

actuarialREVIEW

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PUBLISHED BY THE CASUALTY ACTUARIAL SOCIETY 

INDEXING THE FUTURE: THE RISE OF PARAMETRIC INSURANCE AND ITS EXPANDING ECOSYSTEM



**Prevention Is Better than the Cure:
Unlocking Investments in Climate
Mitigation and Adaptation**

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editor'sNOTE By JIM WEISS

Opportunities in Disguise

The devastation in Texas and California in 2025 highlights inconvenient truths with respect to U.S. property-casualty risk. Recent reporting surrounding these events suggests some damage from recent floods and wildfires could potentially have been prevented with better [flood siren systems](#) or [vegetation management](#), respectively. We will not delve into the nuances of these arguments, but their very existence suggests a society that has run out of patience (if there ever even was any to begin with) for losing homes and loved ones to weather.

Insurance is an industry filled with professionals who take immense pride in helping people and businesses rebuild after tragedy. At the same time there are some public perceptions in the aftermath of the recent events that [not enough people were helped](#) and that having to navigate complicated claims processes while wounds are fresh [retraumatizes victims](#). Similar to claims that these events could have been prevented, the mere existence of these perceptions is a call to action for the industry to make innovations that result in the best possible experience for its public.

Such is the focus of this month's AR. Our two features, by AR writers DJ Falkson, FCAS, and Sandra Maria Nawar, FCAS, explore innovations that all but the most careful observers may have overlooked. Parametric insurance provides a technologized pathway to expedited payouts for those who may fall in harm's way. Investment in climate adaptation helps fortify communities and homes against the disasters of today and tomorrow. This, in turn, presents a novel opportunity for institutional investors such as insurers to do well by doing good.

These innovations are not without challenges. Basis risk has been an inhibitor of scale for parametric, while the majority of climate finance has historically sourced from the public sector (and has lagged what experts view as need). However, as an old saying goes, every problem is an opportunity in disguise. As a result of recent innovations, parametric insurance and adaptation finance are better positioned to increase insurers' access to underserved markets, prevent losses before they happen, and rebuild strained public perceptions (whether fair or not). Actuaries can help. Are you in the solutions business? ●

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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An Enduring Sense of Community

More than 10 years ago, when I was serving as a CAS vice president, I participated with the Board and Executive Council (EC) in discussions to identify the “why” for the CAS. We were inspired by a popular TED Talk by Simon Sinek, called “Start With Why.” In this talk, Sinek encourages organizations to answer the question, “Why does our organization exist?” The answer will dig deeper than questions like, “What do we do?” or “How do we do it?” The “why” question exposes the purpose, cause, or belief that drives the organization. Sinek

For many of the Board and EC members at the time, the sense of community in the CAS was personal and meaningful to them. They valued the sense of belonging they felt at CAS meetings, the insights that were shared in CAS research, and the opportunity they had to contribute to building the CAS community. This articulation of “why” guided many things that we did in CAS leadership for many years to strengthen and deepen this sense of community in the CAS.

Now, 10 years later, I often reflect on how CAS members continue to value

end of this column. The following text comprises parts that I chose from the Gemini summary.

Core Principles

Member-Centricity and Shared Purpose. *At its foundation, a professional community must exist to serve its members. This requires understanding that members' individual requirements, desires, and goals are of critical importance and should be actively catered to (Kaplan). A community must have a unifying purpose that resonates with all members and provides a clear vision. This shared purpose becomes a rallying point during challenging times and a source of motivation that empowers members to move forward with their individual growth as well as the growth of the community as a whole (Kaplan). Without this shared desire and clear articulation of purpose, a community cannot attract or retain like-minded members who are willing to contribute their time and effort (Amann).*

Diversity and Inclusion. *A strong community thrives on diversity. It recognizes that not all members are the same in terms of knowledge, academic background, or work exposure. Welcoming a diverse range of ages, genders, mindsets, and geographic locations creates an environment where people feel appreciated and heard, which drives connection and innovation (Kaplan). Fostering an accepting and inclusive workplace where discrimination is not tolerated is paramount. This can be achieved through creating safe spaces for marginalized voices to be heard (Cacoveanu). By cap-*

The Board and EC members ... valued the sense of belonging they felt at CAS meetings, the insights that were shared in CAS research, and the opportunity they had to contribute to building the CAS community.

says very few organizations can clearly articulate their “why.”

So the CAS Board and EC took on the challenge to articulate our “why.” After several rounds of conversation, a theme started to emerge centered around the word “community.” CAS President Bob Miccolis summarized this theme in the May 2015 *Actuarial Review*:

“So why should the CAS exist?”

Because the CAS is a community defined by the shared beliefs of actuaries whose specialty is solving actuarial problems in property/casualty risks, and those actuaries who share our beliefs are drawn to the CAS and our community. Those shared beliefs are what define our community within the actuarial profession and thereby define why the CAS should exist.”

our sense of community. We are a much larger organization now — more than 11,000 members, with an increasing number outside the U.S. and Canada. We hold more meetings virtually now than we did back then. And our community had to navigate the enormous disruption of the COVID-19 pandemic and the resulting societal strains. Yet despite all those challenges, I believe our sense of community is just as strong and remains an important part of “why” the CAS exists.

I did some research recently on what makes a professional community strong and vibrant (with the help of Google Gemini, Google's next-generation AI model). Gemini summarized four core principles of successful communities (text in italics), drawn from several articles that are referenced at the

President's Message, page 7



turing and promoting diverse mindsets, a community becomes more flexible and accommodating, increasing its chances of success (Kaplan).

Relationships and Collaboration.

A community is the sum of its members, and its effectiveness is based on the quality of the relationships they form. This involves creating a collaborative and cohesive environment — a shareable ecosystem where members can exchange ideas, information, and resolve queries without hesitation (Kaplan). This is a departure from individual work in isolation

integrity, objectivity, and professional competence (ICAEW). Integrity requires being straightforward and honest in all professional relationships. Objectivity demands that professional judgment is exercised without bias or undue influence. Professional competence and due care entail maintaining the necessary knowledge and skill to provide a high-quality service and acting diligently in accordance with applicable standards (ICAEW). Principles of professional conduct are not merely rules to be followed; they are the essential components

We continue to be a strong and vibrant community of professionals. This didn't happen by accident. It happened because you, our members, value this community and are willing to invest in it.

and is characterized by a shared commitment to work together to create an effective and supportive environment (Earp). A well-functioning community provides an engaging atmosphere that positively involves members, linking their needs, relationships, and common goals to drive proactive participation (Kaplan).

High Ethical Standards. A professional community is founded on trust. Drawing from the fundamental principles of professional conduct in fields like accounting and law, a community's ethical infrastructure must be built on

that build the confidence and respect of the community and the public it serves (Washington state Supreme Court).

I see many ways that these principles come to life in our CAS community. In our most recent Strategic Plan, we confirmed that members are at the center of our objectives. And our Envisioned Future continues to articulate a shared purpose for the CAS — CAS members are globally recognized for their expertise in applying analytics to solve complex insurance and risk man-

agement challenges. We are fostering an increasingly inclusive culture, as more members join us from different backgrounds and nations.

There has been a renewed interest in coming together to build relationships. Our recent Annual and Spring Meetings have had very high attendance. Attendees tell us how much they value meeting colleagues, renewing relationships, and sharing experiences together.

We have established new Research Working Groups in current topics like artificial intelligence and climate risk, attracting many members who are eager to collaborate on these challenging issues.

Our shared commitment to professionalism continues to bind us together and represents an essential part of our identity.

So more than 10 years after the CAS Board articulated the “why” of community, we continue to be a strong and vibrant community of professionals. This didn't happen by accident. It happened because you, our members, value this community and are willing to invest in it. Because of that, I'm confident that the CAS community will continue to thrive for decades to come.

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from page 7

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On “Regulating Fairness”

Dear Editor,

I am writing to the *Actuarial Review* with questions and comments on the article “Regulating Fairness” that was published in the May-June 2025 issue.

The article repeatedly used the term “bias” but failed to give the mathematical definition of bias as applied to the cases mentioned in the article. My impression is that the term is not being used in the same sense that modelers would use it, which is that for an unbiased model, the gap between observed and the modeling estimates will tend towards zero, but seeing the formula behind the article’s definition of bias would help confirm that. I believe that the article was, in fact, arguing that a disparate impact analysis should override the results from a model that is unbiased in the statistical sense if the results of

an unbiased modeling exercise would, under a disparate impact analysis, disadvantage members of a protected class.

Actuaries have an obligation to protect clients against the potential effects of adverse selection by providing advice to clients on expected loss costs or loss ratios when selecting factors for a given rating plan. Our clients rely on us to call balls and strikes without fear or favor. I believe that if an actuary fails to show the best estimate of the expected loss ratios to management for a given rating plan, that individual would not meet the obligation to provide reliable advice to a client. A separate disparate impact analysis could provide useful information to company management, though.

Sincerely,

Michael R Larsen

Email: mikeplcact@gmail.com ●

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For more information on AR editorial policies, visit https://ar.casact.org/wp-content/uploads/2023/06/AR_Statement_of_Purpose.pdf

COMINGS AND GOINGS

Jayson Taylor, FCAS, has been appointed head of casualty at MSIG USA. Taylor, who previously served as head of product innovation, brings more than 20 years of deep underwriting and actuarial experience to the role. Since joining MSIG USA in 2024, Taylor has been instrumental in shaping the company's innovation agenda, driving the development of data-driven, market-responsive insurance products. As head of product innovation, he helped modernize MSIG USA's casualty product lines by incorporating actuarial insights and technology-enabled solutions into the underwriting framework. In his new role, Taylor will oversee all aspects of MSIG USA's casualty business, including strategy, underwriting, portfolio management, and product development.

Dale Porfilio, FCAS, has been appointed head of personal and commercial lines business development for the insurance consulting and technology (ICT) business at WTW. Porfilio most recently served as chief insurance officer at the Insurance Information Institute (Triple-I) and president of the Insurance Research Council (IRC). In these roles, he led the research and education activities of Triple-I and IRC. Prior to this, Porfilio was senior vice president and corporate chief actuary for Gen-

worth Financial, where he oversaw the actuarial practice for all product lines and countries. Based in Chicago, Porfilio will be responsible for driving growth, market share, and profitability in both personal and commercial insurance sectors. Key aspects of the role include building strong client relationships and identifying ways in which WTW's technology and consulting services can help those clients drive better business and customer outcomes.

Anju Arora, FCAS, has been appointed vice president of data, business intelligence, and innovation at Novatae Risk Group. In her new position, she will spearhead efforts that focus on enhancing the company's data capabilities and oversee various programs that leverage business intelligence and analytics. Working alongside Novatae's President, Nick Greggains, she aims to foster collaboration among actuarial, underwriting, claims, and technology teams. Arora brings a wealth of experience to Novatae, having dedicated over 25 years to the insurance industry. Her background encompasses a diverse range of roles within actuarial science, regulatory compliance, and product development. Notably, she held significant positions at Ethos Specialty, a part of Ascot Group, as well as AXA XL, The Hartford, and Deloitte.

Hyeji Kang, FCAS, has been appointed chief financial officer (CFO) of Allianz Commercial. Kang will oversee the global financial operations of both Allianz Commercial and Allianz Global Corporate and Specialty SE (AGCS). She joined AGCS in 2015 as chief actuary for

CALENDAR OF EVENTS

November 9–12, 2025

CAS Annual Meeting
Austin, TX

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

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the Americas, later advancing to global head of actuarial, global head of reinsurance and catastrophe risk management, and global head of performance management across AGCS and Allianz Commercial. Since March 2023, she has served as CFO of Allianz Re, managing its financial division. Before joining Allianz, Kang held various roles in mergers and acquisitions and actuarial consulting. ●

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 Leader, Mentor, Teacher

Joseph Suhr Highbarger (FCAS 2005) 1971–2024

Joseph Suhr Highbarger, 53, passed away in October 2024 in West Des Moines, Iowa. Highbarger was born to John and Jean Highbarger in South Bend, Indiana. The family lived for several years in Hyde Park, New York. After his father’s death, the family moved to Ames, Iowa, where he spent his childhood. He graduated from Ames High School in 1989 before attending Clarke College in Dubuque (now known as Clarke University) on a full-tuition scholarship. It was at Clarke College that he was advised to pursue a career in actuarial science. After graduating from Clarke in 1993 with a B.A. in mathematics, he continued his studies for an additional year at the University of Iowa. Highbarger began his actuarial career in Des Moines with Allied Insurance before taking a position with GuideOne Insurance, where he spent the majority of his career. He also worked at Fireman’s Fund Insurance in Denver, CO, American National Insurance in Springfield, MO, and most recently, took a position with Grinnell Mutual Insurance. He was a leader, mentor, and teacher throughout his career. Highbarger met his wife, Jennifer, in 2000 in Des Moines. The couple moved to Colorado in 2002 and got married in 2003. In 2005 they moved back to the Des Moines area and had a son, Samuel Anson Highbarger, in June of 2007. He considered being a husband and a father to be his great-

est role and loved traveling and making memories with his family. He is survived by his wife of nearly 21 years Jennifer Highbarger; his son Samuel Anson Highbarger; mother Jean (Highbarger) Klute; brother Matthew (Helene) Highbarger; stepbrother Kevin Klute; mother-in-law Pat Roach; father-in-law Ed Roach; and sister-in-law Hillery Roach. He was preceded in death by his father John Highbarger; stepfather Dennis Klute; paternal grandparents Samuel and Isabel Highbarger; and maternal grandparents Virtus and Dorothy Suhr.

The Musician, Traveler, Family Man

Dennis Lee Lange (FCAS 1982) 1954–2025

Dennis Lee Lange passed away in June 2025. Lange was born in Milwaukee, Wisconsin, to Charles and Patricia Lange. There, he grew up with his sister, Deborah, and his younger brothers, Douglas and Daniel. Dennis graduated from Washington High School, where his intelligence shined as valedictorian. From there, he went on to UW-Milwaukee, where he earned both B.S. (1975) and M.S. (1977) degrees in actuarial science. This education led to a long-storied career as an actuary, working for companies such as Sentry and Kemper. In 1981, Lange embarked on fatherhood when his first daughter, Megan, was born. His family continued to grow in 1983 with the birth of his second daughter, Emily, and again in 1986 when his son, Zach, arrived. Lange was a provider

to his family and cherished many moments of his children’s youth, especially camping, cross-country travel, and a special trip to Germany. In 2012, Lange met Marilyn, his cherished wife of 11 years. Their long-distance romance grew while she attended seminary, eventually leading to their marriage on June 28th, 2014, a date chosen as an ode to their shared love and appreciation of math, as it is pi doubled. With his marriage to his loving wife, Lange also gained a son, Ryan. Lange’s family continued to grow as he became a grandpa, a role that he loved and shined at. Lange beguiled his three grandchildren with dad jokes and enjoyed spending time with them. Lange was a talented musician, playing trumpet in the Palmyra Eagle Community Band, Watertown Municipal Band, and Windy Hill Symphonic Band. Dennis also played in the 1st Brigade Band, which portrays the history of the band from the Civil War with antique instruments and uniforms. Lange was a man who fully believed in God and the Bible. Lange is survived by his loving wife Marilyn Lange; daughters, Megan (Jordan) Anderson and Emily (Garrett) Campbell; his sons, Zachary (Katie Uhlman) Lange and Ryan Beyer; his grandchildren, Kherrington, Aaron, and Brett Campbell; his mother Patricia Lange; his sister Deborah (Jay) Hall; and his brothers, Douglas (Jeane Lawrence) Lange and Daniel (Kathy) Lange. He is preceded in death by his father Charles Lange. ●

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CAS STAFF SPOTLIGHT

Meet Vikash Bhartiya, Program Manager, India

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

Vikash Bhartiya.

- **What do you do at the CAS? How does your role support the Strategic Plan?**

As program manager for India at the CAS, I focus on fostering strategic expansion by building and nurturing partnerships with leading academic institutions and employers. My efforts are aimed at aligning modules from the CAS educational journey with university programs, increasing awareness of the actuarial profession, and ensuring alignment with national education priorities to support long-term strategic institutional engagement.

I also drive active engagement with employers, professional bodies, and regulatory authorities to understand workforce needs and lead joint initiatives that help in building skills for the future. These partnerships help create a sustainable pipeline of credentialed actuarial talent. Through these integrated efforts, I contribute to driving growth for the CAS in India by expanding our network of candidates, members, and partner organizations across both academia and industry.

- **What inspires you in your job? What do you love most about your job?**

What inspires me most is the opportunity to help shape a profession and create a meaningful career pathway for students and young professionals in India. At the CAS, it's incredibly motivating to introduce a globally respected profession to emerging talents and witness their growth. I also value the strategic partnership aspect of my role by meaningfully engaging with universities and employers, understanding their objectives, and co-creating initiatives that make a lasting impact. It is deeply rewarding to see these collaborations result in tangible outcomes like new academic programs and student success stories.

- **Describe your educational and professional background. What do you bring to the organization?**

With about 17 years of experience leading strategic partnerships and high-impact initiatives, I specialize in driving growth through meaningful collaborations across academia, industry, and government bodies. I joined the CAS with a strong foundation in growth leadership and a results-driven approach, well positioned to contribute meaningfully to the organization's strategic priorities and long-term success.

- **What is your favorite hobby outside of work?**

Outside of work, I truly enjoy listening to music and going on long drives. Driving through the



Vikash Bhartiya

countryside or up to the hill stations gives me a sense of freedom and clarity. It is a chance to disconnect from the daily noise and reconnect with nature and my thoughts. For me, music and long drives are the perfect combination for reflection, creativity, and unwinding.

- **If you could visit any place in the world, where would you go and why?**

I have always dreamed of seeing the Northern Lights in Norway. Their beauty and mystery are incredibly captivating, and the idea of witnessing such a rare natural phenomenon in a serene Arctic setting feels both inspiring and unforgettable.

- **What would your colleagues find surprising about you?**

I am passionate about spontaneous long drives. Given my work schedule, it often surprises people that I enjoy unplanned road trips, but it's my favorite way to unwind.

- **How would your friends and family describe you?**

They would describe me as a problem-solver, dependable, and caring. ●

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LISTEN

DOWNTIME

An Actuary's Reflections From a 150-Mile Walk By JIM LYNCH

Hiking a forest between the Spanish villages of Valga and Padrón.

Me: What day is it? Is it Wednesday?

Liz (my wife): Yes, it's Wednesday. Why? What's Wednesday?

Me: Nothing. Just curious.

We walk. A bird sings.

Liz: At least I *think* it's Wednesday.

It was that escape from time that had sent us on the Camino de Santiago, a three-week walk up the spine of Portugal to the northwest corner of Spain. There, according to Roman Catholic tradition, the body of the apostle James the Greater lies.

Pilgrims have made the trip by foot, horseback, or bicycle for more than 1,000 years.

There are several routes. The Frances is the most popular, clipping 300 miles across the northern forehead of Spain. Our route, starting just north of Porto, was only 140, but certainly a challenge for our retired, fogey bones.

Popular books (Shirley MacLaine's "The Camino;" and "I'm Off Then" by German comedian Hape Kerkeling) and movies ("The Way," starring Martin Sheen, and "Journey to You" – a Hallmark romance) have turned the Camino from a religious journey to something broader. According to the [Oficina de Acogida al Peregrino](#), just under 500,000 journeyed it last year, more than double those who visited a decade earlier.

Some welcome the physical challenge, lugging a 15-pound backpack 15 miles a day through heat, rain, sore

knees, and blisters. Others seek spiritual fulfillment — disconnecting from life in the hopes of appreciating it more.

I wanted to step away from the current moment of ineffable cruelty (who wouldn't?). I also sought the logistical challenge. The planning brought back memories of months of studying to prepare for a CAS exam. The journey itself reminded me of the trek to fellowship.

It feels like a million details, like...

Packing:

- How many pairs of socks? (I took 4)
- Hiking boots or running shoes? (trail runners, sized up because your feet will swell)

- Rain jacket or poncho? (poncho)

Planning:

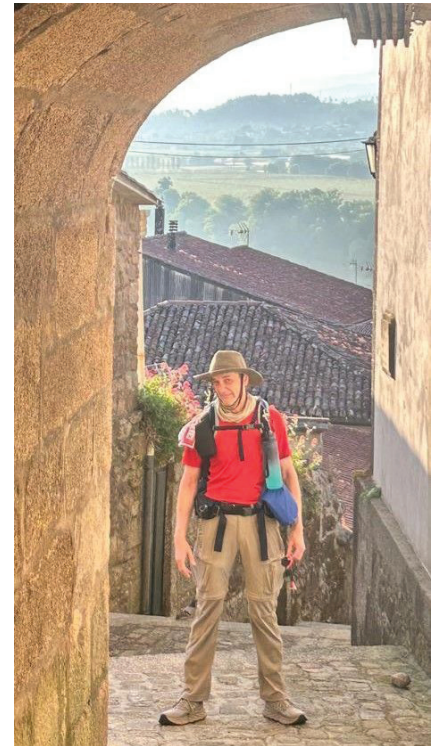
- How far can we walk in a day?
- How far *should* we walk in a day?
- How far ahead should we book accommodations?

I scrounged a packing list online and developed (actuarially enough) an expected vs. actual table to see if we were on schedule.

The plan: train from Porto to the shore town of Póvoa de Varzim, average 14.3 kilometers a day as the ocean trail spirals up the Portuguese coast, climb a couple of hills and arrive June 7, in time for the Catholic feast of Pentecost.

Planning is deceptive, though. The Camino is simple. You walk as far as you can. You eat someplace you've never heard of, sleep in simple quarters, get up early, and start off again.

Our first lesson came on Day One, on a sidewalk separating the ocean from



Following a cobblestone lane through a medieval archway in the town of Tui, Spain. Photo by Liz Haigney Lynch..

seaside apartments: If you wear a wristwatch, you will look at it. All. The. Time.

Morning Two, I tucked the watch into my backpack, next to my house keys.

I focused on scenery:

- Seaside, the ocean massaging the sand.
- Inland, the tongue of a pine grove reaching down to the sea.
- Morning, the sun peeking over the mountains, rising into a cloudless sky.

Unfortunately, there are more miles than there is spectacle. Audiobooks ("A

Confederacy of Dunces,” “The Canterbury Tales”) help.

Books, though, rob you of the humble beauty of everyday life:

- A carabiner tick-tick-ticking against backpack.
- Wildflowers winking along a highway.
- A Saab diesel gurgling past.

And birds. Near the shore, in the mountains, in cities and villages — even on a timeless was-it-Wednesday in the woods, there’s always one: twittering, trilling, whistling, cooing.

You meet other pilgrims, not so many at our glacial pace, but still:

- A German woman, pushing her son

in a stroller, eager to finish on his second birthday.

- A reserved Dutch woman, so lost and flustered early that she wept openly on the beach, the wind carrying her tears to the sea.
- A woman on her second Camino, her eyes welling up as she said her first Camino taught her she needed to cry often to be truly happy.

And you learn that plans and goals are only suggestions. We abandoned the actual vs. expected analysis after about four days. It remains a curiosity in my cloud drive.

Instead, every day we walked awhile and stopped, never looking far ahead.

We still finished by Pentecost.

Lessons? I still don’t understand willful cruelty, but I did learn — don’t ask how — that patience and empathy are cousins. Each reinforces the other.

And I learned that when the road takes you past a pigsty or along a rainy highway with semis howling past, you need to just listen. Amid the pain and frustration, a bird is drawing a breath, ready to sing. ●

Jim Lynch, FCAS, MAAA, is retired from his position as chief actuary at Triple-I and has his own consulting firm.



A boardwalk curves past windmills near the Atlantic coastline in Apúlia, Portugal. Photo by Liz Haigney Lynch.

VOLUNTEERS MAKE THINGS HAPPEN

A Servant Leader Shaping the RPM Seminar Experience By SARAH SAPP

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

Among the many dedicated volunteers who contribute their time and talents to the CAS, Jamie Mills, FCAS, stands out for his thoughtful leadership and commitment to collaboration. As the volunteer chair of the Ratemaking, Product, and Modeling (RPM) Planning Working Group, Mills plays a key role in shaping one of the CAS's most dynamic educational events — the RPM Seminar. With a balanced mix of strategic vision and hands-on coordination, he has helped grow the event's attendance and relevance for actuaries at every stage of their careers.

The RPM Seminar is one of the CAS's five signature annual events and is one of the cornerstones of CAS professional education. From general sessions and workshops to concurrent tracks and roundtable discussions, Mills guides a dedicated planning group through both the creative and operational aspects of the seminar.

"Our main goal," Mills explains, "is to deliver an RPM Seminar that brings real value to the CAS membership and the broader actuarial community. We focus not just on strong content but also on how that content is delivered—whether through sessions, workshops, or other formats."

His approach supports the CAS Strategic Plan and the CAS Capability

Model by expanding content accessibility and embracing a variety of interactive learning technologies.

One of Mills's proudest achievements is the committee's dedication to meeting attendees wherever they are in their career journey — from early-career professionals to seasoned actuaries. Recognizing the diversity in learning styles, the team has prioritized content variety and innovative delivery formats, making the seminar more relevant and engaging for all.

"It's a fun challenge to rethink the one-size-fits-all approach," Mills says. "We want every attendee to walk away feeling like their professional growth was truly supported."

Behind the scenes, Mills cultivates a collaborative and inclusive atmosphere. His leadership fosters a space where every member of the working group is empowered to contribute and grow.

"I'm incredibly proud of how engaged and collaborative our working group is," he says. "The teamwork makes the process both productive and enjoyable, and the relationships we've built are a big part of what makes the experience so rewarding."

This sentiment is echoed by Kellee Jenkins, the staff chair of the RPM Seminar Planning Working Group. "Not only does Jamie dedicate an incredible number of hours as the RPM Seminar volunteer chair, but he is also amazing with making others feel included, responding to prickly moments with grace, and projecting a sense of calm



Jamie Mills, FCAS

and peace when faced with challenges. Jamie truly exemplifies servant leadership and equips all stakeholders who engage with him to be their most efficient and best selves. He is an absolute gem to work with!"

Mills's history with CAS volunteering is both rich and inspiring. He began as a university liaison, sharing his passion for the actuarial profession with students. After becoming a Fellow, he joined the Syllabus and Examination Working Group — contributing as a writer, grader, part vice chair, and part chair.

Following a short break, Mills returned to volunteer service through the RPM Seminar Planning Working Group, eventually serving as co-chair before assuming his current leadership position.

"Volunteering is my way of giving back," Mills says. "The actuarial career has given me so many opportunities to grow, learn, and do meaningful work. I want to help create similar opportunities for others."

Mills holds a double major in mathematics and physics from Illinois Wesleyan University. He discovered actuarial science through a friend and began his career with Allstate, moving into pricing roles spanning auto, home, and specialty lines. Today, his work focuses on automation and AI in the actuarial space, an exciting intersection of technology and analytical rigor.

Away from the spreadsheets and seminar planning, Mills is a proud father

of four. His weekends are often spent on the sidelines of youth sports games or cheering at dance and cheer events. The Mills family also shares a love for travel and baseball, with a mission to catch Cubs games in new cities across the country. As for titles, Mills reveals his most cherished one: “I hold the very official title of ‘Coolest Dad Ever,’ which is proudly on display on my calls when working from home.”

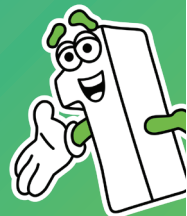
Mills is not just a skilled actuary

— he’s a generous mentor, a thoughtful leader, and a true ambassador of the CAS mission. Through his volunteerism, Mills continues to elevate the value of professional education while building a more inclusive, innovative, and impactful actuarial community. And it is no wonder that Mills received notice in July that he won the 2025 CAS Above and Beyond Achievement Award. He will be recognized at the 2025 Annual Meeting in Austin, Texas. ●

Together, We’re Making Numbers Count.



At The Actuarial Foundation, we’re bringing together the entire actuarial community to build a future where everyone has the opportunity to succeed.



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Will you Be the One to help us transform students’ lives, All for Math?

All for Math
The campaign for math proficiency



2025 CAS Trust Scholarship Recipients Announced

The CAS is thrilled to present the winners of the 2025 CAS Trust Scholarship. This award was made to further students' interest in the P&C actuarial profession and to encourage the pursuit of CAS designations. The CAS received a record number of applications from around the world this year, resulting in an incredibly competitive cycle. This year's eight recipients have demonstrated remarkable achievements, both academically and professionally, as well as a strong commitment to the P&C industry.

\$5,000 CAS Trust Scholarship Recipients

The awardees of the \$5,000 CAS Trust Scholarship are Jolin Cheung, Radhika Damle, Sang Huynh, and Alexia Xu.

Jolin Cheung is a fifth-year student at McMaster University, where she is studying actuarial and financial mathematics. In 2024, she interned at Echelon Insurance, where she gained experience in both the commercial property pricing and corporate actuarial teams. This summer, she returned to Echelon for another internship, working with the corporate actuarial and personal auto pricing teams. She is also actively involved in the McMaster Actuarial Society, the university's local actuarial club.



Jolin Cheung

"I am honored to receive this recognition from the CAS and deeply grateful for the support from my mentors, family, and friends. I'm excited to continue pursuing my passion for the profession and to give back to the next generation of actuaries."

Radhika Damle is a rising senior at the University of Nebraska–Lincoln in the Jeffrey S. Raikes School of Computer Science and Management, where she is majoring in actuarial science and data science with a minor in computer science. She previously had actuarial internships at Lincoln Financial and Travelers and gained additional actuarial experience through her internship at State Farm in the summer of 2025. Damle is currently serving her second term as the president of the Actuarial Science Club. She has held leadership positions as an ambassador for the honors program and Gamma Iota Sigma, and she serves on the study advisory



Radhika Damle

board for the College of Business.

"I am truly honored to be selected as a recipient of the 2025 CAS Trust Scholarship Award. Knowing that I have this support is very inspiring for me as I continue to grow and pursue my goals in the actuarial profession."

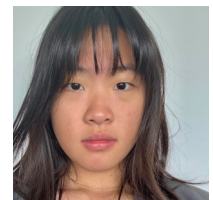
Sang Huynh is in his final year of a master's program in actuarial science, a joint degree between the Institut de Science Financière et d'Assurances in France and the National Economics University in Vietnam. After interning at Sun Life Vietnam in 2023 in an IT role, he found and developed a strong interest in the actuarial profession, which led him to pursue graduate studies in the field. In summer 2024, he joined ORLab at National Economics University as a research collaborator, contributing to a project in portfolio optimization. Currently, his research focuses on bias and fairness in insurance pricing.



Sang Huynh

"Receiving this recognition from the CAS is an incredible honor — one that I owe to the unwavering guidance of my professors and mentors who are also my dearest friends. This isn't just an award; it's a powerful affirmation that fuels my ambition to become a researching actuary, dedicated to pushing the boundaries of actuarial science with work that genuinely matters."

Alexia Xu is a fourth-year undergraduate student at the University of Toronto, specializing in actuarial science and majoring in statistics. She is currently an actuarial intern at Intact Financial Corporation on the personal lines pricing team after previously interning with their specialty lines pricing team in the winter of 2024. Her past experience also includes internships at Definity Financial Corporation in commercial lines pricing and at iA Financial Group in P&C pricing. Xu has held leadership roles with the University of Toronto Actuarial Science Club, the Actuarial Students' National Association (ASNA), and the Quantify Case Competition.



Alexia Xu

"I'm honored to receive the CAS Trust Scholarship and for the support I've had along the way. This recognition inspires me to further pursue my passion for actuarial science and give back

to the community with purpose and dedication.”

\$2,500 CAS Trust Scholarship Recipients

The awardees of the \$2,500 CAS Trust Scholarship are Ava Brown, Michal Gabrick, Saul Garcia, and Duong Nguyen.

Ava Brown is a rising senior at Stanford University, where she is studying data science and is interested in using machine learning and statistics for risk assessment. She spent the summer of 2023 as a data analytics intern with the Life and Annuity Predictive Analytics team at Milliman and the summer of 2024 as an investment banking intern with the Healthcare group at Goldman Sachs. In 2025, she joined Bridgewater Associates as a summer investment associate. Brown currently serves as the executive president of the Associated Students of Stanford University, executive vice president of BLK Capital Management, Corp., president of TEDxStanford, and team manager of the Stanford Equestrian Team.



Ava Brown

“I am incredibly thankful for the opportunity to be recognized as a CAS Trust Scholarship recipient. This scholarship will help me make the most of my final year at Stanford as I explore data analytics, risk assessment, and the actuarial profession. The support of the actuarial community is unmatched, and I am grateful for the guidance and motivation I have found from outstanding organizations like the CAS.”

Michal Gabrick is a rising senior at the University of Texas at Austin, where he is studying mathematics with a minor in computer science. In the summer of 2025, he worked as an actuarial intern at Aon on the reinsurance solutions team, focusing on credit reinsurance. He currently serves as an officer for the University of Texas Actuarial Science Club and is the editor of the actuarial program’s semesterly student newsletter.



Michal Gabrick

“Receiving this scholarship from the CAS is an incredibly meaningful milestone in my journey toward becoming an actuary. I’m deeply thankful for the encouragement and support it represents, and I look forward to giving back to the actuarial community through hard work, curiosity, and service.”

Saul Garcia is a rising senior at Siena College, where he

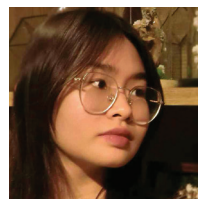
is pursuing a double major in actuarial science and applied mathematics with a statistics track, as well as two minors in computer science and data science. He spent the summer of 2024 as an intern at Chubb’s reserving department and returned for the summer of 2025 to their Westchester Programs company. Garcia currently serves as the president of the Actuarial Science Club and the treasurer of the Computer Science Club at Siena.



Saul Garcia

“I am incredibly honored to receive this recognition from the CAS to help me in my upcoming career. I am also extremely thankful for my academic adviser, professors, parents, friends, and colleagues who supported me in my actuarial development.”

Duong Nguyen is a master’s student in the joint program between Claude Bernard University Lyon and the National Economics University. In the summer of 2024, she interned in the risk management team at Bao Viet Life Corporation and later worked as an actuarial intern at Tasco Insurance, focusing on automobile insurance. In the summer of 2025, she joined PTI Insurance for another actuarial internship, focusing on product pricing. During the 2025–2026 academic year, Nguyen will continue her studies in France to complete the final year of her master’s program.



Duong Nguyen

“I’m honored to receive this recognition from the CAS. I’m deeply grateful to my family, professors, mentors, and friends for their support. This encouragement inspires me to give back to the actuarial community and support others on their journeys.”

[Learn more about our CAS Trust Scholarship program](#)

The CAS Trust Scholarship Program is funded by donations to the CAS trust, which affords members and others an income tax deduction for contributions of funds used for scholarships and research grants. The CAS Trust was qualified by the Internal Revenue Service in 1979 as a nonprofit organization exempt from federal income tax under section 501(c)(3) of the Internal Revenue Code.

CAS members are invited to contribute to the Trust; inquiries and contributions should be addressed to the CAS’s Chief Business Officer, Joyce Warner, at JWarner@casact.org. ●

PREVENTION IS BETTER THAN THE CURE:

Unlocking Investments in Climate Mitigation and Adaptation

By SANDRA MARIA NAWAR

We live in a time when most of the global scientific community agrees that climate change caused by greenhouse gases is a reality. Climate change has led to an increase in the temperature of the earth by an average of 1.2° Celsius over pre-industrial levels, according to the Intergovernmental Panel on Climate Change (IPCC). This measure seems as simple as its repercussions are complex. Global warming has increased the frequency and severity of extreme weather events such as floods, wildfires, and severe convective storms, including hurricanes, hail, straight line winds, and tornados. Higher temperatures have provided more energy for storms, making them more powerful and less predictable. Mean-

while, melting arctic ice has raised sea levels, exacerbating the impact of coastal storms. These extreme weather events have translated into increased risks to civil society and businesses, leading to property damage, business interruptions, and, consequently, an increase in insured losses. Climate change is and will continue to be an imminent risk for many people and businesses — one of the largest sources of insurance expenditures in the immediate future. Beyond insured losses, global warming could risk a climate credit crunch, which refers to the difficulty in borrowing and lending money or accessing financial services (for example, tighter lending standards for energy-inefficient buildings could eventually trigger a more widespread financial crisis). The lines of business that

are primarily impacted in terms of magnitude are personal and commercial property, followed by auto lines. In 2024 alone, according to a report by Munich Re, losses from extreme weather events reached \$320 billion globally, of which \$140 billion were insured. The remaining uninsured amount was left for governments, businesses, and individuals to cover. The magnitude of losses has led to insurers having few options but to limit coverage options or adapt the brute force approach — withdrawing completely from a market. Altogether this has minimized writings in high-risk areas, widening the existing protection gap even further. As significant capital providers in the market, they are uniquely positioned to invest in climate change prevention strategies. Insurance companies, as a



To manage climate change impacts, there are three commonly used strategies: mitigation, adaptation, and acceptance.

business among others that are directly exposed to the risks and costs of climate change, can benefit from climate change prevention strategies — not just from returns on investments, but also by minimizing exposure to insured losses — all while not widening the protection gap for consumers.

Climate change prevention strategies

To manage climate change impacts, there are three commonly used strategies: mitigation, adaptation, and acceptance.

Acceptance is the strategy of employing purely reactive measures to minimize climate change. As the name suggests, acceptance simply recognizes that there will be consequences to climate change and seeks to address those consequences by insuring against them or providing government financial assistance to alleviate their effects. If this strategy sounds familiar, it is because it is the status quo. Insurers practicing the acceptance strategy remain afloat and profitable by transferring risk through high-risk financial instruments such as catastrophe bonds or alternatively by continuing to raise premiums for consumers. While this strategy's social impact is at its best neutral and at its worst negative, its sustainability is dubious. As extreme weather events become more common and severe, the consequences of climate change are expected to be unsustainable under this insurance model. Simply put, continuing a business-as-usual model is likely going to be insufficient to cover the costs of climate change as they increase at an alarming rate. Although insurers do not have to

do much more under this strategy other than introduce new products and rate those products aggressively, the insured losses may soon be so substantial that the model is untenable.

Adaptation, conversely, is a strategy which seeks to adjust to the unavoidable consequences of climate change and help communities manage climate change risks better. Rather than accepting climate change and doing nothing about it, adaptation seeks to avoid the losses of climate change by better preparing for the consequences. For example, to prepare cities for urban pluvial (rainfall) flood risks, the adaptation strategy would dictate restoring watercourses, expanding greenspaces, and introducing porous surfaces that improve storm water management. Adaptation, accordingly, is an investment opportunity, as dollars spent adapting to the consequences of climate change will minimize the losses.

Finally, mitigation — more popularly known as “net zero” — is a strategy that doesn't just try to prepare for the consequences of climate change, rather it seeks to minimize climate change itself. Mitigation refers to reducing greenhouse gas emissions to limit global warming. While this is certainly the boldest strategy of addressing losses related to climate change, skeptics raise issues about the response time of this strategy, that the effectiveness of the strategy is not guaranteed, and that the damage already incurred to the climate is irreversible. In any event, mitigation serves as another investment opportunity as capital allocators can invest in mitigation measures against climate change to minimize the losses.

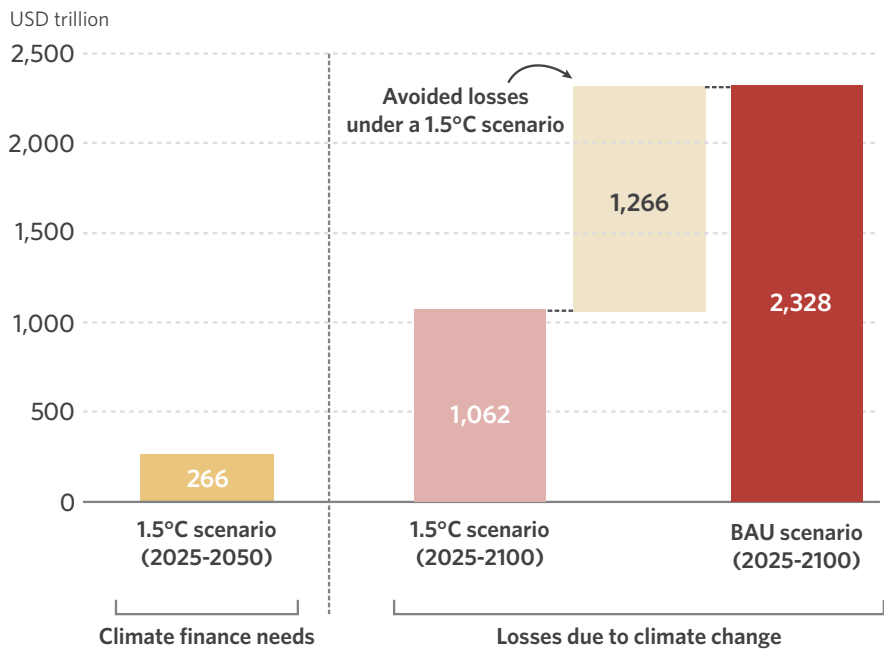
Target levels for climate investment

Based on a study from the Climate Policy Initiative (CPI), it is estimated that the global investment needed to address climate change is \$266 trillion between 2025 and 2100. While at first glance this amount seems overwhelming — for reference, the world’s annual GDP is estimated at approximately \$100 trillion — this amount of investment needed pales in comparison to the projected costs of losses from climate change under the acceptance strategy. Under the acceptance strategy, the global costs from losses due to climate change for the period from 2025 to 2100 are estimated at \$2,328 trillion. These costs include direct economic impact of increased weather-related and other uninsurable damage, increased production costs, productivity losses, and health costs. The CPI also believes that its estimates are likely understated because it does not capture

capital losses caused by stranded assets, losses to nature and biodiversity, or those from increased conflict and human migration that cannot be reasonably measured. However, with proper investments in prevention that would restrain climate change, roughly half of those losses could be avoided.

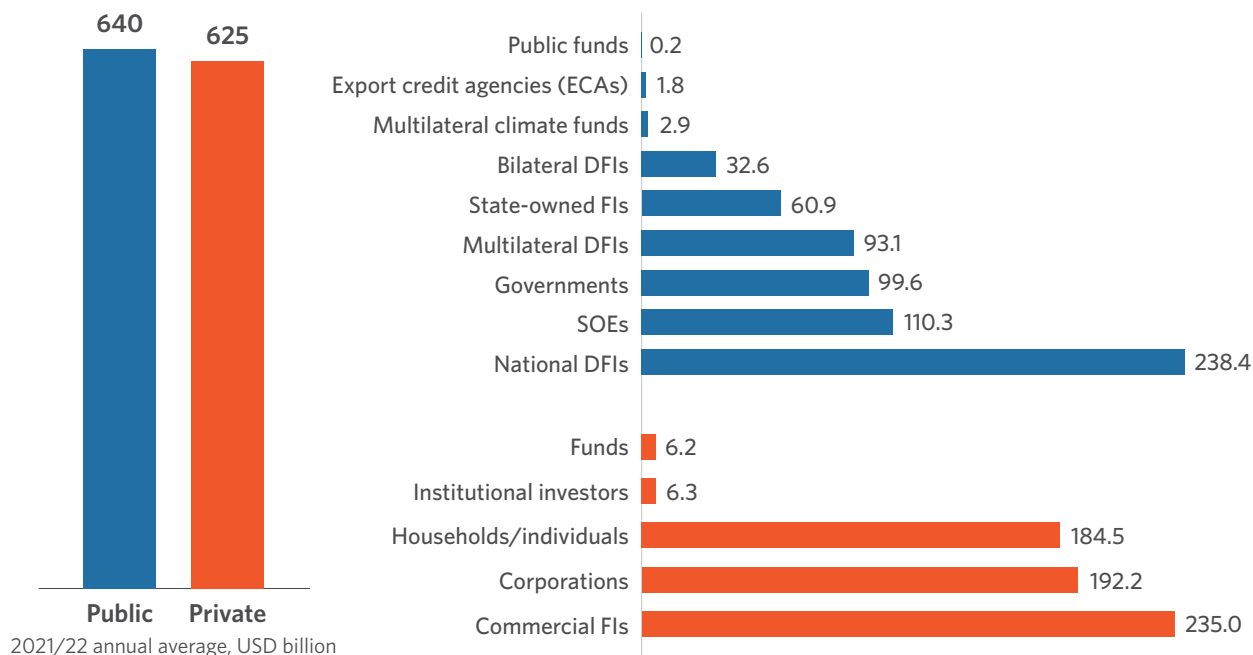
In its study, the CPI estimated that in the years 2021 and 2022, global climate finance approached \$1.3 trillion annually compared to \$653 billion in the years prior. Most of the growth in funds is allocated toward mitigation strategies, with renewable energy and the transport sector seeing the largest growth. Adaptation finance continues to lag, reaching an all-time high in 2023 at \$63 billion and most of the investments in this area dominated by the public sector (around 98%). Despite all this growth, there is still a shortfall and an absence of one major market participant — private insurance companies.

Figure 1: Cumulative finance needs vs losses under 1.5 °C and business and usual scenario



Source: Climate Policy Initiative

Figure 2: Distribution of Public and Private climate financing



Source: Climate Policy Initiative

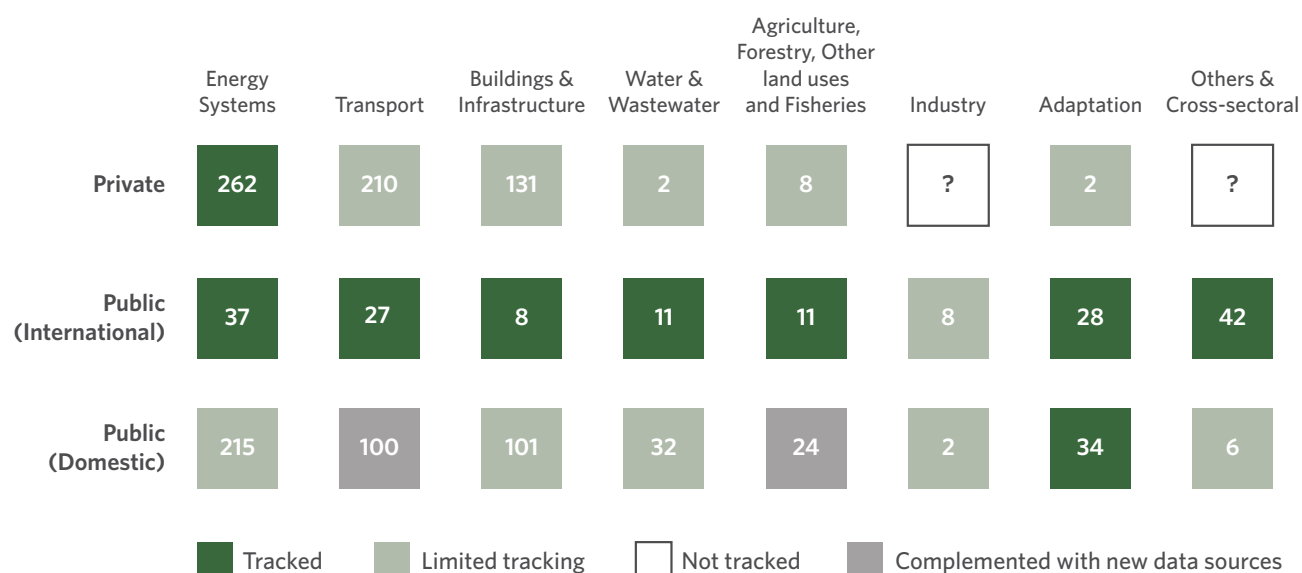
The climate finance conundrum

While private climate finance is growing, it is not yet growing at the rate and scale required. Currently, private climate finance represents approximately 49% of total funds, a significant increase from prior years. However, private climate finance still lags such that it is insufficient to close the funding gap. The source of this investment explains this lag in funding. Rather than institutional investors allocating massive amounts of capital, the largest private sector growth came from individual household spending — driven predominantly by the sale of electric vehicles supported through government policies encouraging the uptake of low-carbon technologies.

While it is certainly necessary for individual households to allocate their spending in ways which adapt and mitigate against climate change, that will not be enough to close the climate finance gap. Even commonly used funding

schemes such as public-private partnerships and blended finance, where an agreement between governments and the public sector involving private capital to finance projects up-front and then draw revenues from future tax receipts to repay these loans, wouldn't solve the issue. Instead, to close the gap, climate finance needs to incentivize private capital to seek returns on investing in climate change action. This means that institutional investors, such as pension funds, investment banks, and insurance companies, need to seek returns on investments in climate finance as opposed to other areas of the market. While two of three of those capital allocators may only reap the benefits of climate finance as a return on investment, insurance companies are poised to reap the benefits as both a return on investment and a reduction on expenditures from insurable losses.

Figure 3: Tracked and untracked climate finance by actor and sector (2021/2022 in billions USD)



Source: Climate Policy Initiative

Incentivizing insurance companies

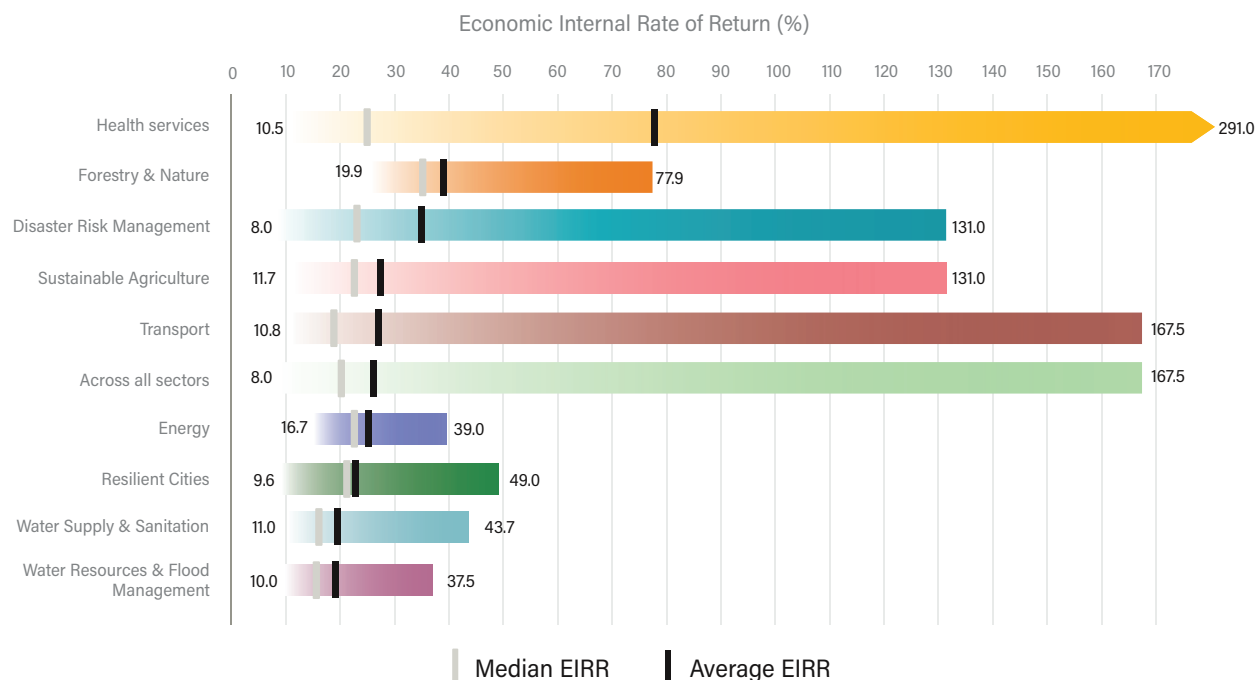
While raising the necessary funds for adaptation remains challenging, especially through private funding, it does create the highest opportunity for returns. Unfortunately, the true value of adaptation remains underestimated because of the difficulty in measuring the returns. For example, the World Resources Institute (WRI) has estimated that the return on investment for adaptation is about \$2–\$10 in avoided losses per \$1 invested over a decade. Likewise, Environment and Climate Change Canada (ECCC) estimates that flood and wildfire standards applied to new construction save \$12 for every \$1 financed.

However, WRI research uses the “triple dividend of resilience” framework to capture three key categories of returns on adaptation investments: avoided losses, induced economic development, and additional social and environmental

benefits — an overarching metric that reveals that the return on investment from certain prevention measures may be much greater beyond simply preventing damage. One example is an urban infrastructure project in Vietnam that aims to reduce flooding and improve water drainage. When estimating the return on this project, many models would consider only the avoided cost of flood damage. However, investments in resilient infrastructure could also increase average land prices, decrease healthcare costs by reducing waterborne diseases, and boost workers’ productivity by reducing travel time, thanks to new and improved roads. The triple dividend framework would account for all these outcomes, offering a more complete picture of the value that adaptation and resilience projects can bring and better incentivizing insurance companies in investing in climate finance.

The WFI has come up with a model

Figure 4: Rate of return on adaptation investments by sector



Source: World Resource Institute

of estimates for rates of return on adaptation investments by sector. This is the path forward to establishing measurable financial metrics on investment returns and more accurately estimate the benefits of climate investments. Despite financial institutions such as insurance companies being highly regulated in terms of investment asset classes and their associated risk, with a more established climate adaptation rate of return rubric, new guidelines can be put in place to incorporate climate finance within the risk appetite of statutory limitations on investments.

The way ahead

Better estimations of the return on climate finance, not just from calculating a return on investment but calculating the losses avoided will be essential to incentivizing institutional investments in climate finance to close the funding

gap. This is imperative for insurance companies, as otherwise the insured losses which will be incurred from climate change will be so substantial that the very insurance model which operates under the acceptance strategy will soon be unsustainable. The cost of not investing in climate finance to prevent climate-related risks is deemed to be higher than the investments needed to prevent it.

Governments, which have largely focused on mitigation measures, will need to collaborate with insurance companies and focus more on adaptation strategies, leveraging the synergies between the two strategies. Restraints on how and where insurance companies invest their capital will need to be reconsidered if governments seek to properly fund the adaptation measures required to avoid the worst possible outcomes from climate change. If governments, fi-

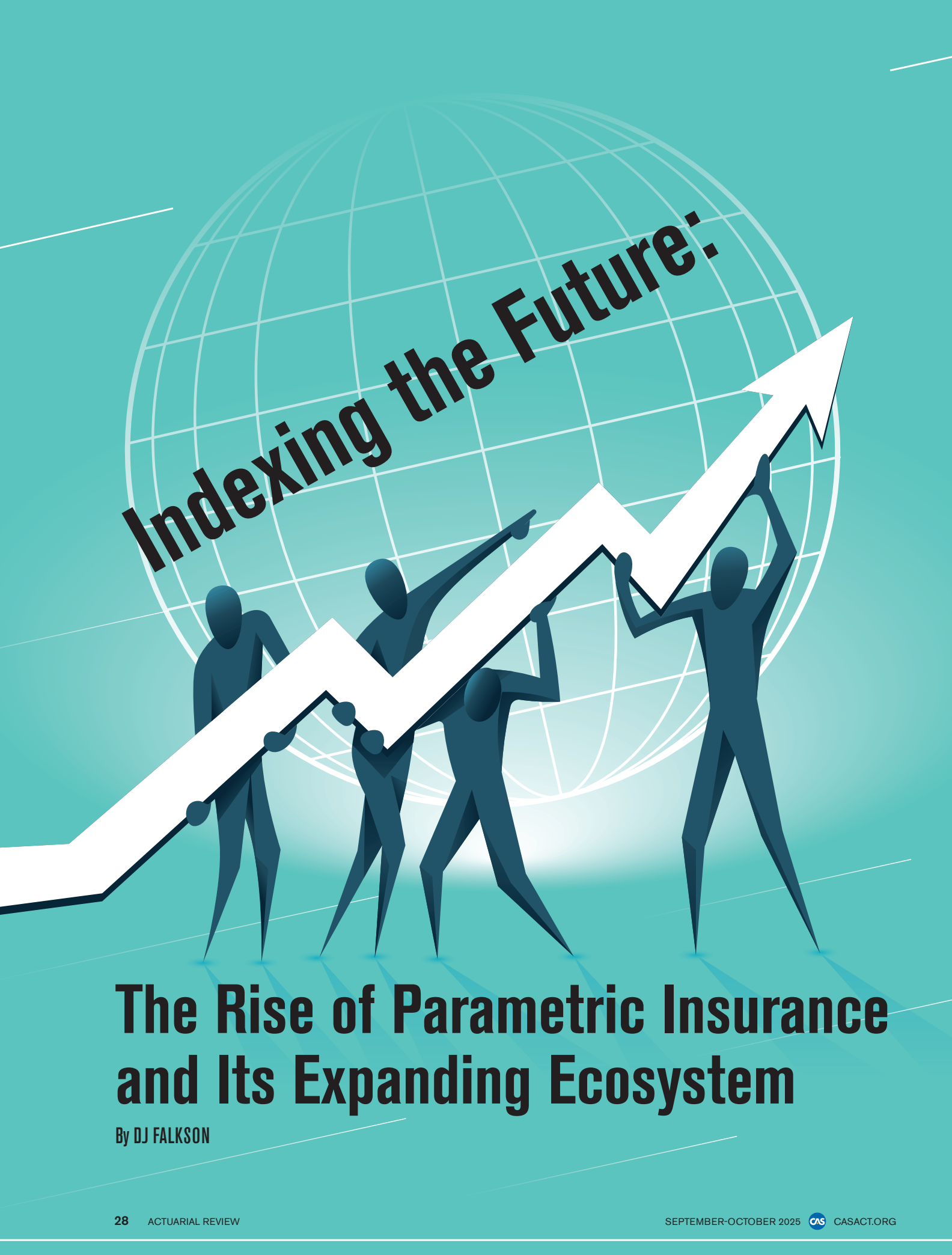
financial institutions, and insurance companies mobilize against climate change and are able to accurately estimate their returns on investing in adaptation measures, then we may be at a turning point of enlisting one of the largest allocators of capital to help address the collective action problem that is presented by climate change.

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Sandra Maria Nawar is a manager for Intact Financial Corporation in Toronto. She is a member of the AR Working Group Writing Staff.





Indexing the Future:

The Rise of Parametric Insurance and Its Expanding Ecosystem

By DJ FALKSON

Parametric insurance can deliver faster, clearer payouts for a changing risk landscape.

In the wake of ferocious wildfires that tore through the Southern California enclaves of Altadena and Pacific Palisades this January, affected home and business owners have mostly followed the standard insurance claims process — first, submitting notices of loss and, in many cases, painstaking inventories of personal property. Claims professionals generally lead with empathy, guiding traumatized policyholders through the steps needed to receive payouts. But, even the most responsive claims team cannot overcome the fundamental challenge: the process is often slow, complex, and opaque — and it can vary widely across insurers.

Recent [New York Times coverage](#) of two families affected by the Colorado Marshall Fire illustrates this clearly. After escaping the blaze, "each family soon reached out to their insurers to begin rebuilding their lives. And that's when their paths diverged — sharply." One family received prompt assistance and a sense of stability; the other found itself bogged down in paperwork and prolonged uncertainty. Even in well-intentioned systems, these differences can feel arbitrary — adding to the emotional toll of loss. The result, for many, is

a sense of frustration and unfairness at a time when they are least equipped to navigate complexity.

Parametric insurance and reinsurance offer a fundamentally different payout mechanism which is a potential salve for the friction in traditional claims handling. Instead of requiring documentation of actual losses, these products pay out based on predefined triggers such as wildfire burn area or proximity, wind speed, earthquake ground shaking, or rainfall accumulation. The key difference from traditional indemnity products is that should these triggers be met — according to agreed-upon data sources — payment is made quickly, sometimes even automatically. They offer clarity and simplicity at a time when they matter most. As Isaac Espinoza, FCAS, CEO of Kettle, a wildfire-focused parametric managing general agent (MGA), explains, "Parametric insurance works because there's a clear-cut loss definition that's assigned up front. The rules dictate when a payout happens, which means there are fewer unknowns for everyone involved."

Slow takeoff, rapid evolution

While there are some earlier examples of parametric-like arrangements, they did not really gain traction until the 1990s. Weather derivatives were emerging

in the utilities and energy sectors, blurring the line between financial hedges and insurance risk pooling. [Some reinsurers such as Swiss Re](#) began exploring index-based solutions to service these industries, which evolved into the parametric products we know today. These products might offer payouts if winters were unseasonably warm or summers unseasonably cool, affecting energy usage patterns. Often seen as exotic and niche, they were purchased by large utilities clients with sophisticated risk managers seeking faster claims payouts and coverage certainty — particularly to manage the financial volatility tied to fluctuating energy demand. And these contracts were always an alternative risk transfer mechanism that complemented traditional coverage rather than replacing it.

In the late 1990s and early 2000s, agriculture became a potent proving ground for the parametric model, with products in both developed and emerging markets protecting farmers from low crop yields that can result from droughts or floods. Governments and development agencies stood up parametric-based programs aimed at protecting smallholder farmers who might lack access to traditional commercial insurance markets, exemplifying a new and distinctly modern form of social safety net. Incepted in 2003, Mexico's CADENA program is a notable early example, providing government-subsidized parametric coverage based on rainfall thresholds at weather stations.

The Caribbean Catastrophe Risk Insurance Facility (CCRIF) launched in 2007 as the first multi-country, multi-peril parametric insurance risk pool in the world. Member countries could get rapid payouts when trigger thresholds were crossed for hurricanes, earthquakes, or excess rainfall. By this time, advances in climate modeling and hazard data were improving the viability — and complexity — of a range of innovative parametric structures. CCRIF's success inspired other parametric risk pools, such as the African Risk Capacity (ARC) established in 2014 to insure African Union member states against drought and other perils. These regional pools underscored how parametric insurance could help close protection gaps in disaster-prone, underinsured regions.

[ARC faced a significant setback](#) during a drought in Malawi during the 2015–2016 growing season. With millions at risk of hunger, ARC's parametric drought insurance failed to

pay out. Rather than a direct weather observation like rainfall being used as a trigger, ARC was relying on a modeled simulation which estimated the number of people who would require food assistance, based on satellite-based rainfall estimates, crop growth models, and vulnerability and food security data. On the ground, severe crop failures and food insecurity were playing out, while in the model the estimate of people impacted was far lower — and crucially below the payout trigger. No automatic payment was triggered, but widespread backlash and humanitarian need led to a negotiated payout.

The ARC saga underscores the central challenge in parametric insurance: basis risk — when real-world losses diverge from triggered payouts. It also spotlights two interrelated trends within the space that continue to shape its evolution. First, parametric products have grown increasingly sophisticated alongside advances in modeling, data resolution, and sensor technology. They now often borrow directly from the same catastrophe modeling frameworks used in traditional reinsurance. Second, many triggers have shifted from simple, observable indices (like rainfall at a specific weather station) to model-based simulations that estimate loss impacts across geographies and populations. These developments expand the possibilities for parametrics but also raise new questions about transparency and accuracy.

Clarity, complexity, and COVID-19

Throughout the 2010s, parametrics gained traction among large corporate buyers and reinsurers, while improved mobile infrastructure and digital distribution opened doors to individual consumers. Microinsurance programs reached millions of smallholder farmers across Africa, India, and Latin America with rainfall-based or vegetation-based drought protection. At the other end of the spectrum, products like AXA's Fizzy offered blockchain-enabled flight delay payouts — also an early example of the nascent blockchain hype that would explode after the pandemic — and startups like Jumpstart piloted earthquake coverage triggered by U.S. Geological Survey ground-shaking data. Yet despite growing interest and technical promise, many early ventures struggled to scale. Fizzy was quietly discontinued, and other offerings failed to convert

Weather derivatives were emerging in the utilities and energy sectors, blurring the line between financial hedges and insurance risk pooling.

enthusiasm into sustainable market share. The reasons often came down to a mismatch between the simplicity promised and the complexity experienced. Low awareness, distribution frictions, and discomfort with automated payouts — especially when no physical damage documentation was required — slowed adoption. In lower-income markets, public subsidies and NGO-led education helped bridge the trust gap. But in commercial contexts, confusion and skepticism persisted. Parametric insurance is often marketed on clarity and speed; ironically, it is the lack of clarity — for both buyers and capital providers — that has sometimes held it back.

Still, by the end of the decade, existing segments of the parametric market like natural catastrophe were coming into their own, and new products were coming to market. Several firms experimented with non-damage business interruption covers, where payouts could be triggered by events that didn't physically damage structures, such as citywide transit disruptions, cyber outages, or — crucially presaging COVID-19 — pandemics. While the markets for these early experiments hadn't matured in time to respond meaningfully to COVID-19, the experience spurred renewed attention to non-damage business interruption coverage. As Raveem Ismail, managing director of Trigger Parametric, observed, "The insurance world has a total obsession with property damage. When I was a terrorism reinsurance underwriter, I kept asking, 'Why are we so obsessed with property damage?' With terrorism, those who suffer aren't necessarily at the epicenter of an attack. The business interruption coverage alone is huge. But you needed a bullet hole through the window for policies to pay out the non-property part of the cover." That narrow focus became especially problematic during the pandemic, when countless businesses experienced crippling losses without suffering any physical damage. Parametric triggers tied to operational disruption — once seen as speculative and abstruse — now appeared vital, even overdue.

In the years following the pandemic, the global parametric insurance market has seen substantial growth, with annual gross premiums rising from [\\$11.7 billion in 2021](#) to an [esti-](#)

[mated \\$16.2 billion in 2024](#). While still a pittance compared to the broader reinsurance market, the pace of growth in recent years is nonetheless impressive and is expected to continue, with projections [reaching upwards of \\$50 billion by the mid-2030s](#). If earlier generations of parametric products revealed the challenges of aligning triggers with real-world losses and communicating coverage clearly, the postpandemic years have brought sharper tools and more experienced players to the table. Improvements in both data granularity and modeling, ranging from hyper-local weather feeds to high-resolution

wildfire and flood models, have helped firms better align trigger conditions with underlying risk. The result is not just a broader range of perils that can be covered, but also a growing confidence among capital providers and brokers that parametric coverage can be both accurate and explainable.

New triggers, new players

This shift is exemplified by a new generation of MGAs applying advanced modeling and data design. Kettle, for example, underwrites wildfire risk using a "Fire-in-Parcel" approach. "We take the polygons of the footprints of wildfires, mapped out in detail, and map those against tax assessor parcel coordinates,"

said Espinoza. "We know something triggers when the fire enters that perimeter." Because wildfires often result in total losses when they affect a property, Espinoza argues, the clarity of fire perimeter data makes basis risk more manageable than in many other perils: "Other perils may need a weather station. With wildfire, we can use perimeter data — it's much more precise." The company also structures reinsurance using square grids to help cedants manage regional risk concentrations. "They might find certain areas are overconcentrated," Espinoza explained. "So they buy wildfire protection which helps soften the blow and protect against extreme exposure concentrations."

Weather perils — especially temperature, precipitation, and snowfall — have long been the bread and butter of parametric insurance, but recent years have seen a shift toward more refined and structured applications. Arbol, originally

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focused on agriculture, has grown into one of the most prolific platforms in the space, offering parametric products across sectors from energy to commercial property. COO Alexander Isakov emphasized how the market has evolved: “Four years ago, there was almost no uptake outside of CAT. We had to do a lot of customer education. But now we’re getting a lot of inbound interest — especially from agricultural firms looking to protect things like pecan farms or hay from excess rain.” Arbol has also introduced second-generation parametric designs — multi-trigger structures that combine multiple environmental indicators to more closely match actual exposure, such as interactions between rainfall volume and temperature.

Demex, by contrast, focuses on modeled aggregates for insurance portfolios exposed to weather risk including severe convective storm (SCS), with plans to expand into winter storm coverage. Their RCR Re product introduces a parametric form of stop-loss reinsurance, designed not to protect solvency after catastrophe, but to smooth earnings volatility at lower layers of the coverage stack, which traditional reinsurers have increasingly shunned as secondary perils grow more unpredictable. “It’s technically a parametric product, but it behaves more like an aggregate indemnity layer,” said EVP Charlie Eadie. “We take observed weather and translate it into modeled loss, then trigger off that.” By calibrating models with insurers’ own claims data, “we ingest geolocated claims and regress against historical weather.” Demex aims to reduce basis risk and align the trigger closely to expected loss. Several clients have already received payouts under Demex policies this year, with quarterly settlements tied to observed weather data and modeled losses. While uptake remains cautious (typical of a risk-averse industry), early recoveries that align with actual indemnity outcomes are beginning to build credibility and interest.

Building trust in a fragmented market

For Ismail, whose firm Trigger Parametric designs parametric contracts for natural or man-made perils, distribution is king. Echoing AXA’s experience with Fizzy, he cautions that

“insurance is the ultimate ‘build it and they will not come’ industry. Even if your product is more accurately modeled to reflect the real risk, this will not drive market traction.” He warns that focusing on product design before confirming distribution leads to “a garage full of white elephants nobody will ride.” In his view, the real challenge is not modeling — it’s selling. “Models can be built in two days flat,” he quipped. The harder task is earning trust — both from the buyer and the capital provider — and walking the buyer through the logic of coverage. “A good broker will take the insured on the journey of recognizing their pain, articulating it, and manifesting it in the desire and budget. That’s where the broking comes in and needs to shine.”

That journey unfolds within a distribution ecosystem far more complex than a simple seller-buyer relationship.

While uptake remains cautious (typical of a risk-averse industry), early recoveries that align with actual indemnity outcomes are beginning to build credibility and interest.

While parametrics promise clear and rapid payouts, their delivery today often mirrors the traditional complexity they sought to supplant. As Sam Knee-Robinson, a Lloyd’s capital and emerging risk broker at Guy Carpenter, put it: “The value chain is changing.” Parametric products are stepping into spaces where traditional reinsurance has pulled back, especially on aggregate layers. “Parametrics can fill a space where traditional products have fallen away,” he noted. But that opportunity brings its own challenges. Many MGAs “act as quasi-brokers,” originating deals and sometimes bringing capital to the

table — but often face what Knee-Robinson calls a portfolio construction problem: the difficulty of assembling a balanced, modelable book that capital providers will trust. Without the scale or track record of incumbents, newer players must work harder to align risk appetite, modeling, and capacity.

Knee-Robinson describes the current moment as a cold start problem: “How do you sell a new product? Someone has to take a leap of faith on both sides of the transaction.” Trust in brokers remains paramount: “People trust a Guy Carpenter or Aon — but it takes longer to trust newer entries.” For buyers, the landscape is equally daunting. “You might talk to four or five MGAs, each with different models and data sources. The onus is on the buyer to sort it out.” Unlike the Insurance-Linked Security (ILS) space, where shared frameworks like

AIR and RMS lend consistency, the parametric market lacks modeling standardization. As more MGAs, reinsurers, and data providers enter the space, the simplicity of the trigger is often counterbalanced by complexity in the deal. Distribution remains king — but in this era, brokers must also serve as translators and educators for both sides of a deal.

Despite this complexity, parametrics have proven to be more than a novelty limited to edge use cases. With a dynamic market teeming with agile startups earning partnerships with huge incumbents and Lloyd's syndicates, observers see a potent combination — incumbents bring capacity, global data, and trust, whereas startups bring novel ideas and digital-first distribution. All along the way, regulators and rating agencies have become more trusting of parametrics, greatly increasing their viability as more buyers integrate them into their capital stack. This convergence of trust, innovation, and capital comes at a moment of mounting pressure on the global risk landscape. Climate change may be the most visible driver, but it is far from the only one. From cyberattacks to grid strain, from pandemics to geopolitical tension, the risks facing businesses and governments have grown more complex, interdependent, and frequent. In this context, parametric insurance is no longer just an exotic alternative — it is becoming a strategic tool for risk managers, CFOs, and policymakers. Whether backing public disaster pools, smoothing quarterly earnings, or protecting against emerging perils, parametrics are increasingly seen as one arrow in the broader quiver of financial resilience.

As the parametric market continues to grow and diversify, the next frontier may lie not just in what types of risks can be covered, but in how seamlessly these products can be integrated into the financial and operational fabric of risk-bearing institutions. ●

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DEVELOPING NEWS

Government Databases at Risk: Changes to Federal Data-Related Practices Present Potential Challenges for Insurers

By JIM WEISS

Several databases of potential interest to insurance companies were affected by federal policy and staffing changes in 2025. The most widely reported in insurance trades was the National Oceanic and Atmospheric Administration's (NOAA) billion-dollar weather and climate disasters database, which NOAA announced it would no longer update beyond 2024 (although archives would remain available). AM Best warned that this could adversely impact insurers' ability to price "secondary" perils such as severe convective storms and wildfires.

NOAA isn't the only agency facing problems; the National Weather Service (NWS) reportedly lost more than 500 employees through layoffs or early retirement incentives, resulting in reduced overnight forecasting and fewer weather balloon launches. Amid concern around the potential for this to impact disaster preparedness and forecast accuracy, NWS began rehiring in June. Datasets most typically used for catastrophe bond triggers, such as the U.S. Geological Survey earthquake report and National Hur-



ricane Center tropical cyclone reports, do not appear to be affected. Private firms are expected to address some of the other data-related challenges. It will take time, however, for them to build sufficiently robust datasets and to establish the trust of interested stakeholders on the level of NOAA.

It's not just meteorological and climatological data that's being affected; in April the Bureau of Labor Statistics reportedly pared back the extent of data collection used to produce the consumer price index (CPI) and discontinued approximately 350 producer price

indices (PPI). Federal health agencies also reportedly removed several datasets and webpages following January executive orders pertaining to DEI and gender. Lawsuits helped restore access to some of the information in question. Amid the volatility, some concerned organizations — mostly nonprofits — are painstakingly laboring to mitigate potential data loss by capturing and archiving vulnerable government data via web scraping and other means.

What this means for actuaries:

When it comes to frequently used da-

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tasets, it can be easy to take for granted certain considerations in Actuarial Standard of Practice (ASOP) No. 23, such as internal consistency (3.2.b.2), sampling methods (3.2.b.7), and significant known limitations (3.2.b.5) including sufficient currentness (3.2.b.1). Because of the uncertainty surrounding the availability and continuity of government data,

actuaries should brush up on ASOP No. 23 — including its guidance regarding availability of alternative data sources (3.2.b.6). This may be particularly timely for econometrics such as CPI or PPI, which likely hold value in assessing loss cost impacts of recent economic policy changes such as tariffs.

Beyond firsthand use of data,

actuaries may also consider whether vendor data sources are reliant on any of the affected datasets. Although recent developments appear so far to have minimal impacts on reinsurance and catastrophe bonds, were this to change, actuaries would likely play some role in reengineering these instruments so they can continue functioning. ●

Canadian Consolidation: Definity Acquires Travelers Canada, Beneva Merges With Gore Mutual. Who's Next? By ERIN LACHEN

The Canadian P&C insurance industry is consolidating through strategic mergers and acquisitions. In a recent deal worth \$3.3 billion, Definity's acquisition of Travelers Canada boosts Definity's gross

written premiums (GWP) by roughly one-third to \$6 billion and moves it from the sixth to the fourth-largest P&C insurer nationally. This acquisition adds \$1 billion in personal lines and \$600 million in commercial lines premiums,

substantially broadening Definity's risk portfolio. Central to Definity's strategy was its 2021 demutualization — the first in Canadian P&C history — which unlocked access to capital and enabled participation in large-scale consolidations.

Meanwhile, Beneva, Canada's largest mutual insurer, announced plans to merge with Gore Mutual, one of the country's oldest mutual insurers, allowing the insurers to scale without demutualizing. The merged organization will have close to \$8 billion in total premium volume across life and P&C lines, with about \$3 billion in P&C premiums, positioning Beneva-Gore among the top 10 P&C insurers nationally. The merger preserves Gore's 180-year heritage and mutual governance, highlighting consolidation achieved through a merger rather than an acquisition.

More broadly, several international insurers — including Farmers, AIG, Al-



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lianz, and CNA — have recently reduced their Canadian operations. Between the complex Canadian regulatory environment and climate-imposed shifts in risk, these insurers no longer see a path forward in Canada, leaving fewer options for insureds.

What this means for actuaries:

These moves highlight the role of tech and data — modern technology facilitates these deals and enables the companies to more quickly leverage their newfound resources. Consolidation

enables scale to address the ever-present challenges of economic uncertainty, demographic shifts, and compliance costs. With greater capitalization, these larger companies are better able to weather the insurance cycle, providing confidence and protection for their customers.

These mergers and acquisitions will continue to evolve the Canadian insurance market. The P&C insurance industry has several foreign players who may decide to pull out of the market, keeping an eye on whether they can manage to support their scale within the Canadian

market with increasing insurance risk. For customers, while lower prices due to economies of scale and expense reduction are possible, it is more likely that less competition and fewer options will result in higher prices. For actuaries, this reinforces the need to consider portfolio diversification and adequate capitalization. The impact of climate change on insurers' books is also becoming a higher priority, especially for those companies that are more geographically diversified. ●

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This Line of Business Posted a 49% Loss Ratio in Calendar Year 2024 Despite Declining Premium

By SARA CHEN

Directors & Officers (D&O) Liability saw its best calendar year (CY) loss ratio in over a decade at 49% for CY 2024, despite three years of declining direct written premiums (DWP). To make sense of these results, let's take a look at the insurance cycle and how the D&O market has ebbed and flowed with it:

- CYs 2016 – 2019: The insurance market was in a soft phase. D&O insurers noted rising claims severity, particularly from securities class actions and event-driven litigation. There is still a disproportionate number of open claims from these

years, indicating potential future adverse development.

- CYs 2020–2022: The insurance market entered into a hard market phase with significant price increases and stricter underwriting standards. The rise in D&O rates stemmed from increased securities litigation, pandemic-related bankruptcy concerns, and a surge in initial public offering (IPO) and special-purpose acquisition companies (SPACs) activity.
- CY 2023 to Present: The D&O insurance market is cooling, with prices declining as competition

rises — the number of carrier groups participating in the U.S. market increased from 45 in 2019 to 58 in 2024. Securities class action litigation filings fell to around 200 annually in 2021–2024, down from 400+ in 2017–2019. Fewer IPOs and SPACs further drive rate and premium reductions.

While the D&O market as of mid-2025 is still a buyers' market, signs of a shift are emerging. Premium reductions have started to slow, and macroeconomic pressures such as inflation and geopolitical risk concerns add further complexities to the outlook.



What this means for actuaries:

The foundation of a pricing actuary's role is setting rates based on anticipated losses and expenses. However, external and competitive forces, such as the insurance underwriting cycle, play a significant role when the price goes to

market. As Sholom Feldblum, FCAS, FSA, MAAA, states in his paper, "Underwriting Cycles and Business Strategies," "actuaries indicate rates, but the market sets prices."

An interconnected relationship exists between pricing strategy and the

underwriting cycle, and the strength of this relationship depends on the line of business. Lines such as personal auto and homeowners are less responsive to the fluctuations of the underwriting cycle due to factors such as regulatory oversight and inelastic demand. Conversely, commercial and specialty lines, such as D&O, are more susceptible to swings in the cycle due to sensitivity to macroeconomic conditions and market competition.

Actuaries who understand the underwriting cycle can serve as valuable business partners to their companies. When looking at historical results through the lens of the underwriting cycle, patterns and trends can be uncovered that show how a particular line of business responds in each part of the cycle. This in turn can help guide actuaries and their business partners in deciding how much rate to take in the future, and when. ●

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What Could Possibly Go Wrong With Actuarial Humor? By JIM WEISS

A while back I was scrolling through my LinkedIn feed, when a video of a standup comedian caught my attention. It received a lot of engagement from my network. “Our neighbors are super cool, and we’re very close with them,” the comic said in the video. “They all have real jobs ... [One of them] is an actuary. I thought that was with birds.” I chuckled and even streamed his Netflix special, “Your Friend, Nate Bargatze.” But when I reflected on it afterward I wondered, “Why are actuaries more likely to be the punchline than punchy?”

There is no concrete formula for funny, which may be one reason many actuaries (including myself) often end up on the wrong side of jokes. Studies show the actuarial profession disproportionately attracts introverts.¹ The serious nature of the work does not always call for laughs. Actuaries are scientists, and insurance is the business of helping people through tragedy. Precept I of the Code of Professional Conduct requires actuaries to “act in a manner ... to uphold the reputation of the actuarial profession.” If there were a formula for funny, these conditions would not likely be the ideal values to plug into it.

Despite this, I did not need to think long or hard to identify actuaries who bring down the house. At the CAS Spring Meeting, past CAS president Frank Chang, PhD, FCAS — who is VP of applied science at Uber — explained the intricacies of making napalm and “dead grandmother [AI] exploits” to a ballroom packed with actuaries. Melissa

Huenefeldt, FCAS — who is a consulting actuary at Milliman and chair of the CAS Professionalism Education Working Group — brought to life “Claire, FCAS,” a Michael Scott styled consultant who “does reasonableness checks in [her] sleep.” Xinyi (Cindy) Hu, ASA, actuarial associate at Mutual of Omaha, opened LinkedIn’s eyes to similarities between underwriting and dieting. Kyle Bartee, ACAS, founder and CEO of Aviator Ops Ally, derided my soda drinking habit in the middle of an unrelated Zoom call. None were reported for violating the Code (that I know of), and I remember the points they were making better than most I make.

So I asked Chang whether, like me, he would like to see the profession become funnier. “I would like to see actuaries get better at communication, whether that’s with or without humor,” he replied. “I feel the profession needs to march forward on understanding the message, being partners who can communicate important ideas, [and] having good business judgment on how to get folks aligned on a decision.” But, Chang added, “A message is easier to swallow with a dose of joy.”

What is the most terrible part of your day?

Not everyone strikes comedic gold right out of the gate. “[Humor] is not something you develop immediately,” says Chang. “Some people naturally like to joke, so they get a lot of failures in, and if they get a lot of these reps, then you can figure out what success looks like.” Success takes different forms. According

to Bartee, “Even if people are just giving you a courtesy laugh, they acknowledge that you put yourself out there and risked nobody laughing. They appreciate the effort to break the ice, break the tension, and get a conversation started.”

“I’ve gotten some groans and I’ve taken that feedback to heart,” adds Huenefeldt. “But sometimes those groans are just as funny as the laughter.”

Hu likes to wield a particularly pointed icebreaker. Her Actuarial Joke Series on LinkedIn received thousands of reactions — “some laughs, a few groans, and at least one person questioning their life choices,” she says. The first installment dealt with her practice area, but when she navigated into less familiar ones, she started workshopping ideas with AI. “ChatGPT is still in the process of learning human humor, and it’s not 100% there yet,” says Hu. “It’s a great source for brainstorming ideas and sparking creativity, but it’s not capable of delivering final, polished results on its own. It works best as a collaborative tool alongside human input.” So she moved on to people. “At in-person events, I was able to chat with actuaries in all kinds of functional areas. I asked them, ‘What is the most terrible part of your day?’ — not only to gather material, but also as a perfect way to break the ice.”

The question resonates personally with Hu. “During my first 18 years, I used humor as a coping tool [for bullying personalities] because if they said something mean and I reflected it back positively, it lost its sting.” This approach scales from classrooms to boardrooms. Chang gives the example of a negotia-

¹ <https://www.slideserve.com/Gabriel/personality-types-of-actuaries>.



tion initiated by a 15-minute tirade from one of the sides. The other side paused and joked, "Well that's a bit of an aggressive way to start a negotiation!" "It took all the tension out of the air," Chang says. "But it also sent the message, 'We want to get common ground and starting like that takes away from that.' Humor defused the situation and got the discussion back on track."

Feeling alive (or at least not as drained)

Effective quips help ensure key messages and agreements are not locked in conference or Zoom rooms after meetings wrap. "I will admit professionalism is not the most exciting topic, even though I am passionate about it," says Huenefeldt, whose working group delivers over 100 hours of professionalism programming each year. Her team's offerings include games such as Professionalism Bingo as well as sketches such as Lights! Camera! Professionalism! (where "Claire, FCAS" was born). "Certain tools help people learn," she adds. "For example, music is a good way to

deliver a message. I know lyrics to songs I learned 30 years ago. Humor is similar. If you can take a topic that is dry or boring and make it more fun, then you're getting your message in, and people are picking up on it."

The element of surprise, which is the driving spirit behind most punchlines, also snaps people out of brain fogs that descend on monotonous settings. For example, most attendees at the Spring Meeting didn't expect Chang to be lecturing about grandmas making napalm, but it perfectly accentuated a broader point he was making about the fragility of AI.

"A little humor here and there can make long meetings feel less painful," says Hu. "Even a small joke reminds people, 'We're still here, still alive — not completely drained.'" However, don't let the setup drag on long enough for boredom to creep back. "The goal is to give enough context so that people understand what you're talking about. Deliver the punchline and do it efficiently," says Bartee. "No one wants to listen to a 30-minute story where the

punchline is 'and then the soda sprayed him in the face,'" he said as I cracked open my second can of soda during our interview. Chang suggests the SUCCESS framework to make ideas "stick" (from the eponymously titled book): simple, unexpected, concrete, credible, emotional storytelling.²

Reading the room effectively amplifies success factors. "Picking up on situation-specific things shows you are more malleable, less rigid, and able to roll with the punches," says Huenefeldt. "For example, it is really powerful when you pick up things other people said earlier and reference them in your own material." Hu notes pop culture references and analogies also help personalize facts and figures. "Actuarial concepts are rarely concrete, but when you compare them to something from everyday life, people can relate to this better," she says. "Most people feel the same way about their weight as actuaries do about loss ratios [wanting them to go down without doing work], so they can relate the two."

Bartee and Huenefeldt both suggest puns as a simple and effective tool to

² <https://thinkinsights.net/consulting/success-framework>.

experiment with humor, and one that particularly resonates with actuarial audiences. “Because we have such deep subject matter expertise that not many other people understand, when we’re among other people who understand that nerdiness, we can throw out really nuanced puns,” he says, like “applying CTRL+Z” to retract his own suggestions. While inside jokes likewise abound for broader insurance audiences on topics ranging from trampolines to “policy administration PTSD,” Bartee cautions: “People might not find that funny in other circles. Actuaries see the world in shades of risk.”

Intersection between the 10-year-old mindset and that of an actuary

I asked my personal comedy icons where they have found inspiration. Hu became motivated to develop a joke series after finding joy in actuarial valentines that *AR* contributor Nate Worrell, FSA, client relationship actuary at Moody’s, posted on LinkedIn. Huenefeldt cites her father’s dry wit as something that influenced her style, while Bartee cites his children. “Dad jokes are my jam. They really kill with an audience of 10-year-olds, and there’s a weird intersection between the 10-year-old mindset and the actuarial mindset,” he says of deadpan humor. Chang is inspired by comics such as Jim Gaffigan, Brian Regan, and Steve Martin — whose master class he recommends. Streaming or paying closer attention to the humorous people in your life can help you understand your sense of humor and what makes you laugh. A good rule

of thumb cited in some comedy tutorials is to make yourself laugh first — if you don’t find your jokes funny, others won’t either.³

Hu sees authenticity as a core part of being funny, even if that means being authentically ironic. She states, “My comedic style does not try too hard to cater to other people’s tastes. I just try to be myself. If you find me funny and enjoy it, that’s great. If not, that’s OK. Just move on,” she says. Hu sees the jokes as a reflection of who she is outside of work, and jokes lose their momentum or charm when they feel forced or ingenuine. Huenefeldt similarly advises starting with topics you know well because it allows you to speak more genuinely and improvisationally.

Chang suggests being true to your risk appetite. “If you are at a point in your career where you are trying to move up very quickly, you may have a much tighter risk appetite,” he says. “Some people may also have a lower appetite because they want to present themselves in a way that everything they say has credibility. Those folks won’t try humor, because that seriousness is part of their brand.”

Besides occasional embarrassment or awkwardness when a joke flubs, humor carries additional risks actuaries should factor into their appetite. Self-enhancement, which focuses on everyday situations and good-natured ribbing, is generally viewed as safer than self-deprecation, although the two are not mutually exclusive.⁴ “Self-deprecation has a bunch of ways it could go wrong,” says Chang. “One is if it’s not

genuine. If your brand is as a leader and you self-deprecate, people may think, ‘That’s not how I see you,’ and it won’t be funny. On the other hand, people could start believing the self-deprecation. You may stop getting assignments because of things you literally said about yourself.”

Prolonging moments of laughter and joy

Our experts generally agree that experimenting with humor, despite its inherent risks, is worthwhile. “Constantly remind yourself that the goal is to make human connections, not business connections,” says Bartee, drawing upon the well-known “yes, and ...” comedy technique of piggybacking off others to prolong moments of laughter and joy.⁵ “Imagine people sitting around a table, and you’re drawing imaginary lines between two different people whenever you can relate their stories to each other. The more you can do that — the more lines and intersections — the more of a web it becomes. And the more connected that group becomes, the more of a friend social circle that becomes. You make so many different connections with people, and that’s how you bond.”

Consider me appreciative for the four bonds I made while pursuing this article. And, by the way, it turns out someone actually did develop a formula for funny.⁶ ●

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

³ <https://www.success.com/humor-in-the-workplace/>.

⁴ <https://www.forbes.com/councils/forbescoachescouncil/2019/02/28/using-humor-to-build-a-high-performing-workplace/>.

⁵ <https://www.forbes.com/councils/forbescoachescouncil/2019/02/28/using-humor-to-build-a-high-performing-workplace/>.

⁶ <https://www.apa.org/monitor/jun06/formula>.

ETHICAL ISSUES

Actuarial Judgment

By MIKE SPEEDLING AND KENNETH HSU, MEMBERS OF THE CAS PROFESSIONALISM EDUCATION WORKING GROUP

The Professionalism Education Working Group is frequently asked to publish articles on topics related to actuarial professionalism, including clarifying how the Code of Professional Conduct and the Actuarial Standards of Practice (ASOPs) apply in various scenarios. Our work explores key aspects of professionalism, emphasizing the importance of integrity, accountability, and adherence to professional standards in all areas of actuarial practice.

If you need counseling resources, the Actuarial Board for Counseling and Discipline is available at abcdboard.org. To make this truly a learning and professionalism experience, we want your feedback. You can send your comments and questions to ar@casact.org.

Actuarial judgment is the disciplined application of experience, expertise, and ethical reasoning to make informed decisions in complex situations. Good actuarial judgment is not a single moment of insight; it's a pattern of thoughtful, consistent decision making from both experience and integrity.

But what is actuarial judgment?

The Actuarial Standards of Practice (ASOPs) don't define "professional judgment." Instead, they refer to what is needed to exercise it by providing an analytical framework.

ASOP 1, Section 2.9 "Professional

Judgment" states:

"Actuaries bring to their assignments not only highly specialized training, but also the broader knowledge and understanding that come from experience. For example, the ASOPs frequently call upon actuaries to apply both training and experience to their professional assignments, recognizing that reasonable differences may arise when actuaries project the effect of uncertain events."

How, then, should actuaries understand the relationship between professional judgment and the standards of practice? ASOPs provide a framework where actuarial training and experience, resulting in actuarial expertise, enables the application of professional judgment when performing actuarial services.

Professional judgment is not subordinate to the ASOPs, but married to them to form a cohesive, happy union. ASOP 1 clarifies this union by stating that "while ... ASOPs are binding, they are not the only considerations that affect an actuary's work." Those other "considerations" include "the actuary's own professional judgment informed by the nature of the engagement." In other words, ASOPs are not substitutes for professional judgment. They are predicated upon its proper application.

However, ASOPs do not give free rein to individual judgment, no matter how expert it is. Instead, ASOPs

discipline the exercise of judgment. For example, ASOPs "allow for the actuary to use professional judgment when selecting methods and assumptions, conducting an analysis, and reaching a conclusion," but within the parameters of what a particular ASOP requires an actuary to "consider, do, document, and disclose." This means different actuaries can successfully provide actuarial services in accordance with the ASOPs, yet they still "can reasonably reach different conclusions when faced with the same facts" because of their differences in actuarial judgment.

When actuarial judgment is such that the actuary wants or needs to deviate from an ASOP, then they should disclose and document this occurrence, including the nature, rationale, and effect of such a deviation.

The ASOPs might suggest loss development recommended practices, but the selection of the methods and factors themselves might be actuarial judgment. Another way of depicting this is that ASOPs are a toolbox. But deciding which tool, the size of the tool, or if you need to find a new tool is actuarial judgment.

When is judgment used?

Actuaries build up a case about the level of pricing or reserves needed using data (evidence) and a scientific process. We act more like detectives than judges. So where does judgment fit into the process?

At different points in the process, decisions need to be made. Whether they are about data credibility and complements, when to choose between responsiveness or stability, or which other experts to rely on, actuaries are responsible for deciding which evidence to use and how to use it.

Actuaries must apply actuarial judgment to make appropriate and reasonable choices and come to sensible conclusions when performing actuarial services under the constraints of limited time and information. In doing this, other things need to be considered, like the line of business specifics, the business and social environment, company goals, ethical considerations, and what we've learned from our education and

8. Communication skills

First, **education and qualification exams**. Actuaries need a solid foundation in mathematics and statistics. They must pass a series of exams, which include topics like statistics, financial mathematics, ratemaking and loss reserving, insurance regulation, predictive modeling, and more. These exams are extremely rigorous, and even the most successful actuaries often fail one or more of these exams.

Second, they further strengthen their judgment with **continued lifelong learning**. As with many professions, continuing education is not just a requirement for upkeep of their credentials but is important so they can be informed of technological, regulatory,

raw data.

Fourth, **practical experience**.

No exam or textbook can fully prepare actuaries for real-world complexity. Over time, hands-on work with actual data, collaborating across departments, and seeing how past decisions play out in real time help sharpen actuarial judgment. Practical exposure brings nuance to methods that may appear straightforward in theory.

Fifth, **critical thinking skills**. Good actuaries question assumptions, test edge cases, and consider alternative models or scenarios. They avoid blanket application of methods and models; instead, they evaluate whether results make sense in the real-world context. This habit of thinking critically, even skeptically, is one of the most important elements of developing good actuarial judgment.

Sixth, **mentorship**. Learning from experienced actuaries accelerates growth. Mentors share not only technical insight, but also how they made tough decisions, handled uncertainty, communicated effectively, or even what they learned from past failures. Through mentorship, younger actuaries gain perspective that would otherwise take years to develop on their own. And for mentors, the process offers a chance to reflect on their own careers — consolidating years of experience into lessons that clarify what has shaped their professional judgment.

Seventh, **ethics**. Sound judgment is not only about being correct. It is also about being responsible. Actuaries handle sensitive data and make decisions that affect pricing, fairness, and public trust. Ethical grounding ensures their judgment serves not just their employers, but also policyholders,

No exam or textbook can fully prepare actuaries for real-world complexity. Over time, hands-on work with actual data, collaborating across departments, and seeing how past decisions play out in real time help sharpen actuarial judgment.

experience. When the process is close to completion, actuaries need to step back and look at their work and come to practical conclusions and recommendations.

How to develop actuarial judgment?

Judgment is generally developed from eight main categories:

1. Education and qualification exams
2. Continued lifelong learning
3. Understanding and intuition of the business
4. Practical experience
5. Critical thinking skills
6. Mentorship
7. Ethics

and scientific changes. The actuarial landscape is constantly changing, so actuaries need to stay informed.

Third, **understanding and intuition of the business**. While technical skill is vital, actuaries must develop a strong grasp of the industry they work in, whether it's auto insurance, workers' compensation, or emerging risks like climate change. This includes understanding how products are sold, how claims develop, how competitors behave, and how market conditions evolve. Over time, this connection deepens their judgment as they begin to recognize patterns, risks, and assumptions that may not be immediately apparent in the

regulators, and the broader public. As a self-regulated profession, actuaries must hold themselves to the highest standards of ethics.

Eighth, **communication skills.** No matter how strong an actuary's analysis is, it must be clearly explained to non-technical audiences. Good judgment includes knowing what to emphasize, how to tailor messages to different audiences, and when to simplify without misrepresenting.

Indicators of good actuarial judgment

In actuarial work, strong judgment can be difficult to measure directly, but here are clear indicators that suggest it's been well developed.

Consistent decision making: If your decisions regularly lead to outcomes that align with expectations or desired business results, it's a strong signal that your judgment is sound. In actuarial work, this might mean reserve estimates that remain stable over time or pricing decisions that accurately reflect emerging experience.

Confidence from others: Trust from peers, managers, clients, or principals is a major indicator. When others consistently seek out your input or rely on your assessments, it often reflects a history of solid, well-reasoned decision-making.

Ability to anticipate outcomes: Actuaries with good judgment can often foresee the likely consequences of various actions or assumptions. Whether it's anticipating reserve strengthening, shifts in claim frequency, or competitor responses to rate changes, this ability to project outcomes from known data reflects mature judgment.

Strong critical thinking skills: Good judgment requires the ability to assess complex, ambiguous situations and arrive at logical, defensible conclusions. This involves weighing evidence, recognizing biases, testing assumptions, and identifying what matters most in a sea of information and noise.

Learning from mistakes: No actuary gets everything right the first time. What separates those with good judgment is their ability to reflect on past

missteps, understand the root causes, and adjust their thinking accordingly. Growth through experience is a key component of sound decision-making.

Ethical decision-making: Actuaries are bound by professional codes and public interest obligations. Consistently making choices that align with ethical standards, especially when under pressure, demonstrates judgment that goes beyond technical correctness to consider fairness, transparency, and accountability.

Flexibility and adaptability: Finally, good judgment requires the ability to adapt. Actuaries must adjust their approach as new data emerges or when business needs or external conditions change. Being open to different perspectives and recognizing when to pivot is a sign of both humility and maturity in judgment.

Do you think you have good actuarial judgment? Have you met a colleague who consistently demonstrates good actuarial judgment? We want to hear your thoughts at ar@casact.org. ●

Monograph Author Explains Why Mixed Models Matter for Actuaries

In a new volume in the CAS Monograph series, "Practical Mixed Models for Actuaries," Professor Ernesto Schirmacher, FSA, PhD, of Bentley University proposes ideas on bridging credibility theory and mixed models to enhance actuarial practice with deeper statistical foundations. Mixed models, sometimes known as hierarchical models, offer advantages over generalized linear models (GLMs) by accounting for

group-level variability and correlation within clustered data. This leads to more accurate and generalizable inferences.

Kenneth Hsu, FCAS, a member of the Monograph Editorial Board, discusses the development process, the importance of interdisciplinary connections, and the collaborative effort that helped bring this monograph to life with the author.

Kenneth: What motivated you to

write this monograph?

Ernesto: The motivation dates back to when I was first learning about GLMs. Steve Mildenhall's paper on minimum bias procedures (PCAS 1999 vol. 86) demonstrated a connection between those methods and GLMs. Still, these ideas weren't fully placed in a broader statistical framework. Years later, I encountered another paper by Frees, Young, and Luo (Insur. Math.



Ernesto Schirmacher

Econ. 1999) that connected credibility models to linear mixed models. That was a lightbulb moment. Actuaries and statisticians have often worked in parallel but siloed within their own disciplines. I wanted to bridge the gap and make the connections more accessible and practical for actuaries.

Kenneth: What is the main takeaway you hope readers gain?

Ernesto: I hope readers walk away with a clearer understanding of how credibility theory and mixed models are

technical backgrounds can follow the progression from the simpler to more advanced concepts.

Kenneth: What were the biggest challenges you faced while writing the monograph?

Ernesto: The hardest part was deciding what to include. I wanted to share all the code and computations so readers could replicate every result, but that would have made the monograph long and tedious. Striking a balance between transparency and readability was a real challenge. And it takes a few rounds of back-and-forth between multiple peer reviews to strike the right balance. Readers will be the ultimate judges.

Kenneth: What surprised you most during the process?

A strong grasp of GLMs will help, but I recognize many actuaries have only encountered them through exam preparation. That kind of exposure tends to compartmentalize understanding.

related. Even for those already applying credibility methods in practice, seeing how they connect to mixed models opens up new opportunities. That deeper insight can enhance both the theoretical grounding and the practical outcomes of their work.

Kenneth: What would you like readers to know outside of the paper to get the most value from the monograph?

Ernesto: A strong grasp of GLMs will help, but I recognize many actuaries have only encountered them through exam preparation. That kind of exposure tends to compartmentalize understanding. Real-life applications are different. The examples in the monograph are designed to encourage hands-on learning, and I hope even readers with modest

Ernesto: How far software has come. I tested examples using different tools — R, SAS, and others — and usually got consistent results. But in some edge cases, tools behaved differently. For instance, R flagged convergence issues while SAS didn't, yet after rescaling the data, both produced the same outputs. I've always been skeptical about whether these tools handle edge cases properly, so this kind of validation was both worrying and reassuring.

Kenneth: What advice do you have for those interested in contributing to CAS research?

Ernesto: Don't hesitate. Start writing down your ideas; it'll help you think more clearly and contribute meaningfully. People often ask, "Do I know

enough?" The truth is you probably do. There's always someone behind you who could benefit from what you've learned and published. And while your ideas may not feel revolutionary to you, they could be very impactful to someone else.

Kenneth: What's the biggest value-add to the actuarial research community?

Ernesto: I think it helps make the connection between actuarial methods and broader statistical frameworks feel more natural. It shows that by repurposing ideas across disciplines, we can innovate and expand our toolkit. Hopefully, this inspires more actuaries to explore beyond traditional boundaries.

Kenneth: How was your experience working with CAS volunteers and the Monograph Editorial Board?

Ernesto: Truly outstanding! From the beginning, I was paired with [you], who provided steady support and invaluable feedback. The reviewers were also fantastic, and their input helped shape the monograph into something much more complete. I'm deeply grateful to all of them and encourage readers to thank them if you see them at an event.

Kenneth: Finally, tell us something personal. Any interests or hobbies you'd like to share?

Ernesto: I have some quirky hobbies. I love learning new programming languages. Lisp, for example, is my favorite. Python gets a lot of praise, but Lispsers had many of those features ages ago! I also admire the elegance of mathematical typesetting and aspire to be a capable technician. I cook, though my culinary skill is quite limited. I also enjoy home projects, but I'm not allowed to go into Home Depot unsupervised! ●

The AI Moment in Insurance: How Actuaries Are Grappling With the Future

By DAN JACKMAN

The narrative around artificial intelligence (AI) is everywhere, from news sites to trade reports: a dizzying array of headlines, each more definitive than the last. One claims, “AI is coming for your \$100K job.”¹ Another cites a study predicting that 40% of agentic AI projects will be abandoned by 2027.² The narrative swings between breathless hype and cautious retreat, but beneath it all is an undeniable truth: AI is having its cultural moment, and it is rewriting the rhythm of nearly every industry, including ours.

This moment has arrived with a velocity unmatched in technological history. Consider this: ChatGPT reached 100 million users within two months, far outpacing the adoption curves of the internet and personal computers. Two years after its public debut, generative AI — in the form of tools like ChatGPT — achieved a 39.5% adoption rate, a milestone that took the internet a decade to reach and telephones nearly a century.³ Technology-related roles are among the fastest growing, with AI and information processing alone projected to create 11 million new jobs by 2030. This growth is a key driver of the fundamental shift in how humans and technology coexist.⁴

The global AI market, valued at \$64 billion in 2023, is projected to surpass \$1 trillion by 2030, underscoring how expansive its reach will become.⁵

But if AI’s promise feels limitless, its challenges are equally daunting. At the 2025 CAS Spring Meeting in Toronto, a town hall poll asked participants whether they had used AI in their work. More than half said they had not. While the statistic was only a snapshot, it pointed to a larger truth: in an industry built on risk analysis and predictive model-



Dave Cummings

ing, adoption has been cautious and progress uneven. CAS President David Cummings noted during the discussion that many companies have firewalls in place to block AI tools, aiming to protect sensitive company data.

AI is not just another technology; it is a revolution unfolding at a complex moment for humanity, where excitement about innovation and anxiety about unintended consequences are intertwined.

Yet for all its momentum, adoption has been uneven. Research from

MIT Sloan and the National Bureau of Economic Research (NBER) shows that AI adoption clusters in “superstar cities” and large companies within manufacturing and healthcare. In finance, insurance, and real estate — industries built on data and predictive modeling — AI’s high-intensity usage remains below 2%.⁶ Why is adoption so slow in sectors that seem poised to benefit most?

The answer lies partly in culture. Insurance, and its actuarial function in particular, is an industry defined by caution, evidence, and the rigorous assessment of risk. Actuaries, who specialize in quantifying uncertainty, are naturally skeptical of tools that promise much but often remain opaque. As CAS



Frank Chang

Board Chair and CAS past president Frank Chang, who has navigated nontraditional actuarial roles at Google and Uber, put it on the “Almost Nowhere”

podcast: “AI is transformative. But the replacement of humans by AI is where my skepticism starts. Human judgment calls are very difficult for AI to comprehend.”⁷

¹ John Hope Bryant, “Yes, AI Is Coming for Your \$100K Job. But It Could Build Great Jobs for Many More,” *Time*, July 31, 2025, <https://time.com/7306692/ai-taking-jobs-more-opportunities/>.

² Gartner, “Gartner Predicts Over 40% of Agentic AI Projects Will Be Canceled by End of 2027,” press release, June 25, 2025, <https://www.gartner.com/en/newsroom/press-releases/2025-06-25-gartner-predicts-over-40-percent-of-agentic-ai-projects-will-be-canceled-by-end-of-2027>.

³ Alexander Bick, Adam Blandin, and David J. Deming, “The Rapid Adoption of Generative AI” (working paper, Federal Reserve Bank of St. Louis, September 18, 2024), 3, <https://ctstate.edu/images/Forms-Documents/AI-presidential-fellows/The-Rapid-Adoption-of-Generative-AI.pdf>.

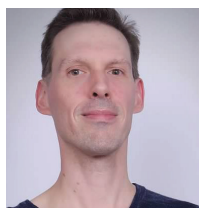
⁴ World Economic Forum, “Future of Jobs Report 2025” (2025), https://reports.weforum.org/docs/WEF_Future_of_Jobs_Report_2025.pdf.

⁵ Bloomberg Intelligence, “Generative AI 2024, Assessing Opportunities and Disruptions in an Evolving Trillion-Dollar Market” (2024), <https://assets.bbbhub.io/promo/sites/16/Bloomberg-Intelligence-NVDA-Gen-AIs-Disruptive-Race.pdf>.

⁶ Kristina McElheran et al., “AI Adoption in America: Who, What, and Where,” NBER Working Paper No. 31788 (National Bureau of Economic Research, October 2023), 1, https://www.nber.org/system/files/working_papers/w31788/w31788.pdf.

⁷ Alicia Burke and Max Martinelli, “Frank Chang, The Growth Set,” *Almost Nowhere*, June 4, 2025, podcast, <https://open.spotify.com/episode/20P2bA3SiW4dXI48biTwvS?si=zaOtzHc0RIW1SRMlgk4HAQ>.

The complexity of AI lies not only in its technical sophistication but in how it reshapes decision-making itself. One insurer may find an algorithm excellent at predicting which claims will escalate but lacking the nuance to understand the context of a vulnerable customer's situation. Another may discover that AI models can flag anomalies in reserving data but still require an actuary's judgment to interpret what those flags mean within a business and regulatory



Jim Weiss

environment. This friction reminds us that actuarial work is not just about data; it is about understanding people, policy, and the consequences of decisions.

Jim Weiss, FCAS, [outlined four scenarios](#) in a 2023 issue of *Actuarial Review* — Doomsday, Groundhog Day, Training Day, and Judgment Day — to describe actuaries' uncertain futures in an AI-driven world. Each scenario reflects a nuanced vision of coexistence between humans and machines.⁸



Josh Meyers

Today's reality can be a blend of all four. AI is neither a perfect solution nor an existential threat. It is a negotiation, an evolving balance between human expertise

and technological capability.

At its core, this negotiation requires

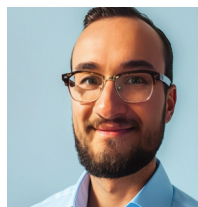
cultural change. Josh Meyers, FCAS, who helped design the CAS Institute's (iCAS) AI Fast Track Bootcamp, captured this on a recent "Almost Nowhere" podcast: "The AI Fast Track built a community. It wasn't just about learning AI, it was about collaboration, sharing insights, and practical use cases."⁹ Technology may be revolutionary, but its adoption demands human skills — communication, collaboration, and strategic thinking — as much as computational power.



Alicia Burke

Recognizing this, CAS and iCAS have stepped into roles as guides and facilitators. Alicia Burke, director of portfolio at iCAS, put it plainly:

"AI isn't a topic you just learn once and walk away. The topic is complex and will be evolving for decades to come. This is exactly why we built the AI Fast Track with a vibrant community discussion board. We want individuals to feel welcome to share their successes and challenges with one another to further build the profes-

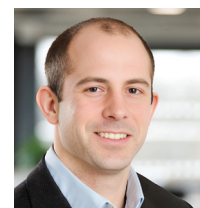


Sergey Filimonov

sion." This reflects the thoughtful, incremental approach required to integrate AI within the cautious world of insurance.

Sessions at recent CAS Annual, RPM, and Spring Meetings further illustrate how actuaries are engaging with

these complexities. At the 2025 RPM Seminar in Orlando, Sergey Filimonov explored the promise and challenges of using large language models and unstructured data. "The models are black boxes, and that goes against the transparency that's valued in actuarial work," he noted on the "Almost Nowhere" podcast. "There's a lot of really interesting discussion around some of these big open questions that we're figuring out."¹⁰ His reflection captures the tension between the appeal



Charlie Stone

of AI's capabilities and the actuarial commitment to transparency, nuance, and careful judgment.

These challenges and

opportunities are not limited to the United States. Globally, regulators are taking a keen interest in AI, from the European Union's 2024 AI Act's focus on transparency and accountability, to the NAIC's ongoing discussions on AI model governance. Charlie Stone, an actuary speaking at the Spring Meeting, demonstrated AI's potential in his "Bridging the Data Divide" session, detailing how U.K. regulators use machine learning to identify reserve deterioration and act faster than traditional methods allow. "AI tools highlight exactly where attention is needed," he said. Yet Stone was clear: technological innovation alone is not enough. Adoption requires cultural change and overcoming operational inertia, challenges often more significant

⁸ Jim Weiss, "Four Futures for Actuaries in the Wake of AI," *Actuarial Review*, July 13, 2023, <https://ar.casact.org/four-futures-for-actuaries-in-the-wake-of-ai/>.

⁹ Alicia Burke and Max Martinelli, "Josh Meyers, Actuaries in the Age of AI," *Almost Nowhere*, February 13, 2025, podcast, <https://open.spotify.com/episode/3FVgt2rsxnkrpMd7nm7ijjd?si=3G0uiOrORIGhtv3OQy3TPQ>.

¹⁰ Alicia Burke and Max Martinelli, "Sergey Filimonov," *Almost Nowhere*, February 18, 2025, podcast, <https://open.spotify.com/episode/3FVgt2rsxnkrpMd7nm7ijjd?si=3G0uiOrORIGhtv3OQy3TPQ>.



than the technology itself.

As Stone also noted on the “Almost Nowhere” podcast, U.K. regulators are already leveraging AI to monitor reserving practices while carefully balancing fairness and transparency requirements. For actuaries, these signals are clear: the era of AI governance is arriving, and their expertise will be essential in shaping how these systems align with public trust and regulatory expectations.

These barriers are echoed in recent research from the NBER, which found that successful AI adoption is slowed not only by technical challenges but also by entrenched human resistance and organizational inertia. Startups embracing AI often have younger leaders open to new methods, while large insurance organizations face the challenge of layered

processes and established workflows.

In many cases, incremental change remains the only viable path forward.

Technical obstacles, organizational resistance, and deeply rooted concerns about data privacy and security further complicate the journey. Insurance companies and actuarial teams grapple with the tension between innovation and the

tion.

Yet small, focused AI initiatives are making meaningful impacts. Consider the Air France-KLM Group, which began experimenting with 10 automation bots in 2016 and gradually scaled to 179 bots that now save 200,000 staff hours annually across customer service, cargo, and engineering operations.¹¹ The airline

AI is neither a perfect solution nor an existential threat. It is a negotiation, an evolving balance between human expertise and technological capability.

protection of sensitive customer data, facing the reality that even the most advanced AI cannot fully eliminate the risks associated with digital transforma-

tion. didn’t seek a sweeping overhaul; it invested in targeted, practical automation that freed staff to focus on higher-value work while improving workflows. For

¹¹ Karl Flinders, “Air France-KLM to Increase Intelligence of Bots That Saved 200,000 Hours,” *Computer Weekly*, July 3, 2025, <https://www.computerweekly.com/news/366627136/Air-France-KLM-to-increase-intelligence-of-bots-that-saved-200000-hours>.

actuaries and insurers, the takeaway is clear: meaningful AI adoption does not require grand transformation. It can begin with small, carefully chosen projects that align with operational needs while building confidence and capacity for broader innovation.

This tension between ambition and caution, between rapid technological change and the deliberate pace of trust, defines the insurance industry's relationship with AI. Yet the cautious pace of adoption is not shortsighted. Actuaries' commitment to deliberation, ethical scrutiny, and rigorous standards protects both the profession and the public.



Brian Fannin

A key challenge for the profession is understanding how Actuarial Standards of Practice apply to models that were not built by actuaries. Technology may

advance rapidly, but the profession's ethical foundation must remain firm.

Brian Fannin, ACAS, echoed this need for foundational clarity in predictive modeling. "Individual claim reserving and predictive modeling have similar objectives — to find predictive elements. Actuaries need to continuously update their predictive skill sets," he said on the "Almost Nowhere" podcast.¹² His insight captures the paradox of technological progress: innovation often requires a return to first principles, reinforcing the importance of human judgment and ethical frameworks, particularly in matters of data privacy, security, and bias.

Actuaries are not merely specta-

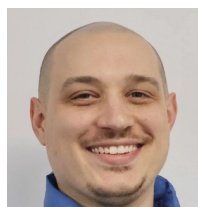
tors of this technological shift. Through initiatives like the CAS Institute's AI Fast Track program, they are actively learning how to distinguish hype from substance, ensuring the promise of AI's usefulness translates into meaningful, responsible action. The program opens by demystifying AI, reminding participants that beneath the buzz lies a set of

Innovation often requires a return to first principles, reinforcing the importance of human judgment and ethical frameworks, particularly in matters of data privacy, security, and bias.

sophisticated algorithms, not a replacement for human judgment. Sessions guide actuaries from the fundamentals of search techniques and rules-based AI to advanced discussions on machine learning, deep learning, and generative AI, equipping them with practical skills while emphasizing the irreplaceable value of domain expertise.

A key theme running through the Fast Track is that actuaries, with their grounding in data ethics and risk, are uniquely positioned to guide how AI

is implemented responsibly within insurance. In the program's capstone session, "Mind, Model, Morality," the discussion moves beyond technical



Max Martinelli

considerations to the ethical and philosophical implications of AI. It challenges participants to consider bias, judgment, and governance, ensuring that new tools

are used in ways consistent with actuarial standards and the public trust.

Max Martinelli, who co-designed the Fast Track, emphasized the importance of actuaries claiming their seat at the table as companies build AI strategies. "That domain knowledge is key," he said. "It's not the crunching of numbers, it's the domain knowledge, and actually

getting your hands dirty can really be part of the process."

He has consistently urged actuaries to resist the narrative that AI will replace them, advocating instead for a focus on practical, well-scoped applications that build confidence and demonstrate value. "We try to root ourselves in practical innovation," he explained. "It really just goes back to the fact that insurance risk is typically very multivariate in nature. It's about using the right tools for the right use case."

Martinelli also dispelled the notion that actuaries need to become AI engineers before engaging with these tools meaningfully. "You don't have to read a ton of textbooks to get started. You can learn by doing," he said, explaining that repeated, hands-on use is what gives people the knowledge to tie it to use cases.

Perhaps most importantly, he encourages actuaries to see the potential of their existing modeling skills to unlock new business opportunities and drive

¹² Alicia Burke and Max Martinelli, "Charlie Stone and Brian Fannin," *Almost Nowhere*, July 1, 2025, podcast, <https://open.spotify.com/episode/5mATz1FsAGoyDMZHC2Ao2y?si=kg70cmH1ROOPAnxbPMWcGw>.

organizational improvement. “Actuaries already have these powerful modeling skills, and more tools are coming out that allow us to model quickly,” Martinelli noted. “We can start using them to solve questions we’re already answering, better and faster.”

Taking the first step

For actuaries, embracing AI doesn’t require becoming engineers overnight. It begins with curiosity and participation: seeking out training like the AI Fast Track On Demand program or sessions from the 2025 iCAS Data Science & Analytics Forum, including “Reserve with Machine Learning” and “Tech for Pros: An Overview of Modern Ops.” It means attending CAS meetings with AI-focused sessions, testing small projects such as claims triage or reserving data exploration, and joining CAS and iCAS community discussions to learn from peers. It also means advocating for ethics and governance in your company’s AI roll-

outs, ensuring these tools align with the profession’s mission of protecting the public while delivering practical value. Where does this leave actuaries today? In many ways, at the center of a quiet but profound transformation. AI is neither a cure-all nor a curse. It is a powerful tool that, to be effective, requires careful judgment, critical analysis, and ethical rigor — traits that have long defined the actuarial profession. As organizations race to deploy AI tools, a clear message has emerged from the actuarial community and beyond: building these systems responsibly requires structure, accountability, and sustained oversight. It is not enough to launch a model and move on. The World Economic Forum called for the creation of dedicated heads of AI ethics to guide implementation, advocating for policies that keep models in beta longer, require thorough documentation, utilize external assessments, and commit to ongoing employee training. Sloan echoes this, urging leaders to treat AI not as a one-off deployment, but as a dynamic system that demands continuous scrutiny and adaptation.

This perspective resonates with Martinelli’s objectives emphasized in the CAS Institute’s AI Fast Track program. Actuaries, data scientists, and analysts increasingly seek not just to use AI tools, but to have a seat at the table as their organizations develop AI strategies and governance frameworks. Their message

this conversation evolving.” This is how actuaries, and indeed all professionals, will navigate the uncertainties of an AI-driven future.

It is this careful, collaborative negotiation between human expertise and technological innovation that may ultimately offer the world a valuable model: a thoughtful approach to progress that balances optimism with skepticism, anchored in ethics and wisdom. In a moment defined by rapid technological change, such a model is not just valuable. It is essential, and it is precisely the role actuaries have long prepared to play, ensuring that the promise of AI serves people first while safeguarding the trust at the heart of the P&C profession.

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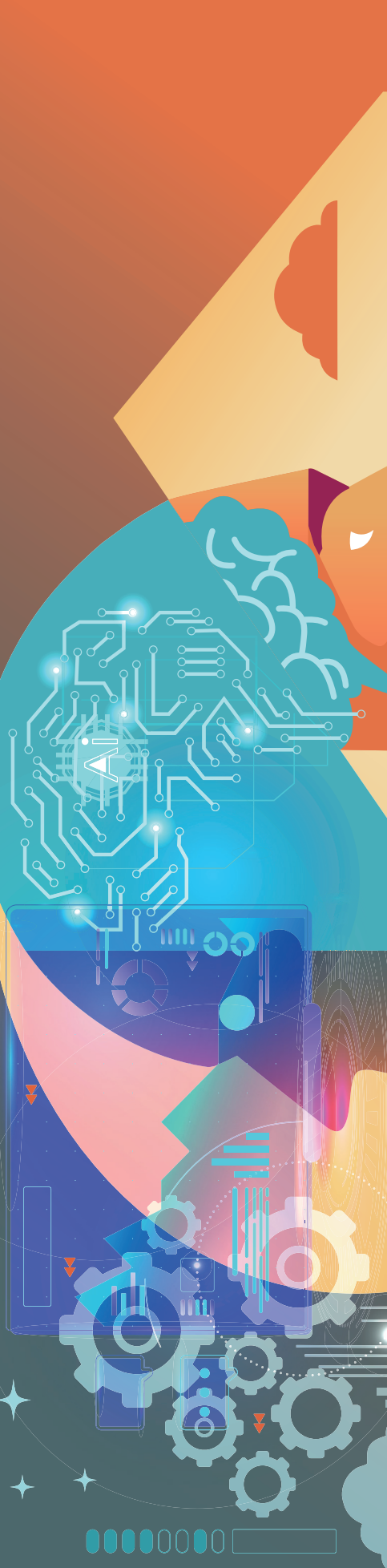
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Alicia Burke and Max Martinelli, “Charlie Stone and Brian Fannin,”

Perhaps most importantly, he encourages actuaries to see the potential of their existing modeling skills to unlock new business opportunities and drive organizational improvement.

is clear: in a field where decisions are only as good as the assumptions and processes behind them, ensuring AI is deployed responsibly is not a sideline concern. It is essential.

The conversation about AI in actuarial work will continue, evolving with each new technology and challenge. Alicia Burke’s invitation remains a clear call to action: “We want to hear how AI is showing up in your work and where you need support. Reach out. Let’s keep



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- **Session:** Bridging Data Divides: AI & Unstructured Data

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AI for enterprise risk and capital decisions.

- **Session:** ERM: Using AI in Scenario and Stress Testing – 2024 Annual
- **Session:** Application of AI and ML in (Re) Insurance – Reinsurance Seminar
- **Article:** From AI to Climate Risk – IAA Tallinn Report
- **Session:** AI-Empowered Actuaries: Intro to AI Agents

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How AI is reshaping actuarial identity and skill sets.

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- **Podcast:** Ep 7 – Frank Chang
- **Podcast:** Ep 8 – Charlie Stone & Brian Fannin
- **Session:** Tech for Pros: Overview of Modern Ops – DS&A Forum

Infrastructure, Ops & the AI Ecosystem

For those interested in technical stacks, systems, and deployment.

- **Podcast:** Ep 2 – Sergey Filimonov
- **Session:** AI Agents in Action – Spring
- **Session:** Bridging Data Divides – RPM
- **Course:** AI Fast Track (On-Demand – Coming Soon)

Voices & Insights

Highlights from the “Almost Nowhere” Podcast.

- Ep 1 – Joshua Meyers
- Ep 2 – Sergey Filimonov
- Ep 6 – Jim Guszczka
- Ep 7 – Frank Chang
- Ep 8 – Charlie Stone & Brian Fannin

IT'S A PUZZLEMENT By JON EVANS

The Palindromic Prisoners

A row of 10 prisoners, each in a numbered cell from 1 to 10, are told the following rule:

“Tomorrow, each of you may either say nothing or announce a single-digit number (0–9). If the sequence of spoken digits — read left to right across occupied cells — forms a numeric palindrome, you will all be freed. Otherwise, you all remain imprisoned.”

The prisoners can plan beforehand but may not communicate after.

On the day, some prisoners may be missing, and no one knows who will be present.

What strategy guarantees freedom, no matter who shows up?

Random Walking on a Hyper-Torus

The short answers to this puzzle are:

There is a 100% probability that the random walk will eventually return to the origin and the average number of steps until it first returns to the origin is 2,000. If starting at another point, return to the origin is only possible if the coordinates of that starting point are all even or all odd. That is true for 1/4 of all the points on the hyper-torus. Starting from one of these reachable points there is also a 100% probability of visiting the origin at some point in the future, and the average number of steps until first reaching the origin is also 2,000. Detailed solutions submitted will be published online.

Solutions were submitted by Bob Conger, Natalie Mo, and Natalie



**Never odd
or even**

**Stressed
desserts**

**No lemon,
no melon**

**Eva, can I see
bees in a cave?**

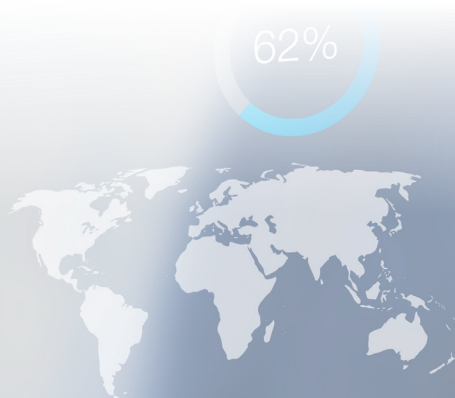
Ramirez.

Note, Steve (Soon Cheol) Kim was left out of the list of solvers for the “How Many Liars?” puzzle in the May/June AR.

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



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