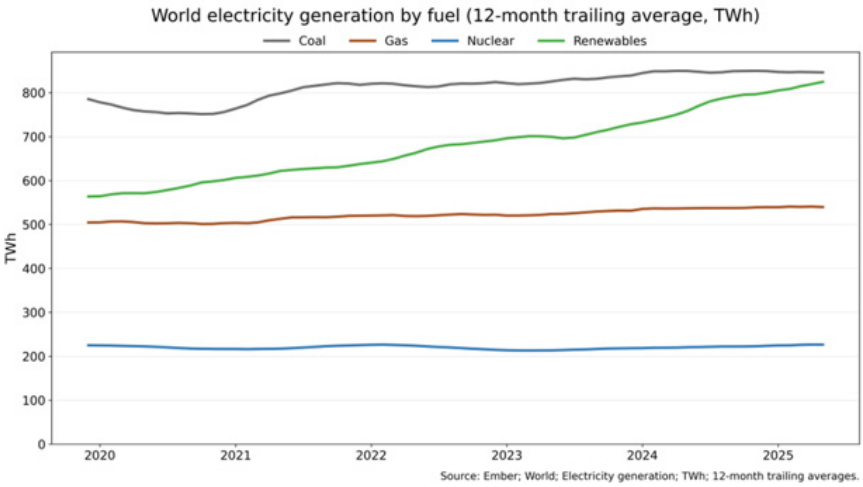


Figure 2.



Futureproofing the insurance industry

All panelists emphasized that the insurance industry cannot allow climate risk and advancements in technology to outpace its ability to manage the associated risks. Approaches for managing the converging risk of climate and cyber include:

- Stress Testing for Compound Risk: Scenarios must be developed that treat climate and cyber as compound risks.
- Hardening Infrastructure: Data centers and energy facilities must be built to withstand extreme weather events. This strategy includes physical measures like ensuring critical technology is not located in basements or ground floors susceptible to flooding.
- Informed Sourcing and Locating: Data centers and energy infrastructure must be located based on both present and future physical risk and climate studies.
- Closing the Regulatory Gap: As green energy and AI adoption outpace regulation, insurance and other risk transfer products must step in to offer needed protection.

By adopting an intersectional view of climate risk and cyber risk, the industry can develop the sophisticated underwriting, capital, and resilience strategies necessary to navigate this complex, converging crisis and ensure the long-term stability of the economy and the insurance marketplace.

Fighting Confirmation Bias in Loss Reserving

By MELISSA HUENEFELDT

In his Annual Meeting session, "Fighting Confirmation Bias in Loss Reserving," Chris Gross of Cognalysis challenged actuaries to confront a powerful force shaping our work: the human tendency to believe what we already think is true. Using real-world anecdotes, psychological research, and simulated reserve analyses, Gross made the case that confirmation bias is a daily operational risk embedded in the reserving process, not just an abstract behavioral science concept.

Gross drew on the work of Peter Wason, the English cognitive psychologist who coined the term "confirmation bias," which is our tendency to favor information that supports existing beliefs and to cling to those beliefs once they've been "confirmed."

This isn't about intelligence; highly trained professionals are just as susceptible. It's about emotion, what Gross referred to as the "lizard brain," the primitive part of us that fears being wrong and reflexively defends prior views. Being wrong hurts, and pain often overrides rational thought.

For actuaries, that emotional dynamic is amplified. Reserving is an exercise in being always wrong, and wondering, "By how much?" We work with wide ranges of reasonable outcomes, especially in long-tailed lines where the truth takes years to emerge, and our methodologies often reinforce the status quo. Prior evaluations feed into actual-versus-expected studies, loss development factor selections, and the a priori estimates we use in Bornhuetter–Ferguson methods. Add in the legitimate need for consistency and the very real fear that frequent changes in estimates will undermine credibility with management, auditors, or regulators, and it becomes much easier to explain away new signals than to admit our prior views might be off.

Being wrong hurts, and pain often overrides rational thought. For actuaries, that emotional dynamic is amplified.

Gross argued that confirmation bias has serious consequences. If prior estimates are consistently low, the company may be writing business at inadequate prices for years, letting under-reserving quietly compound. If estimates are consistently high, opportunities for growth and competitive pricing are left on the table.

One of the most thought-provoking parts of the session was Gross's critique of "smoothing." Many actuaries take a gradual approach, phasing in changes and feathering adjustments over time. To test this phenomenon, Gross simulated a series of random shocks to an underlying reserve position over multiple years and compared two approaches: reacting fully to each new signal versus blending in only half of each new shock.

The blended approach did reduce

the largest single-quarter change, but at a cost. It increased the length of streaks where reserves moved in the same direction quarter after quarter, sometimes for years. From a trust perspective, that's dangerous, especially for those relying on our numbers to make big decisions. A pattern where every adjustment is up or every adjustment is down invites users to conclude that the actuary is systematically conservative or optimistic. Ironically, smoothing in the name of consistency can create the appearance of bias and erode credibility more than a few large but well-explained movements would.

Gross then turned to practical tools actuaries can use to fight confirmation bias, starting with the idea of "starting blind." He encouraged reserving actuaries, at least periodically, to rebuild their analyses from scratch without looking at the prior selections, booked ultimate losses, or even line-of-business labels. Once you've selected objective factors, methods, and a best estimate, compare them to your prior view and ask yourself questions like:

- How close is my current estimate to a purely objective indication?
- Are my subjective selections consistently higher or lower than the objective results?
- Which specific choices (tail factors, method weights, a priori losses) are contributing most to the differences between my prior estimate and the objective results?
- If I played devil's advocate against myself, what would I attack first?

The key question is, "Is it possible I'm wrong, and am I giving that possibility enough weight?"

Peer review, already a standard practice in many organizations, takes on new importance through the lens of confirmation bias. Gross suggested that reviewers, where feasible, make their own independent selections before seeing the primary actuary's work. Otherwise, the reviewer can inherit the same anchoring and end up justifying the same biased result. The most valuable peer review discussions, he emphasized, focus not on cosmetic differences but on the single biggest drivers of divergence, such as the tail factor or a key method of choice.

Gross next focused on building purely objective benchmarks into the selection process. For example, running a standard set of methods with fixed, nonjudgmental rules for selecting factors (e.g., simplified weighted averages over specified periods or a uniform tail methodology) creates a neutral comparison point so we can quantify the magnitude and direction our judgment is pulling us. These tools aren't about replacing judgment; they're about stress testing it.

[Gross] challenged actuaries to weigh that cost against the far larger cost of being wrong for too long … Fighting confirmation bias isn't a luxury.

Finally, Gross borrowed from predictive modeling practice and proposed using training/test splits within triangles: randomly selecting half of the policies to form a training triangle and using that to select development factors to apply to the remaining test data. He illustrated this concept with a case study, varying the weight given to the loss development and Bornhuetter–Ferguson methods. The results highlighted both the wide range around a central estimate and the inherent differences between paid and incurred indications.

Throughout the session, Gross stressed that the real battleground is mindset. Institutional confirmation bias can be just as powerful as individual bias; once an organization has its view of the reserves, future actuaries inherit that view as a starting point. Before touching any data, they're already anchored. The discipline he urged is simple to state but hard to practice: Consciously ask, "What could be wrong with my prior conclusions?", "What might have changed?", and "If I were to see this for the first time, would I make the same selections?" That discipline needs to be applied both to our own prior work and to the analyses we inherit.

Ultimately, Gross acknowledged that robust defenses against confirmation bias, including fresh analyses, deeper peer review, objective benchmarks, and training/test experimentation, require time and effort. But he challenged actuaries to weigh that cost against the far larger cost of being wrong for too long: distorted business decisions, damaged professional credibility, and users who learn to "correct" our work rather than to trust it. Fighting confirmation bias isn't a luxury. It's central to delivering the unbiased, decision-useful reserve opinions our profession strives to provide.

Melissa Huenefeldt is a consulting actuary for Milliman and the CAS VP-Professional Education.

Excess Layer "Center of Gravity" Explained

By DAVE CLARK

This essay is intended to offer a practical metric for evaluating changing limits and attachment points in a portfolio of excess policies.

The problem arose in reviewing development patterns for a portfolio of excess policies that appeared to show changes from one accident year to the next. The team looked at average attachment points and policy limits by year but encountered difficulty in that analysis: Some layers had been split into smaller layers in recent periods. For example, what was previously a 9,000,000 excess of 1,000,000 policy is now three separate policies for 1,000,000 xs 1,000,000: 3,000,000 xs 2,000,000, and 5,000,000 xs 5,000,000. The quota share also varied across the three policies.

What is the correct way to estimate the average attachment point (or limit) for the new set of policies?

One suggestion that can help is to introduce a new metric: excess layer center of gravity (CoG).

The idea is to find a weighted average midpoint of the collection of policies. We can think of breaking the tower of layers more finely than even the three layers identified above; perhaps with a series of 1,000,000 limits in a tower. If we allocate premium to each of these smaller layers, we can then average the midpoint of each small layer by the allocated premium to get an overall CoG for the tower.

The idea of the CoG is derived from Archimedes' "law of the lever," but it may be more familiar from the playground experience of children on a seesaw.

If we consider the premium for contracts broken down into individual layers, then the CoG is the point where all the premium weights would be in balance. As more contracts are added to the portfolio, this CoG will shift with the weight of the new premium and the position of the layers. (See Figure 1.) This is the same as when more children climb onto the seesaw and try to keep it balanced.

Mathematically, the CoG is defined as the following:

$$CoG = \frac{\int_R^{R+L} t \bullet [1 - F(t)dt]}{\int_R^{R+L} [1 - F(t)dt]} .$$

In this formula, the attachment point, or retention "R," is the lower end of the layer, and the Limit "L" is the amount of coverage in excess of this retention that is provided by the policy. The limit should be expressed as 100% share, even if the policy is syndicated or coinsured by the policyholder.

The formula also ensures that the CoG is between the retention (R) and the upper limit ($R+L$), which is sometimes called the "plafond." In fact, it will always be in the lower half of the layer as follows:

$$R < CoG \leq R + (L/2) .$$

While the CoG formula is tractable for many severity distributions, the single-parameter Pareto gives some useful benchmarks to use as a shortcut.

A useful special case is the Pareto with shape parameter alpha equal to 1.500. The CoG is equal to the geometric average of the retention and the upper limit (plafond). For example, a layer of 5,000,000 excess of 5,000,000 would

Figure 1.

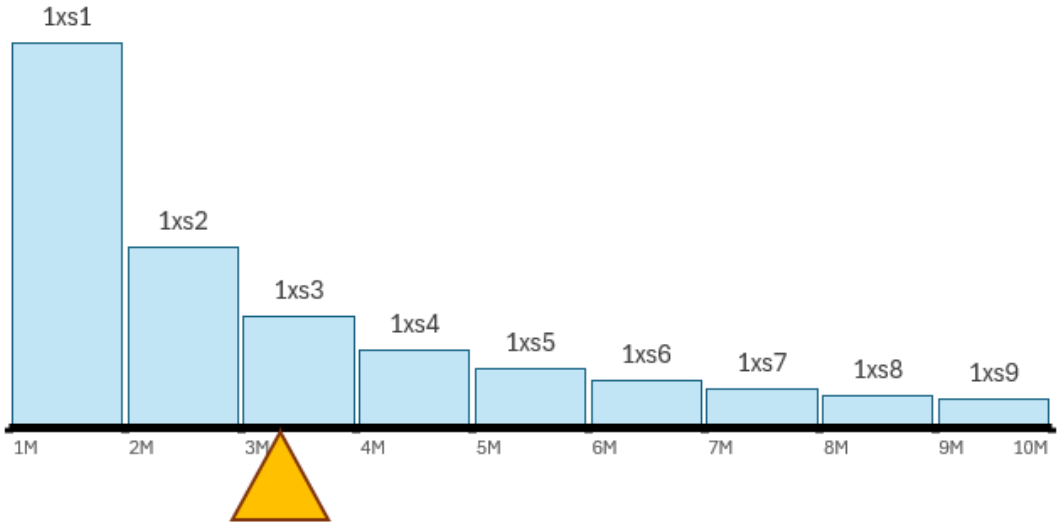


Table 1.

Pareto Alpha	Center of Gravity (CoG)	Type of Average
0	$R+L/2$	Arithmetic average of R and R+L
1.5	$\sqrt{R \bullet (R+L)}$	Geometric average of R and R+L
3	$2 \bullet \left(\frac{1}{R} + \frac{1}{R+L}\right)^{-1}$	Harmonic average of R and R+L

use the square root of the product of 5,000,000 and 10,000,000: resulting in a CoG of 7,071,068. As the shape parameter moves towards zero, the CoG moves towards the midpoint of the layer.

Three common types of averages are each special cases of the single parameter Pareto (see Table 1).

If premium is allocated to layers using the same Pareto as for the CoG statistic, the portfolio CoG is not distorted by how the layers are split or combined. This is shown in Table 2. The layers are in proportion to expected loss from a Pareto with alpha equal to 1.500. The overall CoG is then a premium-weighted average of the individual CoG statistics.

In practice, we use the actual premium by layer, which reflects the share of each layer in the portfolio. But the limit in the calculation should always be at 100% share.

As an example of changing quota share, we might change the 5,000,000 xs 5,000,000 layer to instead take a 50% share of 10,000,000 xs 5,000,000. The retention and "net" limit are not changed, but the CoG does move. The CoG shifts from 7,071,068 (geometric average of 5,000,000 and 10,000,000) to a CoG of 8,660,254 (geometric average of 5,000,000 and 15,000,000). The higher CoG may imply a slower development pattern.

The Pareto assumption is also not necessary. If a more detailed library of size-of-loss distributions is available, then the CoG statistic can be further refined. The geometric average based on Pareto alpha = 1.500 is merely a convenient starting point.

The information needed by excess policy is:

- Amount of premium
- Retention (or "attachment point")
- Policy limit at 100%

The CoG statistic gives us another summary statistic for our portfolio that can be tracked over time. We would expect that if the CoG is increasing at approximately the rate of inflation then the development pattern should be stable. Otherwise, a change in CoG may help to explain a speed up or slowdown in the development.[1]

The advantage is that it combines the effects of the retention, limit, and quota share into a single metric that can be averaged consistently across layers.

As a simple metric, it will not help as much with evaluating volatility. It also will not pick up development pattern changes due to other features such as annual aggregate deductibles (AADs) or loss ratio caps.

What other metrics do you use to track changes in the portfolio in reserving? ●

Dave Clark, FCAS, is a senior actuary with Munich Re.

Table 2.

Limit "*L*"	xs	Retention "*R*"	Allocated Premium	*ELR*	Center of Gravity (CoG)
5,000,000	xs	5,000,000	383,127	65.0%	7,071,068
3,000,000	xs	2,000,000	760,175	65.0%	3,162,278
1,000,000	xs	1,000,000	856,698	65.0%	1,414,214
9,000,000	xs	1,000,000	2,000,000	65.0%	3,162,278

All numbers for illustration only.

Pareto Alpha: 1.5000

[1] The speed of development relative to CoG should be similar to the relationship to the Retention, as described by Pinto & Gogol in their 1987 PCAS paper "An Analysis of Excess Loss Development."

IN MY OPINION

2025 CAS Annual Meeting Address to New Members

By NANCY BRAITHWAITE

Good morning, and welcome to Austin, Texas! I was excited when Dave Cummings invited me to give this address to new members. I know he said I was invited because of my leadership through times of change. But I'm sure he also recognized that as a fan of cowboy boots, I'd have the appropriate footwear for the occasion.

I'm honored to be here sharing this celebration with you, the CAS's newest class of Fellows and Associates. What amazing accomplishments, and my heartiest congratulations to you all!

You, our new Associates, have demonstrated deep technical knowledge and have shown perseverance and resilience to reach this stage.

And you, our new Fellows, have achieved a designation which is the culmination of years of hard work and a real commitment to the actuarial profession.

Today is a day to sit back and enjoy your accomplishment. I know that in the lead up to this day, there was little time to take a breath and smile. Make sure you do that.

And, don't forget to thank all of those who supported you along the way: the families, friends, and the coworkers — all those who picked up the slack or simply smiled and said, "OK," when you once again said, "I can't; I have to study".

You've proven you can learn lots of complex material. That's a terrific achievement. What's next?

I recently heard Neil deGrasse Tyson speak, and he encouraged the youth in the audience to maintain "an insatiable curiosity." That resonated. You've learned a lot, and you've acquired exceptional skills. Don't stop now! Our profession provides endless opportunities to ask questions and to discover new ways of approaching reserving, pricing, and all our analyses. Our profession provides endless new frontiers as well: AI, climate risk, emerging perils, among others. Keep asking: *What else could I uncover? How could I expand this model? What field outside actuarial science has something to teach me?*

Staying curious means you'll never run out of things to learn. Staying curious also means you'll learn to appreciate the expertise of others. You might learn a new respect for the knowledge of the other professionals we work with. You'll be amazed at the perspectives you can gain from underwriters, claims adjusters, accountants, lawyers, marketing professionals — yes, even friends and family.

Be excited to go to work. You'll spend lots of time there. If you're not excited, keep looking (there's that curiosity again). P&C actuarial science encompasses so many areas; there is something for each of you.

Volunteer. You are part of a diverse community of professionals. Volunteering is a great way to give back while enjoying the privilege of getting to know people in all areas of the profession.

Be yourself. Follow your desires. Not all life paths are linear. Detours can enhance your skill set and your life. I'll share a memory.

When I started my career in actuarial work, I thought I was giving up any opportunity to work and live internationally. It was a long time ago, and I was working for Insurance Services Office (now Verisk), a company providing services to the U.S. insurance industry.

It was a great job, but I took a detour. I applied to a program that would help with residence and work permits in Germany, and I was accepted. I resigned from a secure position with a clear path to advancement to take a chance on a unique experience. Remember, in the olden days there were not so many CAS members abroad. I was lucky enough to find a job in reinsurance.

Staying curious means you'll never run out of things to learn

Fast forward a few years, I'm back in the U.S. and back at my old employer. But now, my old employer is expanding internationally. I get to work with leadership on those international initiatives.

Remember, whatever you are doing today won't be what you are doing tomorrow, even if you never change positions. We live in a rapidly changing world.

I started out doing rate reviews with a calculator and paper worksheets. We once worked on rate reviews state by state. We needed to change our severity

trend — imagine that — with a calculator and paper worksheets. My boss at the time locked the door, so we would get the work done on time!

When I came back two years later, after leaving the country, there were five shared PCs in a bullpen that you had to sign up to use. Look at your workstation now!

Your wildest imagination won't take you where you'll be at the end of your career! But I do hope it will help you come up with ways to enjoy today's success! Whatever you do, enjoy your celebration!

Nancy Braithwaite, FCAS, is a CAS Past-President.

IT'S A PUZZLEMENT By JON EVANS

A Friendly Circle of Debt

Alice wins $50 from a scratch-off.

Bob says, "Hey, you owe me $100."

She says, "Here's $50, and I'll owe you $50." She hands Bob $50.

Charlie jumps in: "Bob, you owe me $100."

Bob: "Here's $50; I still owe you $50." He hands Charlie $50.

Alice: "Charlie, you owe me $100."

Charlie: "Here's $50; I owe you $50." He hands Alice the $50.

Bob: "You still owe me $50, Alice."

Alice hands over $50.

Charlie: "Bob, you still owe me $50."

Bob hands over $50.

Alice: "Charlie, you still owe me $50."

Charlie hands $50 to Alice. Alice keeps the $50 in her pocket. Was anyone cheated?

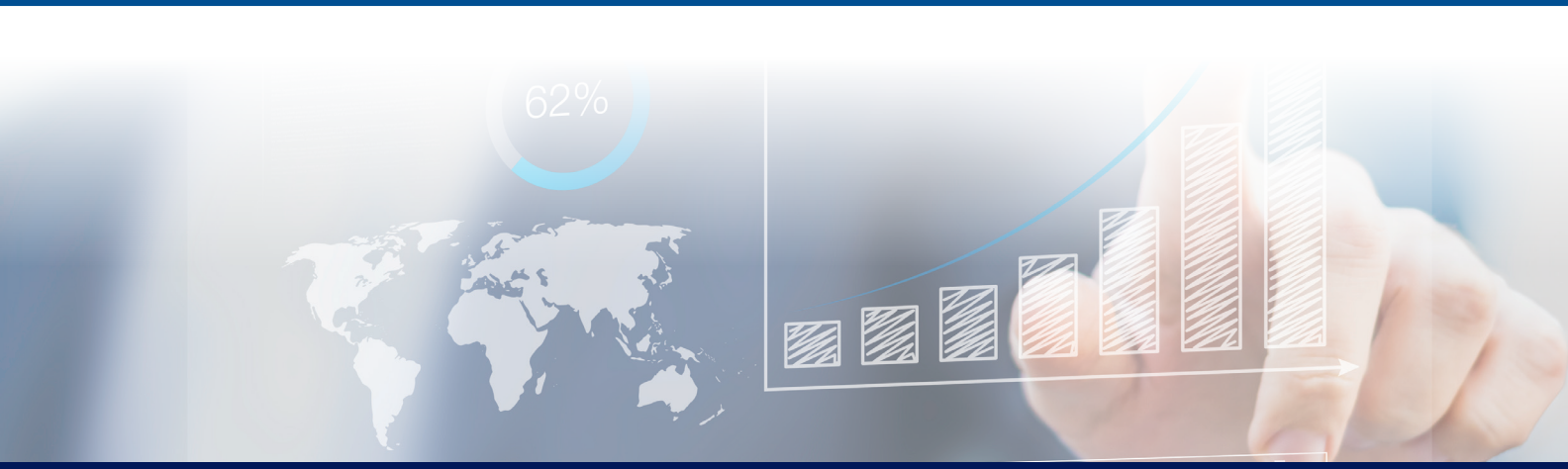
The Palindromic Prisoners

There are many different solutions to this puzzle, but the simplest thing is for the prisoners to all agree to say the same digit.

Solutions were submitted by Bob Conger, Stephen DiCillo, Moshe Gelbwachs, Akshar Gohil, Christina Marinello Swan, Jerry Miccolis, Jacob Ogle, Roger Sarvate, Rick Sutherland, Victor You, and Jeffrey Zheng.

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

Obtain Your Credentials in Predictive Analytics and Catastrophe Risk Management From The CAS Institute



Certified Catastrophe Risk Management Professional (CCRMP) and Certified Specialist in Catastrophe Risk (CSCR)

The International Society of Catastrophe Managers (ISCM) and The CAS Institute (iCAS) have joined together to offer two credentials in catastrophe risk management. The Certified Catastrophe Risk Management Professional (CCRMP) credential is available to experienced practitioners in the field through an Experienced Industry Professional (EIP) pathway. The Certified Specialist in Catastrophe Risk (CSCR) credential is available both through an EIP pathway and an examination path.

Required assessments and courses for earning the CSCR include:

- Property Insurance Fundamentals
- Catastrophe Risk in the Insurance Industry
- Introduction to Catastrophe Modeling Methodologies
- The Cat Modeling Process
- Online Course on Ethics and Professionalism

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

For more information, visit CatRiskCredentials.org.

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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.

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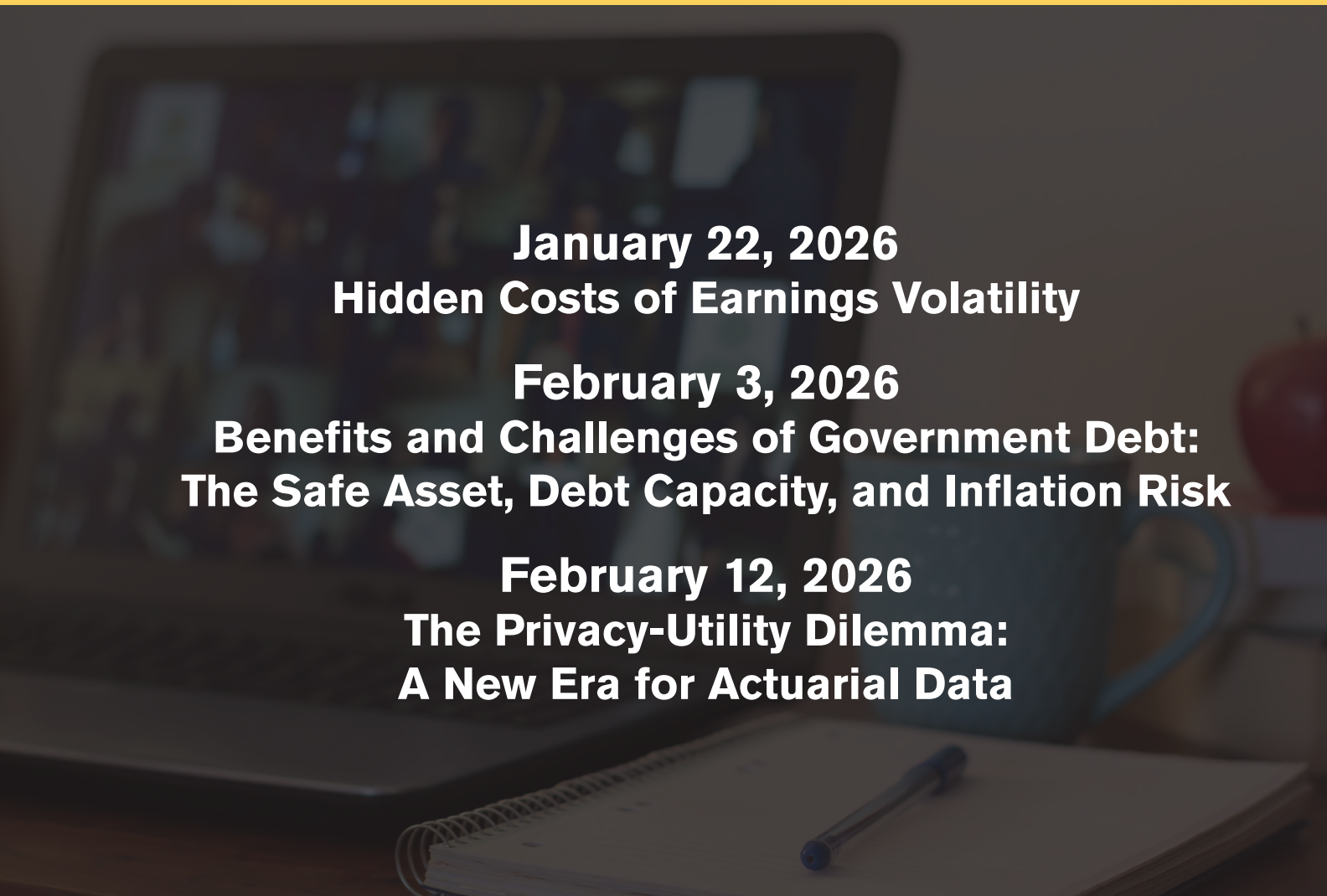

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