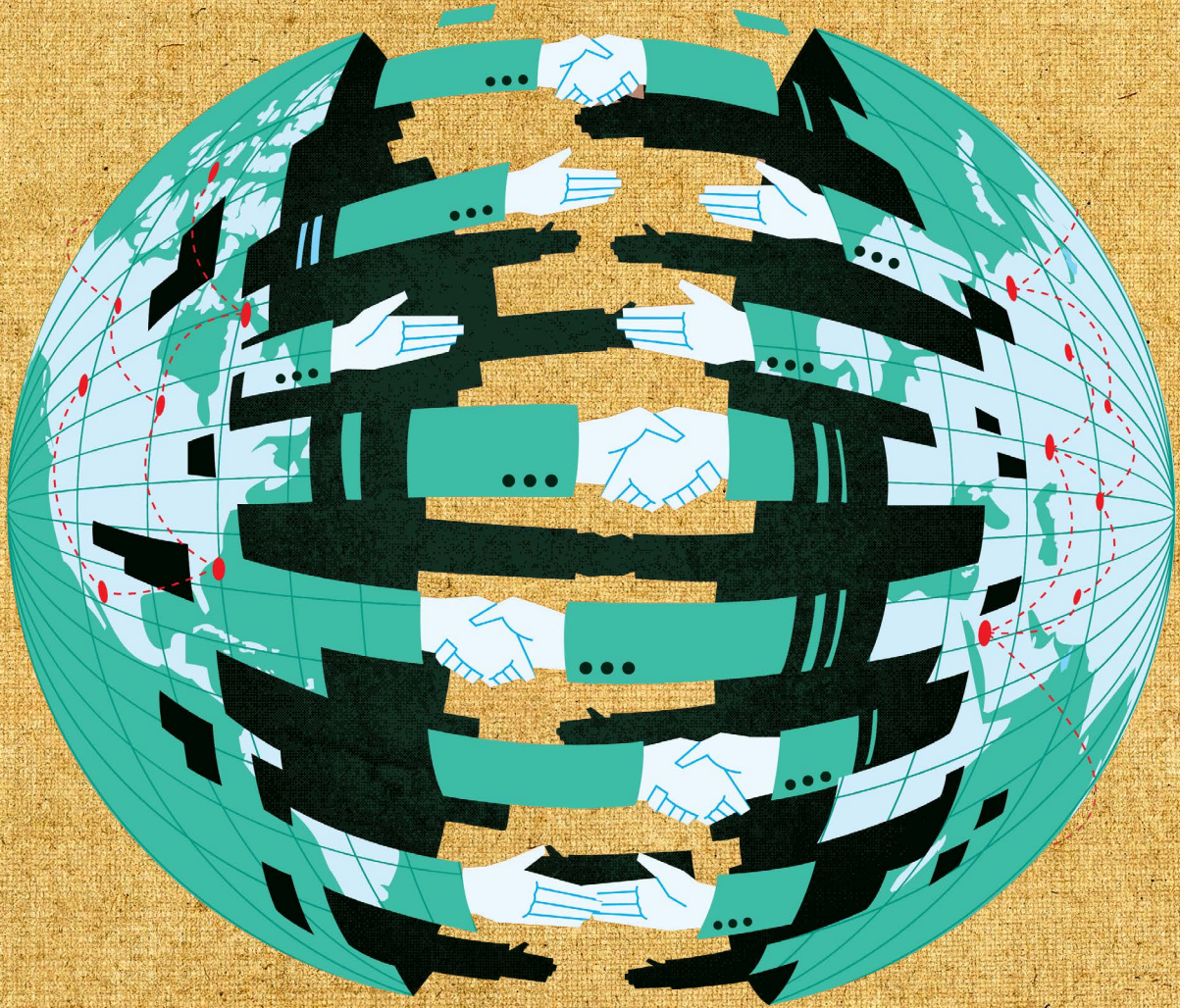


# actuarialREVIEW

VOL 48 / NO 6 / NOVEMBER-DECEMBER 2021

PUBLISHED BY THE CASUALTY ACTUARIAL SOCIETY 

## Volunteers Make Things Happen



## International Leadership Council Extends the CAS's Worldwide Reach

The CAS Launches  
its Admissions  
Transformation Plan

The CAS 2021  
Employer Honor Roll



# 2021 online salary survey



[www.actuarialcareers.com/  
holiday-drawing-2021](http://www.actuarialcareers.com/holiday-drawing-2021)

ACTUARIAL



CAREERS, INC.®

Congratulations  
to our President,  
Aimee Kaye  
for receiving a  
2021 SOA  
President's Award!

## Enter Now – Your Data Is Important

### Don't miss out this year!

Just complete our online Salary Survey to be eligible to win one of: **Five (5) \$500 Amazon Gift Cards**

Go to our website, [www.actuarialcareers.com](http://www.actuarialcareers.com) and enter now. Responses are confidential and the more responses we receive the more you benefit.

### Are you earning what you're worth?

Our unique, online, interactive survey results allow you to dynamically and easily compare your skills, experience, education and field of expertise to those of other actuaries. The results represent responses to our Salary Survey, which is emailed to over 45,000 actuaries.

You can select and change the criteria to see the comparisons that are meaningful to you. See results by selecting combinations of Designation, Specialization, Years of Experience, Region and State.



You can see samples of some of the screens above, but you must go to our website to query our dynamic charts, and see the actual survey results:

[www.actuarialcareers.com/salaries/](http://www.actuarialcareers.com/salaries/)

**Our Actuarial Careers Salary Survey results make it easy to discover what others in the actuarial profession are earning. Enter your data now.**

[www.actuarialcareers.com/holiday-drawing-2021](http://www.actuarialcareers.com/holiday-drawing-2021)

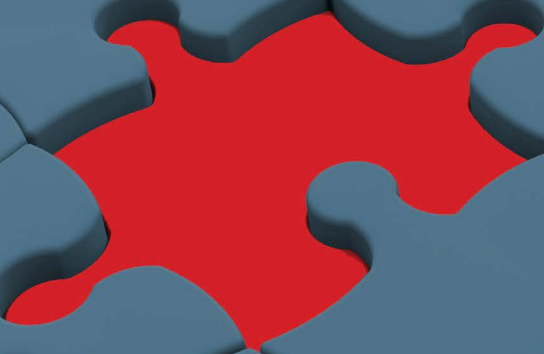
**ACTUARIAL CAREERS, INC.®**

Tel: 914-285-5100 | Toll Free: 800-766-0070

[www.actuarialcareers.com](http://www.actuarialcareers.com) | E-mail: [jobs@actuarialcareers.com](mailto:jobs@actuarialcareers.com)

Pauline Reimer, ASA, MAAA

**PRYOR**  
*Executive Search*




# The Perfect Fit...

**It Takes One to  
Know One...  
An Actuary  
Placing Actuaries**

To have Pauline personally advise you on finding your perfect fit, please contact her at:

 [pauline@ppryor.com](mailto:pauline@ppryor.com)

 [www.ppryor.com](http://www.ppryor.com)

 (516) 935-0100 x 307 or  
(866) 6-ACTUARY

For five decades, local, national, and international insurance communities have benefited from Pryor's exceptional recruitment services.

Our renowned Actuarial, Risk, and Modeling Division has been directed by Pauline Reimer, ASA, MAAA, for the past thirty-five years.



You're the expert on your business.  
 But we can help you leverage the  
 wealth of **information** out there.

$$)= f_j C_{ij}$$

$$(Y|Z))^2$$

$$\sqrt{E(d_{ij})}$$

$$E(C_{ij+1} | C_{ij}) = f_j C_{ij}$$

$$\text{Var}(Y) = E(\text{Var}(Y^2|Z)) + \text{Var}(E(Y^2|Z))$$

$$\text{Var}(f_j) = \sigma_j^2 / \sum_i C_{ij} \quad F_{ij}$$

Every business has its own strategic goals, and our expertise will help you achieve yours.

When you want to incorporate data into your business strategy, we're your partner in determining which information will best serve your unique needs. Starting with your key objectives, we'll work with you to sort through the wealth of available intelligence and mine the data to reveal the most relevant insights. With more data accessible than ever before, there is greater risk of information overload and potential to miss valuable indicators.

Trust Pinnacle's expertise to guide you through the data evaluation process and help you **make better business decisions.**

## Commitment Beyond Numbers



- Alternative Markets
- Enterprise Risk Management
- Legislative Costing
- Litigation Support
- Loss Reserving
- Predictive Analytics
- Pricing and Product Management
- Reinsurance



# actuarialREVIEW

November-December 2021



## departments

- 4 EDITOR'S NOTE**
  - In Celebration of Volunteers
  
- 6 PRESIDENT'S MESSAGE**
  - From International Student to CEO: A Conversation with Lisa Sun, FCAS
  
- 8 READER RESPONSE**
  
- 10 MEMBER NEWS**
  - Comings and Goings
  - Certify Compliance with the CAS Continuing Education Policy
  - Calendar of Events
  - 2021 CAS Trust Scholarship Recipients Announced
  
- 30 PROFESSIONAL INSIGHT**
  - On the Shelf
  - Engaging the Actuarial Community to Combat Racism and Foster Support of Black Actuaries
  
- 34 ACTUARIAL EXPERTISE**
  - Explorations
  
- 38 VIEWPOINT**
  - In My Opinion
  
- 40 SOLVE THIS**
  - It's a Puzzlement



FSC  
LOGO

## on the cover **Volunteers Make Things Happen: International Leadership Council Extends the CAS's Worldwide Reach**

By ANNMARIE GEDDES  
BARIBEAU



Cheers to the more **24**  
than 100 CAS volunteers who work to let  
the world recognize the expertise and  
value of P&C actuaries!

## **The CAS Launches its Admissions Transformation Plan** **16**

This agile strategy will direct the future of CAS examinations.

## **The CAS 2021 Employer Honor Roll** **17**

Many thanks to these generous employers who back CAS volunteers' time and efforts.

*Actuarial Review* (ISSN 10465081) is published bimonthly by the Casualty Actuarial Society, 4350 North Fairfax Drive, Suite 250, Arlington, VA 22203. Telephone: (703) 276-3100; Fax: (703) 276-3108; Email: ar@casact.org. Presorted standard postage is paid in Lutherville, MD. Publications Mail Agreement No. 40035891. Return Undeliverable Canadian Addresses to PO Box 503, RPO West Beaver Creek, Richmond Hill, ON L4B 4R6.

The amount of dues applied toward each subscription of *Actuarial Review* is \$10. Subscriptions to nonmembers are \$50 per year. Postmaster: Send address changes to *Actuarial Review*, 4350 North Fairfax Drive, Suite 250, Arlington, Virginia 22203.



# actuarialREVIEW

The magazine of the  
Casualty Actuarial Society

**Editor in Chief**  
Grover M. Edie

**Managing Editor and  
Director of Publications**  
Elizabeth A. Smith

**Graphic Designer**  
Sonja Uyenco

## Copy Editors

Colleen Arbogast	Rebecca Knackstedt
Rebecca Armon	David Levy
Daryl Atkinson	Ana Mata
Karen Ayres	Stuart Montgomery
Nathan Babcock	Katrine Pertsovski
Sean Bailey	Shama S. Sabade
Glenn Balling	Eric Savage
Robert Blanco	Michael Schenk
Sara Chen	Robert Share
Meng-Fang Chung	Craig Sloss
Todd Dashoff	Rebecca Sze
Charles Grilliot	Sukaina Visram
Stephanie Groharing	James Weiss
Julie Hagerstrand	Radost Wenman
Kenneth S. Hsu	Ian Winograd
Wesley Jenq	Gerald Yeung
Rob Kahn	Yuhan Zhao

**Humor Editor**  
Michael D. Ersevim

**Explorations**  
Glenn G. Meyers James C. Guszczca  
Donald F. Mango Stephen Mildenhall

**Puzzle**  
Jon Evans  
John P. Robertson

**Advertising**  
Al Rickard, 703-402-9713  
arickard@assocvision.com



Expertise. Insight.  
Solutions.®

For permission to reprint material from *Actuarial Review*, please write to the editor in chief. Letters to the editor can be sent to [AR@casact.org](mailto:AR@casact.org) or the CAS Office. The Casualty Actuarial Society is not responsible for statements or opinions expressed in the articles, discussions or letters printed in *Actuarial Review*. To opt out of the print subscription, send a request to [AR@casact.org](mailto:AR@casact.org).  
Images: Getty Images

© 2021 Casualty Actuarial Society.  
[ar.casact.org](http://ar.casact.org)

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

## In Celebration of Volunteers

Our custom for the November/December issue is to highlight the work of one cluster of CAS volunteers — one that proxies for multitudes of CAS members who step up every year to make things happen.

Last year we cast a light on the Joint CAS/SOA Committee on Inclusion, Equity and Diversity, a group that helps to fulfill the CAS Strategic Plan's pillar of "Diversifying the Pipeline" of membership.

This year we spotlight the CAS International Leadership Council and the work it does through its various task forces and working groups, much of it to fulfill the CAS Strategic Plan pillar of "Expanding Globally."

Look for more AR articles in the future on these and the third pillar of the CAS Strategic Plan, "Building Skills for the Future."

We also toast the many businesses that allow and encourage their employees to volunteer for us. The employers of volunteers hold a singular importance

for the CAS. We value their generous contributions.

### A transformation is underway

The Admissions Transformation Plan (ATP) is the biggest thing to happen to Admissions since computer-based testing — and that was just last year!

The ATP is the latest in a line of innova-

tive changes to our credentialing system in recent years and is a process designed to change and grow to reflect the demands of the market. The objective

is to enhance CAS credentials while ensuring that the P&C actuary of the future is well prepared and in demand.

### What's the idea?

The AR Working Group want to know what readers would like to see in the covers of the magazine. Whether it's about the activities of a task force or working group or a member with an interesting hobby, let us know. Send your suggestions to [ar@casact.org](mailto:ar@casact.org).

Thank you for reading! ●



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

SEND YOUR COMMENTS AND SUGGESTIONS TO:

*Actuarial Review*

Casualty Actuarial Society

4350 North Fairfax Drive, Suite 250

Arlington, Virginia 22203 USA

Or email us at [AR@casact.org](mailto:AR@casact.org)

## Follow the CAS







# Vehicle Usage Has Changed.

**CARFAX® Mileage Data**  
helps you avoid premium  
leakage and remain  
competitive.

**Learn More at**  
**[CarfaxForInsurers.com](http://CarfaxForInsurers.com)**







## From International Student to CEO: A Conversation with Lisa Sun, FCAS

*For my President's Message columns, I have been talking to distinguished actuaries who embody the new Envisioned Future for the CAS. Videos of these interviews are available as Web Exclusives on the Actuarial Review website and the CAS YouTube channel.*

Lisa Sun is a warm, relatable CEO — those are not words you find together very often. But talking to this head of AIG Insurance Company China felt like talking to an old friend. She started out as an actuarial intern at Liberty Mutual. That sounds so normal! She made triangles in Excel and checked the data. So did I!

Lisa Sun fell into the actuarial profession through her college career fair. She spent most of the time fruitlessly searching for internships, but the last company she visited told her that her math major was exactly what they were seeking. It was Liberty Mutual and they were looking for *actuaries*. “What is that word?” she asked. “How do you spell that?”

Since then, Sun has made some great decisions throughout her career, taking her from actuarial intern to CEO. Development and risk are two things that have enriched her work life.

### Value your career development

When it came time to decide on her first full-time job, she chose Liberty over another, higher paying job offer in life insurance. The choice was easy because she had seen how much the P&C firm valued the development of their actuaries. “The company had a great training program ... that was the biggest thing for

me. I wanted a job where I could learn and grow.”

### Take a chance

A while ago, when her husband moved to Hong Kong, Lisa's job search led her to the opportunities to either transfer to Liberty Mutual's international business

### Leadership abilities are critical and so transportable. Companies are always looking for great leaders.

or join AIG in Asia. She initially wanted to turn down the AIG offer because relocation *and* switching companies seemed too much change to handle.

Following her decision but before accepting Liberty's offer, an unusual thing happened. The AIG President of Worldwide Accident and Health wrote her a letter, saying: “Lisa, I don't often write to a potential candidate after they have made their decision (in fact this may be the only time that I have done so) but in this case I thought it was appropriate as I truly believe you are making a mistake ... your knowledge and passion for your work would serve you well at AIG and put you in a good position to maximize career opportunity.” This extraordinary letter got her thinking: “I'm young, I can afford to be bold and take a calculated risk ... I can give it a try and do something new.”

Taking the AIG job was one of the best career decisions she's made. “The company really throws you in the deep end of the water and you learn to sink or swim, and you learn very quickly ... the company wants to see you be suc-

cessful...you were surrounded by many experienced professionals from whom you can learn.”

### Follow the Sun

Lisa Sun has some good advice for other actuaries who are looking to grow into leadership positions.

1. Be passionate — You have to love what you do in order to do it well.
2. Be professional — Know who you are and what your weaknesses and strengths are. Under pressure a person could revert to type; you need to know where your pressure points are and what your potential weaknesses are.
3. Have perseverance — Actuaries already possess this. They have finished their exams and have committed to being actuaries. This perseverance can translate to their leadership goals.
4. Know the fundamentals — You have to understand and “sweat” the technical stuff.
5. Connect the dots — Take what you've learned and translate that into your work.
6. Know the business — Knowing your business allow you to drive proper insight from your data that can advise the company to make informed business decisions and take calculated risks.

*President's Message, page 8*

# DON'T STAY UP LATE SETTING RESERVES.

## (UNLESS THAT'S YOUR THING.)

**STILL STRESSING OVER DEADLINES? GET SOME PEACE OF MIND WITH ARIUS.** Our cloud-based and desktop P&C reserve analysis solutions automate, streamline, and add reliability to your entire reserving process. Find out why companies like yours rely on Arius every day for better, more efficient analysis.

[arius.milliman.com](http://arius.milliman.com)

Milliman **Arius**<sup>®</sup>



**President's Message**

from page 6

- 7. Develop leadership and communication skills — Leadership abilities are critical and so transportable. Companies are always looking for great leaders. Great leaders can communicate to get people excited and engaged, which can lead to happier employees and happier customers.

So, how do you accomplish all of this? Lisa Sun stresses self-knowledge as the key: You have to know where your gaps are. Then, you need to have deliberate practice. You can read leadership books, but pick a few things to focus on and put the concepts into practice.

**What I've learned**

This is the last of my interviews and columns as president of the CAS. Every actuary I've interviewed has had an impact on me in ways I wasn't expecting:

- Frank Chang showed me how actuaries can succeed in Silicon Valley. He forged this path for others to follow.
- Kathleen Antonello showed me how you get from chief actuary to CEO. Her advice? Be curious and contribute to the leadership team beyond your actuarial skills. It's OK to have an opinion on marketing!
- Adam Druissi answered the question of "how to crack the nut" and truly have significant business impact through data and analytics. Research Quantum.com for the innovative products and tools they provide for their clients, among them Walmart and Facebook.
- Brian Duperreault helped me put my work challenges into perspec-

tive. Imagine me stressing about a hugely challenging thing that I'm doing at work, but then I think, "Duperreault grew ACE from a company of 50 people!" OK, no. What I'm doing is not *that* challenging.

- Sarayyah Baksh made me more comfortable in sharing my career goals. (For those whom I've shared them with — you know who you are — thank you!)
- And finally, Lisa Sun. Thank you for showing a truly relatable pathway to leadership and giving me the confidence to continue my journey. Thanks to all six remarkable actuaries and to all the readers of *AR* and watchers of the YouTube videos. Thanks for liking, commenting and reviewing.

I have one last request as president: I'd love to know just one thing you took away from these interviews. Please share via my LinkedIn profile or through ar@casact.org! ●

**ACTUARIAL REVIEW LETTERS POLICIES**

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

**One Actuary's Story**

**Dear Editor:**

Grover Edie's IMO, "A Tale of One Actuary," is an inspiring story of resolve and courage. He is correct that everyone faces obstacles they must overcome but incorrectly assumes the obstacles people face are not impacted by their demographics. His own story illustrates the importance of connections and representation. The 1970 U.S. Census shows only 4.5% of those identified as working in the insurance industry were African American. Furthermore, the connection in question was an actuary, a profession which the 1970 census shows as only 2% African American. Thus, the mere existence of having this connection eliminates a hurdle that others would have to climb. Even today the data shows that people who are not White have additional obstacles. The actuarial profession is only 31% female. Even today less than 2% of the membership is Black. Similarly, less than 2% is Hispanic/Latinx. These statistics alone indicate there are additional hurdles that are unseen by white males like me. He also incorrectly propagates the myth that hard work alone is a key to success. Mr. Edie worked hard to achieve his success, but hard work only counts if you are allowed to play. It is these hurdles we must address to ensure that the actuarial profession is equally available to everyone. We all agree that demographics should not be a barrier to success. But the evidence suggests otherwise. So, the question is: What are we going to do about it?"

— David Terné, FCAS, MAAA

**Grover Edie, AR Editor in Chief, responds:**

*Reader Response, page 10*



# Boost your pricing process with advanced analytics

Akur8 is the next generation pricing platform for P&C insurers



## Deliver speed-to-insights

Find the best predictive signal at a fraction of the time by reducing time-to-modeling by 10X, empowering teams to focus their limited resources on decision-making and fine-tuning.



## Increase collaboration across teams

Collaborate more effectively, onboard new team members quickly, and transition projects easily thanks to documentation notes and an easy to use interface created for actuaries.



## Ensure compliance through transparency

Minimize costly compliance issues & risk of adverse selection thanks to higher controls and transparency over the rate making process.



## Boost Performance

Modernize processes and become leaders in pricing sophistication by enhancing the capabilities and toolset of your actuarial teams.



[www.akur8.com](http://www.akur8.com)

For more information or to request a demo, please contact:

North America  
Boriana Trifonova  
boriana.trifonova@akur8-tech.com

Other regions  
Brune de Linares  
brune.delinares@akur8-tech.com

### They trust us:



Duck Creek Technologies

Munich RE



wefox





**Reader Response**

*from page 8*

**D**avid brings some points I'd like to address about my prior IMO.

We often speak of demographics in terms of race, gender and national origin, but height, weight and size of hometown are also demographics. Having grown up in a small Midwest town, I had never even heard of the actuarial profession until I was introduced to an actuary my senior year in college, so I was a lot older than most when I started to "play the game."

Like race, height is an obvious demographic. The shortest U.S. president elected since 1900 was Harry Truman, who at 5'9" was 7 inches taller than me. The average height for that cohort is just over 6 feet. If you don't think height matters when it comes to electability or promotability, take a look at your company's C-suite.

The fact that my wife and I had to make choices, take risks and make sacrifices in moving across the country on multiple occasions while following my career, expresses that hard work alone is not enough to succeed. It is only one of the keys to success, I did not say otherwise. Perseverance (it took me 15 years to become an FCAS), risk taking (moved back and forth across the U.S. pursuing my career) and the support of my wife and family were also important, as well as networking (meeting the actuary while still in college). I should have included that we also prayed a lot. ●

**COMINGS AND GOINGS**

Erie Insurance has named **Robert Zehr, FCAS**, senior vice president and chief actuary. Zehr previously served as Erie's vice president for ERM. In this new role, he will be responsible for managing the company's P&C loss reserving team.

**Jonathan Abbott, FCAS, MAAA**, has been appointed senior vice president, P&C actuarial services at NFP, the insurance broker and consulting firm. Abbott comes to NFP from Arch Insurance. Prior to that, he spent seven years with QBE. Abbott has over 17 years of P&C experience across personal, commercial and specialty lines of business.

**Clinton Bartlett, ACAS**, has been named managing actuary for WorldTrips, a global provider of travel medical and trip protection insurance products. Bartlett worked previously for CSA Travel Protection and Arrowhead Insurance Group. He has extensive expertise in risk evaluation, regulatory oversight, pricing, product design and financial reporting.

Breach Insurance, a developer of cyber insurance products for the cryptocurrency market, has appointed **Jim Flinn, FCAS**, as head of risk and chief actuary. In his new role, Flinn will build and lead the actuarial and underwriting teams with an initial focus on strategic opportunities, capital structure and reinsurance. Flinn began his career at USAA and most recently served as senior vice president and enterprise CRO at American National Group, where he led the ERM practice and chaired the P&C reinsurance committee.

**Justin Brenden, FCAS, FIA, CPCU**, has been appointed to the role of chief

actuary for SiriusPoint Ltd., a global specialty insurer and reinsurer based in Bermuda. The appointment is subject to approval by the Bermuda Department of Immigration. Prior to the merger between Third Point Re and Sirius Group, Brenden served as EVP, chief reserving actuary at Third Point Re. He joined Third Point Re in its first year of operations and played a significant role in the growth and development of the company. Brenden previously served as CAS vice president-marketing and communication from 2016-2019. SiriusPoint Ltd. also announced that **Patrick Charles, FCAS**, will head up the company's Americas Property and Casualty Insurance. Charles will be responsible for managing and growing the U.S. P&C insurance business, to include expanding the company's key strategic partnerships and launching products and services to support these relationships. Charles joins the company from Zurich Insurance Group, where he held North American leadership roles in underwriting and strategy spanning the past decade. He has also served at McKinsey & Company, Alliance Bernstein and the St. Paul Companies.

**Laurna Castillio, ACAS**, has been named senior vice president of state product management for CSAA

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

Insurance Group. Castillio will be part of CSAA's newly formed Enterprise Strategic Initiatives Office. She will lead state product management and agency administration and experience teams, which are responsible for the performance of personal lines insurance products.

The Cayman Islands-based company Greenlight Capital Re, Ltd. has appointed **Brian O'Reilly, ACAS**, as head of innovations. O'Reilly joined the multi-line P&C reinsurance company in 2013 and has held a variety of roles within the actuarial and underwriting teams. In 2018 he was part of the founding team of Greenlight Re Innovations. He is responsible for supporting and

expanding Greenlight's portfolio of innovative companies.

**Julie Halper, ACAS**, has appointed executive vice president and chief actuary for Toa Re America. Halper joins the company from Swiss Re in Armonk, New York, where she was most recently the head of actuarial analytics and leader of the team responsible for pricing the North American casualty portfolio. Prior to Swiss Re, Halper served as the chief actuary at Berkley Re America.

**Jacqueline Muschett, ACAS**, has been named managing director, head of actuarial & valuations for Elementum, a Bermuda-based, alternative investment company specializing in collateralized natural catastrophe event reinsurance

investments. Muschett comes from Hudson Structured Capital Management where she served as managing director, head of valuations. She has also held senior positions at such firms as Sompo International (formerly Endurance) and Montpelier Reinsurance. ●

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

## CALENDAR OF EVENTS

**March 14–16, 2022**

Ratemaking, Product and  
Modeling Seminar  
Sheraton New Orleans Hotel  
New Orleans, LA

**May 15–18, 2022**

Spring Meeting  
Disney's Coronado Springs Resort  
Orlando, FL

**May 17–20, 2022**

Actuarial Colloquia  
(hosted by the CAS)  
Disney's Coronado Springs Resort  
Orlando, FL

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

## Certify Compliance with the CAS Continuing Education Policy

All Fellows and Associates need to certify their compliance with the CAS CE Policy's requirements as of December 31, 2021. Members must certify compliance at the end of each calendar year as compliance with the CAS CE Policy allows the member to provide actuarial services in the year immediately following certification of compliance.

If a member is practicing as an actuary, the member should indicate the proper attestation year as the year during which they are able to practice after having met the prior years' necessary CE/CPD requirements.

Note that even members who are not in actuarial roles should review the requirement as CE compliance

may still be required. If members are not providing actuarial services, they must still attest within their CAS member account.

Members who do not certify their compliance or who do not indicate they are not providing actuarial services by **February 1** of the year following the December 31 compliance attestation deadline will be shown as Non-Compliant under the Continuing Education heading of the membership directory on the CAS website.

For more information on certification, visit the Continuing Education webpage at <https://www.casact.org/professional-education/continuing-education-policy>. ●

## IN MEMORIAM

Ronald Joseph Zaleski Jr. (FCAS 2005)  
1979-2021



## 2021 CAS Trust Scholarship Recipients Announced

By MARGARET KERR, CAS UNIVERSITY ENGAGEMENT MANAGER

Eight university students are recipients of the 2021 CAS Trust Scholarship, an honor created to further students' interest in the property-casualty actuarial profession and encourage the pursuit of the CAS designations. This year's awardees are Reiner Atstathi, Olivier Côté, Josh Gordon, Sankar Krishna, Claire Liu, Simon Llaguno, Molly Olander, Ana Romo and Maurice Williams.

### \$5,000 Recipients

**Josh Gordon** is a rising junior at the University of Michigan, where he is studying actuarial science and statistics. He worked this summer as an actuarial intern on the commercial auto pricing team at Liberty Mutual. He is also a teaching assistant for the introduction to finance course at Michigan. "I am incredibly grateful to be recognized and awarded with the CAS Trust Scholarship," said Gordon. "Thank you to my family, mentors, and all others who have shown continued support and guidance as I navigate the early stages of my actuarial career. As I work toward an FCAS designation, I plan to continue learning from peers and mentors in addition to becoming a mentor to other actuarial students."

**Claire Liu** is the actuarial club president and an up-and-coming senior at University of Wisconsin–Madison majoring in actuarial science, risk management & insurance and statistics. In the summer of 2020, she was an actuarial analyst intern working on the Medicare Advantage and prescription drugs bid team at Optum/UnitedHealth Group.

Liu will be interning at Travelers' leadership development program working on small commercial business insurance. "A big thank you to the CAS Trust Scholarship Committee for allowing me the honor of receiving this scholarship!" said Liu. "This scholarship will help me finish my college career strong, and I am grateful that the CAS is able to provide this support to students."

**Molly Olander** is a senior at the University of Nebraska-Lincoln, studying actuarial science with minors in mathematics and music. During the summer of 2020, she worked as an actuarial intern at Mutual of Omaha on the financial plan and analysis team. Currently, she is a 2021 intern in the actuarial leadership development program at Travelers on the business insurance actuarial product team. "Being awarded the CAS Trust Scholarship is an immense honor, and I am humbled to be recognized by the selection committee and am ever grateful for those that have supported and believed in me," said Olander. "I am dedicated to learning, working, and serving, and through the generosity of this award, I am continuing to push to better myself each day on the path towards my future career as an actuary."

**Ana "Cati" Romo** is a rising junior at the University of Pennsylvania, where she is studying actuarial science and business analytics. This past summer, Romo interned at Willis Towers Watson in their retirement consulting department. She serves as co-president of the Penn Actuarial Society and is also involved as a tour guide for the school.

"I am so honored to be a recipient of the 2021 CAS Trust Scholarship," said Romo. "I hope to continue to further my actuarial career and serve as a role model for young Hispanic women interested in actuarial science."

### \$2,500 Recipients

A senior at St. John's University, **Reiner Atstathi** is studying actuarial science and has completed two internships with BDO USA in their advisory practice and one with Deloitte in consulting. He passed Exam MAS-I in May 2021 and is looking to take Exam MAS-II next year as he returns to BDO for his third internship with the firm. Receiving the CAS Trust Scholarship has been one of the greatest honors of his educational career, and the financial and professional support he has gained as a result has been immense.

**Olivier Côté** has just completed a bachelor's degree in actuarial science at Université Laval. He is deepening his knowledge with a master's in actuarial science at the same school in the fall of 2021. He experienced three diversified and rewarding internships at Desjardins General Insurance Group. Côté was involved with his student club and is currently the coach of his former football team. "I am truly grateful for this award from the CAS. I want to thank my family, girlfriend, teachers, colleagues, and all of my former football coaches who helped on my journey," said Côté. "I will continue to work hard and give back to my community, hoping that others can enjoy a course full of absorbing challenges,

*CAS Trust Scholarships, page 14*

2022  
MARCH  
14-16



**R**atemaking  
**P**roduct and  
**M**odeling  
Seminar and  
Workshops

Sheraton New Orleans • New Orleans, LA



## CAS Trust Scholarships

from page 12

fulfilling encounters and developmental opportunities.”

**Sankar Krishna** is a first-year graduate student at Sri Sathya Sai Institute of Higher Learning (SSSIHL) who is pursuing a master’s in mathematics with a specialization in actuarial science. He spent the summer of 2020 interning at Tech Actuarial, focusing on claims analytics and pricing tools for group insurance products. He participated in the CAS Independent Summer Program and Actuarial Data Science workshop at the University. He is a theatre and cricket enthusiast and plays the trombone in the University’s brass band. “I am honored to receive this prestigious international award and grateful to the CAS for their generous contribution towards my professional qualification,” said Krishna. “This award motivates me to pursue actuarial data science with more zeal and make a positive difference to the profession and society. I thank God and express my deep gratitude to my family, friends, the faculty at SSSIHL,

and alumni for their constant support.”

A senior at Temple University in Philadelphia, **Simon Llaguno** is studying actuarial science with a minor in MIS. He spent 2020 interning with Everest Insurance on the actuarial pricing and catastrophe modeling teams. This summer, he worked with Cigna as an actuarial executive development program intern on the seniors reserving team. He is also a CAS Ambassador and served as the director of public relations for Gamma Iota Sigma, Temple’s actuarial science and risk management student organization. “I am grateful to have received this award from the CAS. Thank you to my family, friends, teachers, and mentors for all the support you’ve provided me,” said Llaguno. “I am even more motivated to push myself and excel in my career.”

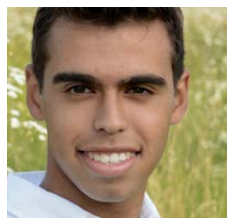
**Maurice Williams**, a senior at St. John’s University, is majoring in actuarial science and minoring in data science. He has been working at Ascot Group as an actuarial intern since January 2021 and will continue until year end. Williams recently passed MAS-I

and is currently studying for his fifth actuarial science exam. “This award goes a long way in relieving much of my financial burden,” said Williams. “I am truly honored to be given this great recognition by CAS; their generosity has inspired me to help others and give back to the community that has helped me to get this far in my risk management and insurance journey.”

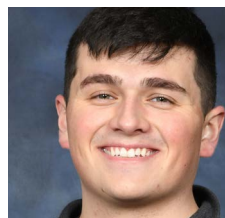
### Contribute to the CAS Trust

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 non-profit 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 CAS’ Chief Financial Officer Todd Rogers at [trogers@casact.org](mailto:trogers@casact.org). ●



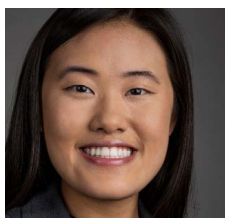
Joshua Gordon



Olivier Côté



Sankar Krishna



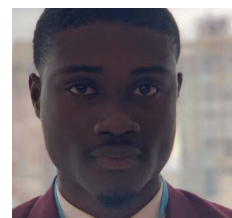
Claire Liu



Simon Llaguno



Molly Olander



Maurice Williams

# VALUED

At the CAS, we strive to be a valued and trusted resource for risk professionals, giving them unparalleled support as they develop professionally and advance their careers. Learn more about our premier educational resources and training for the global community of property and casualty experts at [casact.org/valued](https://casact.org/valued).



**Expertise. Insight.  
Solutions.®**

[casact.org](https://casact.org)



# The CAS Launches its Admissions Transformation Plan

## ATP Will Guide the Future of CAS Admissions

**ARLINGTON, Va. Sept. 30, 2021.** The CAS released its Admissions Transformation Plan (ATP), the first iteration of a high-level blueprint that will evolve over time and enhance the CAS credentialing program for the future. The CAS is committed to ensuring that its members have the professional knowledge and expertise to meet market demands, and with the actuarial profession changing at an accelerated pace, the association is transforming how it prepares CAS members for the future.

The ATP's features, benefits and key milestones are summarized in a series of infographics. The ATP includes a glossary of terms and, because it is an evolving plan, additional resources and announcements will be appended over time. It is critical for any CAS credential to reflect changes in the profession it serves, so this agile approach allows the CAS to be responsive and adaptable.

"Our plan outlines how we'll achieve our strategic goals, specifically the Building Skills for the Future pillar of the Strategic Plan," said CAS CEO Victor Carter-Bey. "I'm thrilled with the new direction we are taking to evolve our credentials to reflect the evolving actuarial profession."

"We are committed to transparency, so we are providing an early view into planned changes," said CAS President Jessica Leong. "This is just the start of an exciting transformative journey. I give credit to the interdisciplinary team of CAS volunteers and staff who are leading it."

By releasing the ATP at this time, the CAS means to minimize the disruptions to those on the path to CAS credentials. While some ATP milestone details will be announced in 2022, such as transition plans, no changes to requirements will



occur until 2023. The first key milestone concerns preliminary exam requirements, the details of which are expected to be communicated no later than early 2022.

Prior to its release, the ATP benefited from vetting by the CAS leadership, admissions volunteers, candidates, employers and others. The agile nature of the ATP allows stakeholders the ongoing opportunity to offer feedback to the multi-year plan as strategy and executional tactics continue to be developed. The CAS welcomes members' perspectives on the plan and invites feedback. Email [casatp@casact.org](mailto:casatp@casact.org) to share your views.

Building on a solid foundation of over 100 years of credentialing property-casualty actuaries, the CAS anticipates realizing its Envisioned Future, as outlined in its Strategic Plan. Developing the ATP is a major step towards achieving those strategic goals.

With the support and involvement of a dedicated community of volunteers, the future state of the CAS will integrate existing best practices into a professional testing model designed to strengthen the value of CAS members' credentials and uphold the association's position as the leading organization for credentialing property-casualty actuaries.

Look for more details of ATP changes in the coming months and years at [casact.org/atp](http://casact.org/atp). ●

# The CAS 2021 Employer Honor Roll

Now more than ever, the CAS is grateful for the support of employers that encourage their actuaries to volunteer their time and effort to the CAS.

## Top Ten Employers and Organizations with the Largest Number of Members Volunteering

Liberty Mutual Insurance	Milliman
Travelers	Zurich North America
Allstate Insurance Company	USAA
The Hartford	ISO/Verisk
Willis Towers Watson	Chubb

## Large Employers with at Least 40 Percent of Members Volunteering

Liberty Mutual Insurance	Zurich North America
Travelers	ISO/Verisk
Allstate Insurance Company	Intact Financial Corporation
Willis Towers Watson	CNA Insurance Companies
The Hartford	EY
Milliman	





# Graphical Representation and Regression Formulation of Link Ratios



Thomas Mack identified the stochastic regression model that underlies volume weighted average link ratios. Other authors, including Murphy and Venter, have developed these ideas further. A graphical representation and regression formulation of link ratios makes it clear what assumptions underpin the methods and extensions thereof.

	0	1	2	3	4	5	6	7	8	9
1981	5,012	8,269	10,907	11,805	13,539	16,181	18,009	18,608	18,662	18,834
1982	106	4,285	5,396	10,666	13,782	15,599	15,496	16,169	16,704	
1983	3,410	8,992	13,873	16,141	18,735	22,214	22,863	23,466		
1984	5,655	11,555	15,766	21,266	23,425	26,083	27,067			
1985	1,092	9,565	15,836	22,169	25,955	26,180				
1986	1,513	6,445	11,702	12,935	15,852					
1987	557	4,020	10,946	12,314						
1988	1,351	6,947	13,112							
1989	3,133	5,395								
1990	2,063									

1 Unit = \$1

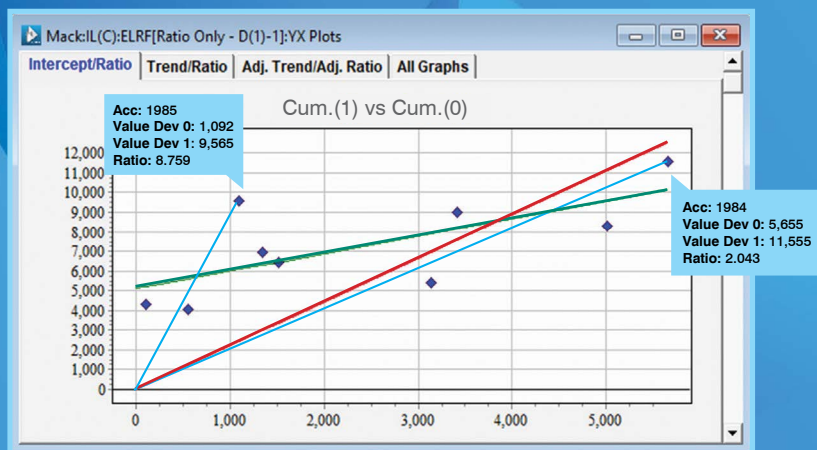
**"There is pleasure in recognizing old things from a new viewpoint."**  
Richard Feynman

Consider the (diagonally opposite) Incurred Loss triangular data from the American Reinsurance Association.

In general, each link ratio ( $y/x$ ) is the slope of the line from the number pair ( $x,y$ ) to the origin.

The graph below plots the cumulatives in development year one versus the cumulatives in development year zero for accident years 1981 to 1989.

The caption on the right is for the point (5,655, 11,555) corresponding to accident year 1984. The caption on the left is for the point (1,092, 9,565) corresponding to accident year 1985. The slope of the blue lines represent the corresponding link ratios – which is 2.043 for 1984 and 8.759 for 1985.



Accordingly, an average link ratio, equivalently average trend, is an average slope through the origin.

This means that the method can be formulated as a regression (Mack (1993)).

Let  $y(w)$  denote the cumulative in development period  $j$  for accident year  $w$  and  $x(w)$  the cumulative in the previous development period,  $j-1$ .

We can write,

$$y(w) = b * x(w) + e(w), \dots (1)$$

where  $b$  is the slope of the line (equivalently, the average link ratio), and  $e(w)$  is the difference between the actual value  $y(w)$  and the corresponding point on the average link ratio line ( $b * x(w)$ ).

When actuaries use link ratios there are two critical assumptions:

- The expected value of the next cumulative is conditional on the previous cumulative multiplied by an unknown factor.
- The selected link ratio (factor) is optimal for prediction.

The optimum value of  $b$  is found by weighted least squares estimation according to the scale of the error terms  $e(w)$ .

Let the variance of  $e(w) = v * x(w)^{\text{delta}}$

For the following values of  $\text{delta}$  (0, 1, 2):

- 0, or constant variance, the weighted least squares estimate of  $b$  is the volume squared weighted average link ratio.
- 1, the weighted least squares estimate of  $b$  is the volume weighted average link ratio – sometimes called the chain ladder ratio.
- 2, the weighted least squares estimate of  $b$  is the arithmetic average link ratio.

In the graph (previous page), the red line is the best least squares line through the origin and the green line is the best least squares line that includes an intercept. The latter appears to be a better model.

Murphy (1994) extended the regression formulation to include an intercept term.

$$y(w) = a + b * x(w) + e(w), \dots (2)$$

where  $a$  is the intercept term, but  $b$  is no longer the average link ratio.

Given that the intercept is positive in the previous graph, the slope of the line with an intercept term is less than any average link ratio (through the origin).

We can obtain visual indications of whether a line with an intercept (Murphy (1994) method) or a line through the origin (Mack (1993) method) is better.

Most importantly, the focus should be on the incremental model, Venter(1998), even if  $a = 0$ :

$$y(w) - x(w) = a + (b-1)*x(w) + e(w), \dots (3)$$

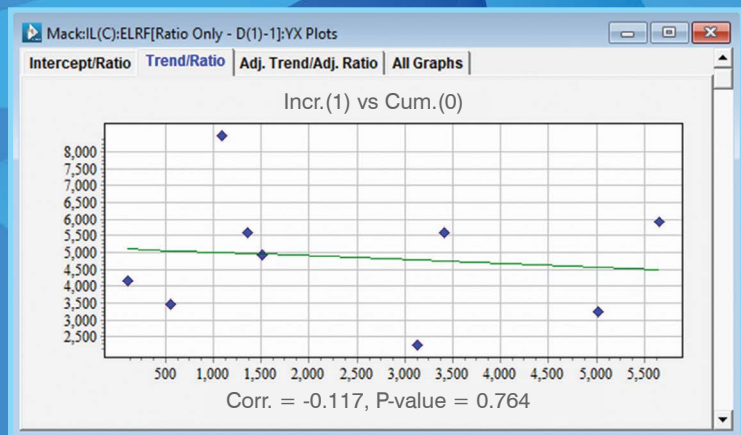
where  $y(w) - x(w)$  is the incremental data point.

When you use a link ratio to project the cumulative in the next period in essence you are only projecting the next incremental as you know the current cumulative. This is the reason all the focus should be on equation (3) not (2).

But what if  $b$  in equation (3) is statistically equal to 1, (Venter(1998))?

Then the incrementals in development periods ( $j$ ) are not correlated to the cumulatives in the previous development period ( $j-1$ ). That is, any ratio applied to the cumulatives does not predict the incrementals!

Here is a graph (right) of the incrementals in development year 1 versus the cumulatives in development year 0.



Note that the correlation is zero (slope not statistically significant). Equivalently  $b-1 = 0$ .

In this case, the reduced model only contains an intercept term.

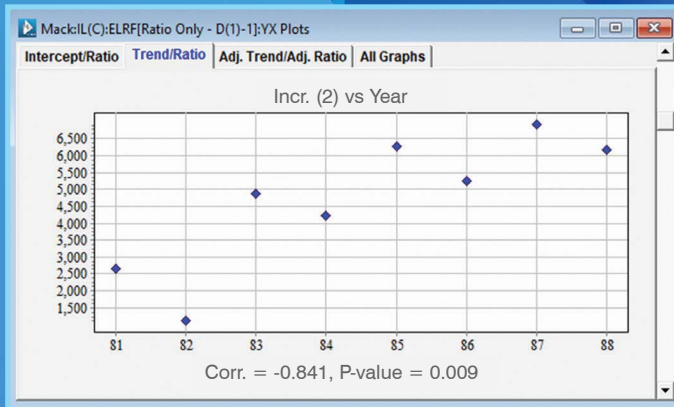
$$y(w) - x(w) = a + e(w) \dots (4)$$

In this model, the incrementals across the accident years are random numbers from a distribution with mean  $a$ , and variance,  $\text{Var}(e(w))$ . If  $e(w)$  has a constant variance, then the ordinary least squares estimate of  $a$  is the arithmetic average of the incrementals  $y(w) - x(w)$ .



It turns out, if you graph the incrementals in any development period against the cumulatives in the previous period, you will note that there are no statistically significant correlations. All the b-1 parameters are statistically zero.

The assumption that the incrementals are random, might not be true. A case in point, is development period two. This suggests that we need to include an accident year trend parameter in model (3).



The equation that includes the intercept, accident year trend and slope can be written:

$$y(w) - x(w) = a_0 + a_1 * w + (b-1)*x(w) + e(w), \dots (5)$$

where  $a_0$  is the intercept,  $a_1$  is the accident year trend parameter and  $b-1$  is the incremental coefficient.

The family of models included in the **Extended Link Ratio Family (ELRF)** are represented by equation (5) between each two consecutive development years. The significance of the parameters is determined by the data.

Development Period	Intercept			Trend			Ratio			
	Est.	S.E.	P-Value	Est.	S.E.	P-Value	Est.	Ratio-1	S.E.	P-Value
0~1	4,849.33333	611.65863	0.00005	****	****	****	1.00000	0.00000	0.00000	0.00000
1~2	2,309.50000	744.19326	0.02103	678.00000	177.89622	0.00885	1.00000	0.00000	0.00000	0.00000
2~3	3,267.14286	883.07057	0.01009	****	****	****	1.00000	0.00000	0.00000	0.00000
3~4	2,717.66667	296.35234	0.00026	****	****	****	1.00000	0.00000	0.00000	0.00000
4~5	2,164.20000	551.44695	0.01718	****	****	****	1.00000	0.00000	0.00000	0.00000
5~6	839.50000	400.27168	0.12689	****	****	****	1.00000	0.00000	0.00000	0.00000
6~7	625.00000	24.02776	0.00147	****	****	****	1.00000	0.00000	0.00000	0.00000
7~8	294.50000	240.50000	0.43596	****	****	****	1.00000	0.00000	0.00000	0.00000
8~9	172.00000	0.00000	0.00000	****	****	****	1.00000	0.00000	****	****
To Ultimate							1.00000	0.00000	0.00000	****

Delta = 0, AIC = 738.5  
 If the test is to be conducted at an overall 5% level, a parameter would be regarded as insignificant if the corresponding P-Value is greater than 0.005116

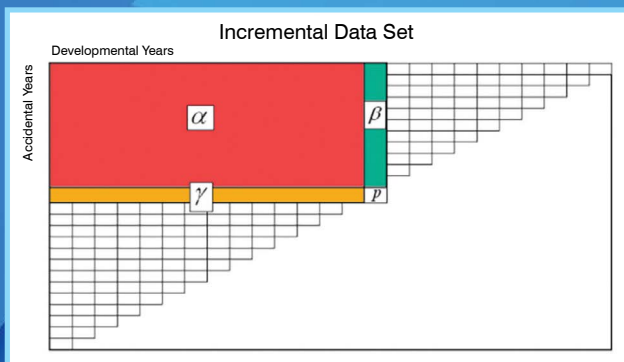
Link ratios have no predictive power for this incurred loss development array. The optimal combination of parameters uses simply an intercept term with the exception of the regression equation between development periods 1 and 2 where an accident year trend is also statistically significant.

Mack, T. (1993). Distribution-free calculation of the standard error of chain ladder reserve estimates. *ASTIN Bulletin: The Journal of the IAA*, 23(2), 213-225.

Murphy, D. M. (1994, March). Unbiased loss development factors. In *CAS Forum* (Vol. 1, p. 183).

Venter, G. G. (1998). Testing the assumptions of age-to-age factors. In *Proceedings of the Casualty Actuarial Society* (Vol. 85, pp. 807-847).

# Volume weighted average link ratios do not distinguish between accident years and development years



Consider any triangle with incremental values where:

- alpha denotes the sum of the values in the red rectangle,
- beta denotes the sum of the values in the green rectangle (one development year), and
- gamma is the sum of the values in the orange rectangle (one accident year).

Let  $p$  denote the incremental value projected for the accident year represented by the gamma values for the next development year.

The value alpha represents both the aggregate of the row sums in the red rectangle and the aggregate of the column sums.

The volume weighted average when you cumulate the triangle in the traditional way is  $(\alpha + \beta) / \alpha$ . If you cumulate the triangle for each development year down the accident years, then the volume weighted average is  $(\alpha + \gamma) / \alpha$ .

Accordingly:

$$p = \gamma \left( \frac{\alpha + \beta}{\alpha} - 1 \right) = \frac{\gamma\beta}{\alpha}$$

If you cumulate along the development years, and

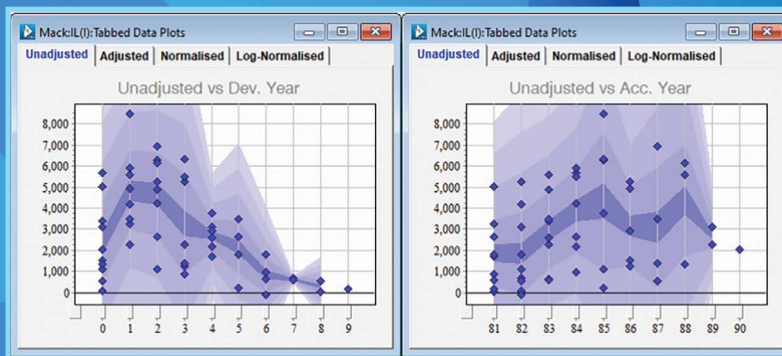
$$p = \beta \left( \frac{\alpha + \gamma}{\alpha} - 1 \right) = \frac{\beta\gamma}{\alpha}$$

If you cumulate along the accident years. QED.

We know that development years are not like accident years.

**CONCLUSION:** Link ratios have got nothing to do with the structure of the data.

For the incurred array we plot the incremental values versus development year. We also plot the values versus accident year. Note the different structure.



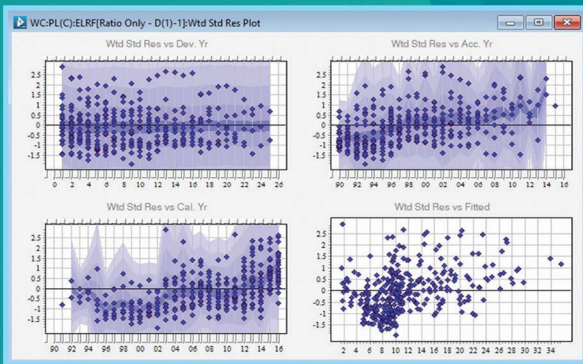
Clearly, we expect any incremental loss development array to decay to zero, but you would not expect the same pattern down the accident years.

# ELRF™ 2020

ELRF™ 2020 is for P&C actuaries who want to take advantage of the graphical representation and regression formulation of link ratios, and extensions thereof.

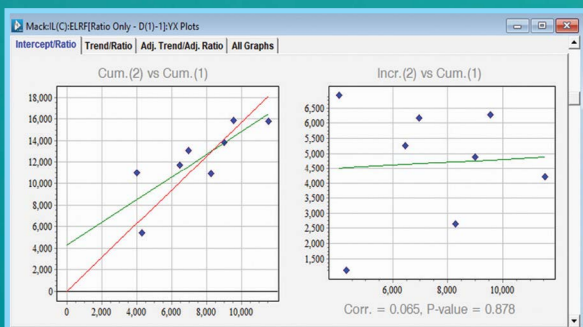
All this, coupled with the power of a relational database are included in ELRF™ 2020. All the information in the database including data, models, and results, are a mouse click away. Accessing data and information through the ELRF™ 2020 application is a pleasure.

Triangle Group	Line of Business	Reserves Held	Survival Ratio	Loss Ratio
7710 Ins Co_22502_WC_10x10	D-Workers Com...	5,934	3.40	54.32
A.I.M. Mutual Ins Co-s [G]_18555_WC_10x10	D-Workers Com...	241,288	4.39	63.39
Accident Ins Co, Inc._12674_WC_10x10	D-Workers Com...	14,965	3.40	64.50
Acuity, A Mutual Ins Co_468_WC_10x10	D-Workers Com...	293,652	3.53	56.73
AF GIP [G]_18680_WC_10x10	D-Workers Com...	1,539,997	3.29	56.96
Agricultural Workers Mutual Au_3276_WC_10x10	D-Workers Com...	504	9.88	30.57
Aioi Nissay Dowa Ins Co Ltd. G_14231_WC_10x10	D-Workers Com...	304	2.24	32.38
Alaska Timber Ins Exchange_1773_WC_10x10	D-Workers Com...	3,294	3.95	53.20
Alfa Ins GIP [G]_106_WC_10x10	D-Workers Com...	0	(None)	-4.57
Allegheny Corporation GIP [G]_18640_WC_10x10	D-Workers Com...	72,184	5.68	64.44
Allianz US PC Ins Co-s [G]_18429_WC_10x10	D-Workers Com...	159,316	5.03	421.35
American Contractors Ins GIP [G]_18067_WC_10x10	D-Workers Com...	84,248	3.87	85.52
American European Ins GIP [G]_18709_WC_10x10	D-Workers Com...	712	3.75	72.08
American Family Ins GIP [G]_124_WC_10x10	D-Workers Com...	209,601	4.19	63.71
American International GIP [G]_18540_WC_10x10	D-Workers Com...	3,598,627	4.72	77.85
American Millennium Ins Co_512_WC_10x10	D-Workers Com...	0	(None)	(None)
American National Prtn & Cas G_2947_WC_10x10	D-Workers Com...	136,433	6.75	66.98



The Extended Link Ratio Family (ELRF) modeling framework provides diagnostics for testing assumptions.

Residual plots versus development period, accident period and calendar period are also used to assess model specification error. Any patterns in the residual plots show features of the data that the method is not describing.



The Y versus X and Y - X versus X plots (left) provide diagnostic testing of the intercept and ratio minus one. Formal tests are provided in the regression tables.

Here there is no relationship between the incremental Incurred in development period 3 with the cumulative Incurred in development period 2. Link ratios do not have predictive power.



## ELRF™ 2020 Standard:

- Over 144 link ratio methods including Bornhuetter-Ferguson and Expected Loss Ratio Methods
- Link ratio methods formulated as regression estimators
- Extensions including intercept (Murphy) and constant accident year trends for each development year
- Diagnostic tools
- Bootstrap distributions by accident year, calendar year and total

## ELRF™ 2020 Professional:

- COM API
- Extended report templates
- Server database (Oracle & SQL Server)

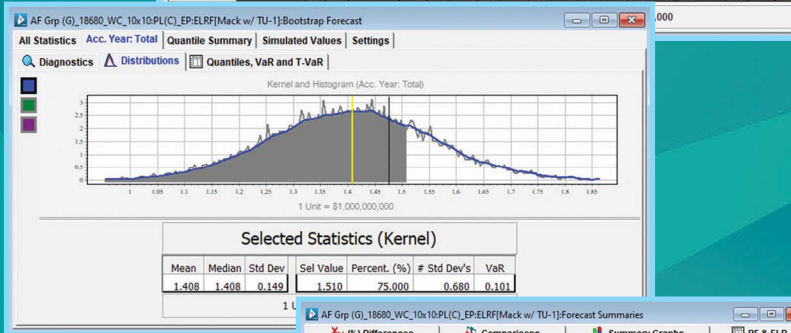
ELRF™ 2020 affords benefits at warp speed unlike any other reserving product.

AF Grp (G)\_18680\_WC\_10x10PL(C)\_EP:ELRF[Mack w/ TU-1]:YX Plots

Incremental Cumulative

### Accident Period vs Development Period (Incremental Forecast)

	Cal.Per.Total.	0	1	2	3	4	5	6	7	8	9	To Ultimate	Outstanding	Ultimate
2017	459,089	165,413	180,975	86,185	45,201	21,397	8,104	364	8,476	5,100	3,294	62,505	154,440	630,736
	425,971	165,413	206,731	104,152	17,054	17,623	23,490	27,294	2,077	2,114	1,808	7,782	50,906	50,906
2018	540,683	216,759	237,151	111,171	56,106	26,559	10,059	452	10,521	6,330	4,089	77,585	302,872	782,908
	596,920	216,759	263,277	24,872	20,249	20,827	27,751	32,286	2,501	2,528	2,125	9,990	68,601	68,601
2019	670,110	272,838	298,506	132,317	66,778	31,611	11,972	538	12,522	7,534	4,866	92,343	658,987	931,825
	741,422	272,838	29,936	29,141	23,321	23,789	31,658	36,870	2,935	2,927	2,419	17,605	92,226	92,226
Total Fitted/Observed		2020	2021	2022	2023	2024	2025	2026	2027	2028	Total To Ultimate		Total Reserve	Total Ultimate
Cal. Yr Totals		4,054,475	490,808	228,594	114,679	56,174	28,104	19,037	22,146	11,623	4,866	561,035	1,537,066	5,661,351
		4,124,285	53,073	49,959	45,990	45,708	45,328	37,052	4,306	3,626		****	173,696	173,696



AF Grp (G)\_18680\_WC\_10x10PL(C)\_EP:ELRF[Mack w/ TU-1]:Bootstrap Forecast

All Statistics Acc. Year: Total Quantile Summary Simulated Values Settings

Diagnostics Distributions Quantiles, VaR and T-VaR

### Quantile Statistics, VaR and T-VaR (Acc. Year: Total)

% Quantile	Sample				Kernel			
	#	S.D.'s	VaR	T-VaR	#	S.D.'s	VaR	T-VaR
99.6	1.812	2.709	0.403	0.444	1.815	2.725	0.406	0.447
99.5	1.800	2.627	0.391	0.435	1.802	2.639	0.393	0.435
99.4	1.785	2.523	0.376	0.427	1.789	2.551	0.380	0.429
99.3	1.775	2.462	0.367	0.419	1.779	2.484	0.370	0.423
99.2	1.771	2.430	0.362	0.412	1.771	2.433	0.362	0.413
99.1	1.764	2.387	0.356	0.406	1.765	2.389	0.356	0.407
99.0	1.757	2.335	0.348	0.401	1.759	2.349	0.350	0.403
98.0	1.715	2.055	0.306	0.363	1.716	2.061	0.307	0.364
97.0	1.690	1.888	0.281	0.339	1.690	1.888	0.281	0.339
96.0	1.669	1.743	0.260	0.322	1.671	1.757	0.262	0.324
95.0	1.654	1.644	0.245	0.308	1.655	1.649	0.246	0.309
94.0	1.640	1.553	0.231	0.297	1.641	1.559	0.232	0.297

Mean = 1.409, S.D. = 0.149, Provision = 1.409, 1 Unit = \$1,000,000,000

AF Grp (G)\_18680\_WC\_10x10PL(C)\_EP:ELRF[Mack w/ TU-1]:Forecast Summaries

(%) Differences Comparisons Summary Graphs BF & ELR

Acc. Yrs Cal. Yrs Loss Ratios Incurring Losses

### Incurring Losses

Acc. Yr	Written Premium	Paid To			CRE	Mean		Standard Dev.
		2019	2019	2019		Outstanding	Ultimate	
2013	681,822	336,086	355,720	19,634	48,384	384,470	4,209	
2014	912,478	414,887	446,391	31,504	60,042	474,929	23,538	
2015	1,008,371	453,000	497,731	44,731	73,298	526,298	34,005	
2016	1,145,882	455,627	519,399	63,772	95,442	551,069	41,022	
2017	1,284,431	476,296	609,796	133,500	154,440	630,736	50,906	
2018	1,420,624	480,036	696,871	216,835	302,872	782,908	68,601	
2019	1,528,580	272,838	632,072	359,234	658,987	931,825	92,226	
Total	9,944,884	4,124,285	5,041,171	916,886	1,537,066	5,661,351	173,696	

1 Unit = \$1,000

## ELRF™ Best's Schedule P:

Included with a Best's Financial Suite - P/C, US subscription!

- Offline access to Schedule P data from AM Best and derived financial metrics;
- All analytical tools included in ELRF™ 2020!

Contact AM Best at [sales@ambest.com](mailto:sales@ambest.com) to learn more.



**Insureware**  
Innovative Statistical Solutions for P&C Insurance

## International Leadership Council Extends the CAS's Worldwide Reach

By ANNMARIE GEDDES BARIBEAU

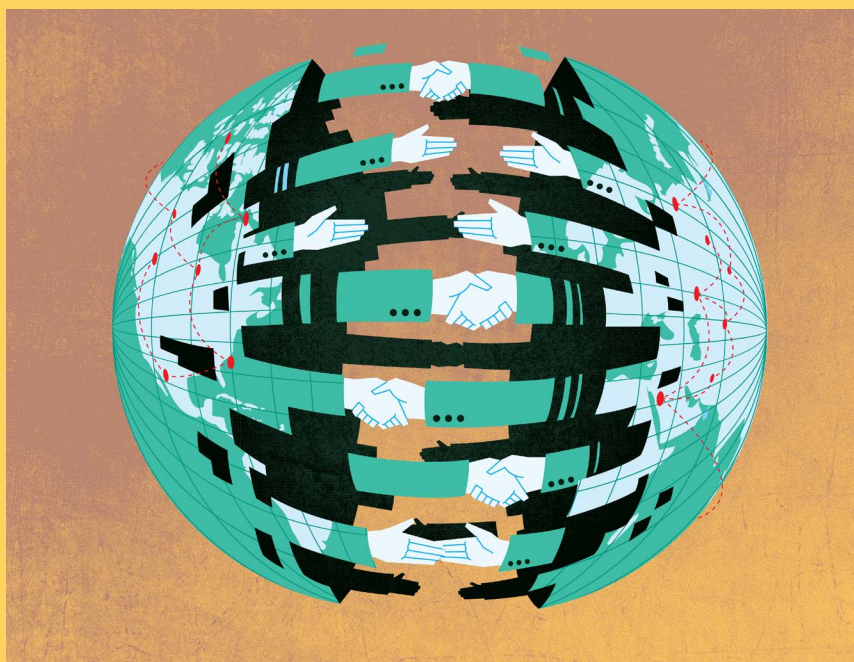
*As its membership grows beyond North America, the CAS commits to building and strengthening its connections.*

The Casualty Actuarial Society is undertaking an ambitious effort to provide more opportunities to international members while also encouraging the growth of the property-casualty actuarial profession worldwide. The CAS's ambitions are made possible by about 150 volunteers who help in various capacities, from enhancing the organization's international presence to encouraging college students outside North America to pursue careers as P&C actuaries.

One major priority is outreach to countries with developing P&C markets since the CAS's membership composition is changing as the world becomes more connected. "We cannot consider the CAS a solely North American group," said Kendra Felisky, FCAS, who is spearheading CAS's international activities.

"A significant proportion of our future members are going to be coming from outside of North America and we need to pay attention to them," added Felisky, vice president of international on the CAS Executive Council and chair of the International Leadership Group.

Currently, 94% of CAS members, including Fellows and Associates, are based in North America. Membership now comprises 82% from the United States, 12% from Canada and 6% from outside the North American continent. There is, however, a meaningful shift



taking place in membership by location as membership outside North America rose 38% from 429 in 2015 to 591 in 2021.

Looking at the current number of candidates reveals the potential CAS member composition in the future: From 2015 to 2021 the number of CAS candidates in North America grew 15% — a quarter of the 60% increase from countries outside the continent.

More significant growth is taking place outside North America and Europe for at least a couple of reasons. “The world is developing more complex risks,” observed Bob Conger, who is a member of the CAS International Ambassador Program. He explained that the property-casualty industry is growing in different parts of the world where there are relatively few actuaries. Conger added that the international effort gives the CAS an opportunity to expand its presence, membership and role.

## Striving for an Envisioned Future

The CAS Board of Directors prioritized the organization’s role worldwide. Its strategic plan, released in December 2020, highlights three pillars for the organization’s “Envisioned Future.” The pillar, “Expanding Globally,” is to ensure “the unique skill sets of CAS members are understood and valued worldwide by raising awareness of the CAS brand globally,” Felisky said.

The International Leadership Group crystalized when Felisky became vice president-international on the CAS Executive Council, Conger said. “She saw we were spending a lot of time

collaborating with each other individually and thought we could do that as a group,” he said. “She was right! It has been quite effective and energizing.”

The group is pursuing multiple initiatives to bolster international participation. Felisky calls the International Member Services Task Force “the powerhouse that drives all our other initiatives.” (See sidebar.)

The International Leadership Group worked with staff to develop and logistically support the new Exam 6-International (6-I), which was administered for the first time in October 2021. Designed for candidates for whom the U.S. or Canadian regulations are not relevant, the exam covers international standards and regulations along with emerging areas of global practice.<sup>1</sup>

Additionally, the International Leadership Group provides top-down direction and establishes priorities for its three international working groups: Asia Regional, Latin America Regional and the International Actuarial Association Working Groups.

The two Regional Working Groups are executing multi-pronged approaches to expand the CAS’s presence in each region and its target countries. Initiatives include developing and delivering the organization’s services to members and candidates; serving as liaisons to local actuarial organizations and their members; coordinating CAS participation in the organizations’ activities; promoting local programs and seminars; and facilitating two-way communication between the CAS and local actuarial organizations.

CAS international volunteers are building relationships with regula-



*This and other articles will highlight the work being done to accomplish the three pillars of the CAS Strategic Plan.*



*CAS VP-International Kendra Felisky: Her mission is to raise awareness of the CAS brand throughout the world.*

<sup>1</sup> <https://www.casact.org/article/cas-announces-syllabus-new-international-actuarial-exam>



**Felisky calls the International Member Services Task Force “the powerhouse that drives all our other initiatives.”**



*A sweet treat: CAS Asia Ambassador Ron Kozlowski samples a gastronomical delight.*



*Kenny Tan: Malaysian auto insurers are now encountering a free market.*

tors and employers to demonstrate the value of CAS credentials as essential for property-casualty actuarial work, Felisky said. Connecting with people in the regions means becoming acquainted with each country’s unique circumstances.

Members are also devoting themselves to university engagement for students, candidates and academics in Asian and Latin American countries, particularly where life and health actuaries or statisticians are serving in roles best filled by P&C actuaries. Felisky said that the effort includes working toward establishing connections with universities to encourage and bolster actuarial programs in P&C insurance.

**Asia — A Growing Market**

Ron Kozlowski, the CAS’s Asia Ambassador, works in conjunction with Conger and focuses a lot of his energy on the region because Asia is experiencing the greatest expansion. “Employers and regulators are increasingly interested in the value that P&C actuaries bring to the table,” said Conger, adding that because the market is growing rapidly, the universities are awakening to the value of P&C education.

The greater demand for P&C actuarial talent is partly because most countries, except the U.S., use International Financial Reporting Standards (IFRS) to prepare financial statements. A new standard, IFRS 17, is speculated to cause a lot of disruption. “[IFRS 17] upends everything you knew about financial reporting for insurers and incorporates a lot of new actuarial calculations,” explained Kenny Tan, FCAS, who lives in Malaysia and serves on the CAS International Webinar and Malaysia Seminar Planning Task Forces. The standard,



*Meet and greet and teach: Bob Conger (right), a long-time leader and member of CAS international programs, performs his ambassadorial duties in a classroom in Chengdu, China.*



*I Love Mumbai: Kozlowski (right) and a friend take in India’s second most populous city.*

which was initially to take effect in 2021, has been pushed back to 2023.

Rate deregulation also explains the greater need for CAS-credentialed actuaries in Asia, said Tan, a Malaysian native who attended college, began his career and earned his CAS credentials in the United States. Five years ago, insurance regulators in Malaysia partially de-tariffed the auto insurance market to introduce competitive rating, Tan said. “I had experienced a free market in the U.S., but the Malaysian auto insurers are experiencing it for the first time,” he said. Like Tan, many CAS volunteers in Asian countries first worked in the United States.

“CAS people are more passionate,” said Tan, when he compared the CAS to other organizations for which he volunteers. “We have volunteers from China,

Singapore and Hong Kong,” he said, adding that the CAS is not just a professional society, but that it offers unique expertise that members can share among each another. Conger confirmed that there are about 200 CAS Fellows and Associates living and working in Asia.

CAS volunteers in Asia often meet virtually and because the countries use many different languages, webinars and seminars are conducted in English. Tan said that there are cultural challenges also, explaining that people in Malaysia tend to shy away from public speaking. This hesitation makes it challenging to find speakers or to encourage conversations during meetings.

The CAS has committed significant resources in China, where almost 9% of current CAS candidates reside, Felisky said. The investment includes hiring a full-time CAS staff member, Ran Guo, FCAS, who serves as China country manager. Based in Beijing, Guo’s work is critical for initiatives such as the CAS Boot Camp, which had more than 250 students this last year, he said.

The effort is essential because actuarial students in Asia often are being exposed to actuarial careers in life insurance, Conger said, and they might not be aware of options in the P&C industry. “[We want] to make sure that there are people in the room coming from the P&C perspective,” he said.

But there is still a long way to go before the P&C actuarial profession is as firmly established in Asia as it is in North America and Europe. The CAS has an advantage over other actuarial organizations that offer credentialing, Tan said, because the tests are specifically geared toward P&C insurance and are the most affordable.



*An acquired taste: Durian is a large spikey and malodorous fruit that is detested by some but loved by many. For those who love it, The Durian Man can oblige you.*



*Kozlowski (left) and Conger take in the sights.*

## Moving Outside North America?

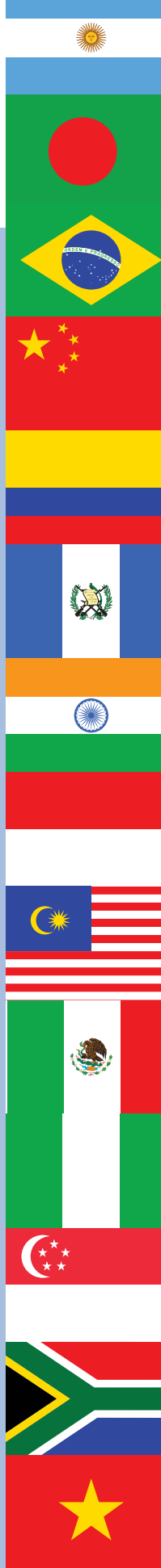
### The International Member Services Task Force can help!

The task force’s purpose is to maintain and enhance the connection between the CAS and its international members. By working in conjunction with the international Regional Affiliates, the task force serves the CAS’s international membership and encourages connection and participation between the CAS and its members.

Services include:

- Assisting the international Regional Affiliates to develop and implement programs for their membership.
- Facilitating and encouraging informal communication and interaction by maintaining email lists.
- Connecting actuaries who are relocating with others who are living in that region.
- Sponsoring educational webinars for international actuarial topics.
- Enabling interactions between traveling CAS leadership and international members.

For more information on how you can volunteer for the International Members Services Task Force or partake of its assistance, please write to [IMSTF@casact.org](mailto:IMSTF@casact.org).





**“The important thing here is that we now have a structure to oversee our dealings with the IAA,” Felisky explained. It is also important to carry the flag as the only exclusively P&C actuarial organization, she said.**



*Nicolás Vega: Latin American regulators need to understand the value of credentialed actuaries.*

### **Latin America — common language, varied practices**

There are similar challenges in Latin America, where the CAS sees promising growth potential. Employers also need to see the advantages of CAS-credentialed actuaries and better support candidates by providing resources and work time for studying as is customary in the United States, said Nicolás Vega, FCAS, who chairs the Latin America Regional Working Group. He sees his primary role as spreading the CAS brand and promoting actuarial science in the region.

Vega says that the development of the P&C actuarial profession varies by country in Latin America. Vega is one of the very few CAS-credentialed actuaries from Colombia. Few CAS-associated P&C actuaries work in Latin America, he said, adding that in Mexico, Brazil and Colombia there are local actuarial associations, but they are not fully focused on property-casualty insurance. Some countries have started to form actuarial groups, but others have not yet reached that stage.

In most Latin American countries, regulators appreciate the value of an actuarial opinion but also need to recognize the value of actuaries overall, especially credentialed actuaries, Vega said. There are also fewer insurance companies in the region. “The scale is different, but the needs are there,” he said. Each country has a CAS ambassador who represents the organization to students, candidates, members and the P&C market.

One advantage to reaching people in the Latin American region is the

common language of Spanish, except for Portuguese-speaking Brazil. The CAS is planning more seminars for the Latin American region.

### **Organizing the efforts**

Led by Ralph Blanchard, FCAS, the International Actuarial Association Working Group coordinates CAS positions regarding international issues and interacts with various associations including the International Actuarial Association (IAA). “The important thing here is that we now have a structure to oversee our dealings with the IAA,” Felisky explained. It is also important to carry the flag as the only exclusively P&C actuarial organization, she said.

### **Getting Involved**

More volunteers are needed, Felisky said, especially those working in the countries where the CAS seeks to expand its presence. “Boots-on-the-ground” volunteers are the ones “we rely on the most,” she explained.

“[Volunteers] really inspire the rest of us,” said Conger. When he was CAS president about 20 years ago, Conger became interested in international outreach while attending the International Congress of Actuaries in Mexico. The insights and creativity he experienced at that event encouraged him to become more internationally involved.

To volunteer, please email [volunteer@casact.org](mailto:volunteer@casact.org). ●

---

*Annamarie Geddes Baribeau has been covering insurance and actuarial topics for more than 30 years.*



ON THE SHELF

Thinking About Thinking By LAURIE MCCLELLAN

*Think for Yourself: Restoring Common Sense in an Age of Experts and Artificial Intelligence*

By Vikram Mansharamani, Harvard Business Review Press, 2020, 304 pp, \$13.99

What do financial bubbles and cancer have in common? Vikram Mansharamani believes they both reflect our current moment, in which experts, technologies and information overload complicate all our choices. They also provided the inspiration for his new book, *Think For Yourself*.

In 2011, Mansharamani, a Harvard lecturer who consults on global business trends, had just published a book about spotting financial bubbles by looking at them through the lenses of several different disciplines, including economics, politics and psychology.

“When you’re looking at something uncertain, like a financial bubble,” he says, “using multiple lenses increases the probability that you’ll identify one.”

At a talk the author gave about his book, an older gentleman asked for his business card. “A couple years later,” Mansharamani says, “he calls me back up, he says, ‘I want to thank you. You and your book and your ideas helped my

wife and me navigate a cancer diagnosis.’ I said, ‘I think you got it wrong, I was talking about finance.’ He said, ‘No you weren’t. Your idea of using multiple lenses to navigate uncertainty was helpful in allowing us to interact with all the experts who were around us.’”

In both finance and medicine, information overload can make it difficult to choose. “We live in a world where expertise is everywhere, embedded in technologies and individuals,” Mansharamani says, “and so a lot of us have come to conclude that there is a perfect answer to every question that exists. But we also know that we don’t know everything about everything, so what do we do? We find the expert! And as a result, many of us stop thinking, and we just follow blindly.”

Of course, Mansharamani, who holds a Ph.D. in management as well as two master’s degrees from MIT, is something of an expert himself. He doesn’t advocate disregarding sources of information like experts and artificial intelligence, but instead looks at the best ways to use that expertise. The result is a guide to thinking about thinking — specifically how to make decisions, consult experts and imagine the future. “My hope is that this is a book that empowers individuals to stand up and think for themselves,” says Mansharamani. “That doesn’t mean dismissing experts. What I do want is for people to feel empowered to ask questions of experts.”

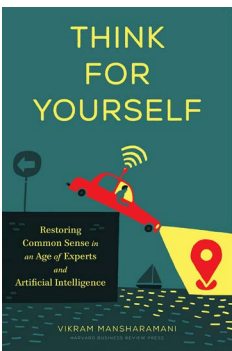
One clue to Mansharamani’s approach is the picture of a fox hanging

above his desk. It’s a reminder of a quote from the Greek poet Archilochus, who wrote, “The fox knows many things, but the hedgehog knows one big thing.” Mansharamani sees himself as the fox in this scenario — a generalist with a breadth of knowledge, as opposed to the hedgehog, a specialist with deep knowledge in one small area. “I’m a big believer that ‘generalist’ is a good word,” he says. “A lot of people say that a generalist is a jack of all trades and master of none. But I do think when you’re navigating uncertainty and making tough decisions, it often is better to be a fox.”

How does being a fox help you make better decisions? According to the author, “In uncertain domains, I believe breadth of perspective may trump depth of knowledge.” He cites research by Philip Tetlock, a professor at the University of Pennsylvania, who found that non-experts are actually more accurate than experts in predicting developments in the experts’ area of knowledge.

Even if you are a wily fox, you’ll still need to ask expert hedgehogs for advice sometimes. Mansharamani’s catchy slogan for this situation is: “Keep experts on tap, not on top.” This strategy, he writes, “means using experts and technologists strategically. They may have a narrow focus, but we can combine their guidance with our broad perspective.” That broad perspective includes one piece of vital information. “There’s only one person that understands your decision context,” Mansharamani says, “and that’s you. And so, you need to think for yourself. And you bring in experts to help you do that.”

The road to thinking for yourself, however, is lined with some predictable cognitive potholes. The book surveys some of the worst mental obstacles that



independent thinkers need to avoid, including framing and focus. Framing refers to the way our choices can be affected by the way those choices are presented to us — often to a surprising degree. In one experiment the author cites, doctors were given statistics for two different theoretical lung cancer treatments: surgery and radiation. According to Mansharamani, “When the doctors were told that for surgery ‘the one-month survival rate is 90%,’ 84% of them preferred it to radiation. By contrast, when they were told ‘there is 10% mortality in the first month,’ only 50% favored it.”

The effects of framing can be hard to spot. The author reminds readers to pay attention to default choices, citing studies on organ donation. In countries where people have to actively choose to become an organ donor by checking a box on a form, between 4% and 28% of people sign up to become donors. But in places where the opposite is true — where people have to check a box to opt out of becoming donors — between 86% and 100% of people become donors.

The problem of focus centers on the question: What should I pay attention to? For example, being presented with three choices often leads to focusing on the pros and cons of each choice. But Mansharamani wants readers to pay attention to situations, such as organ donation, where their focus can be manipulated. He recommends remembering that when presented with three choices, there are actually five options on the table: the three choices, opting to seek additional choices and deciding to simply do nothing.

What are some steps that readers can take to think for themselves? Mansharamani says the key is to triangu-

**Five Ways to Think For Yourself**

- 1. Ask questions.**  
Whether an opinion comes from your doctor or your financial advisor, some of Mansharamani’s favorite questions include: Why do you think this is the right choice for *me*, specifically? How did you reach this diagnosis (or recommendation)? Do you *think* this to be true, or *know* this to be true? What kind of research is this based on?
- 2. Beware of cognitive crutches.**  
Shortcuts in thinking, called heuristics, help us quickly make dozens of decisions every day. But these same shortcuts can mislead. For example, the anchoring effect is the tendency to be biased by the first piece of information we hear. In one experiment, audience members watched a researcher spin a number wheel and read the number out loud. Then they were asked to guess what percentage of African countries belong to the United Nations. If the random number was 10, the average guess was 25%. If the random number was 45, then the average guess was 64%.
- 3. Read novels.**  
Says Mansharamani: “Fiction reading forces you to step back and see the big picture ... and ask questions about the human condition and how it may affect where you are and what you’re doing.”
- 4. Perform a premortem analysis.**  
In this exercise, try imagining the future failure of your project — then try to think through what might have caused it. According to Mansharamani, “Research found that the exercise of thinking about how projects may fail in advance increased the ability of correctly identifying possible trajectories by around 30%.”
- 5. Play devil’s advocate.**  
When making a decision, deeply consider the alternatives. Mansharamani quotes historian Doris Kearns Goodwin from her book *Team of Rivals: The Political Genius of Abraham Lincoln*. Goodwin wrote that “by putting his rivals in his cabinet, [Lincoln] had access to a wide range of opinions, which he realized would sharpen his own thinking.”

late. “Understand every perspective is limited, every perspective is biased, and every perspective is incomplete,” he says. “If that’s the case, don’t rely on one perspective — or one expert. The idea is that you need to get the contrarian view. If you think ‘up,’ somebody should explain to you why ‘down’ may be the right answer. I think it results in better understanding, and therefore better decision making.”

In today’s political climate, Mansharamani feels that seeking out different views is more important than ever. “If you’re watching Fox News, please also turn on CNN,” he says. “I’m not asking you to agree with everything; I’m asking you to appreciate that there are different views. Or if you’re on Twitter and you happen to pay attention to some very liberal commentators, also please turn around and follow a conservative

commentator or two, just to get their perspective ... I think that logic, of piercing the filter bubbles and echo chambers in which many of us live, is constructive and would help us overcome many of these polarizing dynamics that are affecting us.”

The author also believes that a diversified media diet can help fight the current plague of disinformation. “The ideal, which is really a problematic process to get to the ideal, is that the disinformation is taken down,” he says. “And that is really, really hard because everyone’s version of reality may be slightly different ... the worst-case scenario is, you just consume the information put in front of you, and it’s wrong, and you believe it. But if I tell you to diversify your media diet, you’re still going to get that misinformation, but you’ll see that there’s also a different view. There’s a debate. Now you can think for yourself.”

But even the best media sources can begin to distort a reader’s thinking, through the subtle effects of filtering. Mansharamani advocates reading newspapers and magazines in the print version to avoid digital filters and get the broadest views of what’s in the news. Web sites usually display only a small percentage of the articles a printed paper contains; read the paper on your phone and you’ll see even fewer.

“It’s not just that there’s a filter,” says Mansharamani, “but that the filter is dynamic, based on what you’ve clicked on before ... so if you click on stories relating to civil war in West Africa, you know what? You’re more likely to get stories about West Africa and civil war. Then, my guess is, you’re going to believe that Africa is filled with war all the time.” Instead of challenging our think-

## **Instead of challenging our thinking with other possibilities, filtering can lead to confirmatory bias — a process in which in our own beliefs are constantly confirmed as correct.**

ing with other possibilities, filtering can lead to confirmatory bias — a process in which in our own beliefs are constantly confirmed as correct. According to the author, “When these algorithms channel [us] and focus [our] energy and attention on particular topics, our minds seem to adjust to believing they are either more frequent or more regular or more recent than they actually are. And that’s where we lose our ability to think for ourselves, because the whole world seems to confirm what we already believe.”

Quick test: Which is more dangerous: taking a selfie or swimming in places where sharks live? According to the book, in most years, more people die in selfie accidents than in shark attacks. Yet when rare events, like shark attacks, attract a great deal of media attention, confirmatory bias can tell our brains that those events are common.

An advisor to several Fortune 500 CEOs, Mansharamani has come to believe that learning how to navigate uncertainty — by thinking for yourself and seeking out a wide variety of experiences — can pay big dividends in the workplace. “Thinking about how to develop multiple perspectives and skills in your career is really important, and it has big career decision-making implications,” he says. “Some of the biggest corporate stumbles that I’ve witnessed in my career have been leadership decisions, where the person who’s risen came up and was wildly successful as a narrow specialist. And then they end up at the

top, and they don’t have the breadth of perspective or experience to be able to navigate uncertainty.”

To grow in your career, the author recommends throwing out the analogy of climbing a corporate ladder, and instead thinking about a career as a trip through a jungle gym. He explains: “The way to the top may not be vertically, going straight up. It may need to be that, OK, you’re in finance today. You might need to take a lateral move. Go into operations for a little bit. Or you’ve been in operations for a little bit, take a downward step and go do a lower-level operations role in a different country, to get a different perspective.”

For himself, Mansharamani has found that being a generalist, like his mascot the fox, has led to career satisfaction. “Every room I walk into, I know I’m not the smartest person on anything, ever,” he says. “And I find that really stimulating. There’s always someone who I can learn from. For me, as someone who’s curious and constantly seeking to learn, that’s really cool. I feel like being a generalist allows me to spend enough time reading and thinking broadly, that I can make connections with people regardless of their area of study. So, I’ve found it personally more fulfilling.” ●

---

*Laurie McClellan is a freelance writer and photographer living in Arlington, Virginia.*



# Engaging the Actuarial Community to Combat Racism and Foster Support of Black Actuaries

By KATE WEAVER, EXECUTIVE DIRECTOR, THE INTERNATIONAL ASSOCIATION OF BLACK ACTUARIES

The Black Lives Matter movement put a heightened focus on the ongoing systemic racism oppressing the Black community. These systems of oppression continue to permeate through society and even in corporate settings, both limiting the success and advancement of Black actuaries as well as presenting large obstacles for companies looking to cultivate true diversity, equity and inclusion (DEI) within their organizations.

The IABA Pledge was created for the specific needs of the actuarial profession in addressing the barriers to entry and the achievement of underrepresented groups within the actuarial profession. By way of background, let us start with a list of things we know:

1. **Diversity is beneficial.** Studies have shown that increasing (and retaining) diversity in the workplace improves innovation, financial performance, decision-making and marketplace relevance.<sup>1</sup>
2. **The actuarial profession lacks representation of minority talent across all levels.** Despite DEI programs and the existence of support organizations like the International Association of Black Actuaries (IABA), founded in 1992, and Organization of Latino Actuaries (OLA), founded in 2017, Black and Latinx actuaries are still significantly underrepresented. Black and Latinx people represent approximately

12% and 15% of the U.S. population, respectively, yet each group represents less than 2% of credentialed actuaries. Differences in representation in management and senior leadership are even more stark. It is evident that the industry has a long way to go to achieve proportionate representation in the field.

### 3. Diversity alone is not enough.

Diversity is only one piece of the puzzle — it must be accompanied by equity and inclusion, which are equal if not greater pieces of that puzzle. If people of color do not see a path to success yet feel they belong on that path, it will be extremely difficult to attract sufficient numbers of actuarial candidates (both entry-level and experienced). Inclusion and equity are imperative to improving retention.

### 4. Collective action and collaboration drive change.

IABA has always approached the work of DEI through a collaborative lens. We can be more effective and have greater impact if we share, learn from one another, and motivate one another to set bold goals and work toward achieving them together.

### 5. Actuarial employers and recruiters are integral to closing opportunity gaps.

Actuarial employers must consider and implement recommendations for building DEI in the workplace. Consistent ap-

plication of recommendations will ensure people of color are being given the same opportunities for growth and success as are White people. Actuarial recruiters hold a lot of power in helping companies identify talent. As such, recruiters play an equally important role in considering recommendations for ensuring diverse talent in sourcing, recruiting and hiring strategies.

Introduced in 2020 and implemented in early 2021, the IABA Pledge provides a foundation and framework for both actuarial employers (i.e., IABA Commitment to Change) and recruiting firms (i.e., IABA Action Pact) to support and improve the representation of Black actuaries in the profession. These frameworks are meant to correct imbalances by stripping away and avoiding practices that are inequitable and unfair, and that disproportionately hinder underrepresented and marginalized groups. They are meant to correct preferential systems that have been in place for ages, not just in corporations but in society as a whole.

IABA's Corporate Partner-level companies were the first group invited to sign the Pledge. The initial cohort includes AIG, Ally, Cigna, Everest, Milliman, New York Life, Principal, and Prudential. On the recruiter side, three premier actuarial recruiting firms have begun implementing the Action Pact: DW Simpson & Company, Galecki Search Associates and Oliver James.

<sup>1</sup> Some examples include McKinsey & Company's 2020 report, "Diversity wins: How inclusion matters," <https://www.mckinsey.com/featured-insights/diversity-and-inclusion/diversity-wins-how-inclusion-matters> and BCG Henderson's 2017 article, "Diversity at Work," <https://www.bcg.com/publications/2017/diversity-at-work>.

With collaboration and action across all aspects of the profession, IABA is working with industry partners to *collectively* improve key performance indicators associated with Black actuarial representation in the industry to help achieve the following two *industry-wide* goals:

1. At least 3% of senior leadership roles will be represented by Black actuaries in five years.
2. At least 5% of management roles will be represented by Black actuaries in five years.

### How to learn more and give support

We are calling on the actuarial profession to instill change and build pipelines for the long-term increase in and development of Black actuaries across all levels. While DEI efforts have expanded throughout the industry in recent years, we believe these attainable goals will increase the number of successful Black actuaries at an unprecedented and sustainable pace.

Actuarial employers and recruiting firms that are interested in learning more can visit the IABA Pledge website (<https://www.blackactuaries.org/mpage/IABAPledge#>). All companies, even those not enrolled in a Pledge cohort, are encouraged to familiarize themselves with the Pledge and to implement the recommendations provided. ●

---

*Kate Weaver has served as IABA executive director since 2009.*

### Actuarial Recruiters and Employers Share their Early Experiences as Part of the IABA Pledge Cohort

“Our recruiting team strongly feels the importance of increasing the equity and representation of underrepresented groups in the workplace. As external recruiters, we can move the needle on that by ensuring we align our efforts with organizations like IABA as well as our recruiting colleagues both internally and externally,” said Anna Kupik, IABA Action Pact representative for Galecki Search Associates. “Being a part of the IABA [Pledge] Cohort has allowed us to zero in on efforts that would have the most impact both in the short term and long term. To be effective, efforts need to be strategic and not fragmented or duplicative; to make a long-term impact we need to work together.” Kupik noted that being a part of the cohort empowered peers to share their ideas. “We have been able to better understand the strengths we have and the gaps we face in our contributions related to equity and representation,” she said.

“AIG, along with other employers, understand the benefits a diverse team brings to a company,” said Melissa McDermott, ACAS, who is AIG’s chief actuary, North America-General Insurance. McDermott got involved with IABA to be part of the team to help bring about change and create a diverse employee base at the leadership level for actuaries. Some of the changes include raising awareness of actuarial careers among high school and college students, identifying biases in recruiting and establishing key metrics to track improvements. “The opportunity to openly discuss potential barriers and strategize how to overcome those hurdles has been powerful,” she said. “I would highly encourage more companies to sign the pledge; the more power behind this important initiative, the more positive change we can make.”

Eric Sligay, ACAS, MAAA, senior director of actuarial pricing and reserving for Ally said the Pledge is consistent with his company’s culture of driving diversity, equity and inclusion. “[The Pledge] aligns with our corporate philosophy of doing it right and being even better. Perhaps most importantly, it’s simply the right thing to do,” he said. “I’m reminded of what my father told me as a young man, ‘If you’re not part of the solution, you’re part of the problem.’ It’s crucial that we work together to improve participation of underrepresented groups in this profession that has given us all so much,” he said. “Opening the door for others is one of the best ways we can give back to the profession, drive change and ultimately enhance our profession by attracting the best and brightest.”

Ari Moskowitz, ACAS, of Everest Re Group, Ltd. declared that signing the Pledge was an easy decision for his company. “The Pledge only further emphasizes our commitment to ensuring awareness and the increased support and development within all diverse, actuarial communities,” said Moskowitz, who is SVP, chief operations officer and chief pricing actuary-reinsurance for the company. “We have the opportunity to partner with organizations that have similar drive and purpose, and to experience many of the same challenges and successes alike. We want to help increase diversity overall and learning from one another helps to push the needle forward faster,” he said. “The larger the Pledge and the cohort, the stronger the initiative and the closer we will be to achieving results for all.”

EXPLORATIONS BY DONALD F. MANGO

## Is Reserving a Risk Function?

I have limited reserving experience, from much earlier in my career. The bulk of my time since 2000 has been in risk. In March 2020, I became group chief risk officer and chief actuary of Everest Re Group. I have spent a lot of time since then “learning actual reserving.” This article presents my perspectives and questions about reserving, viewed through a *risk* lens.

For a summary of my risk lens, let’s rewind the clock to 2004 (see Figure 1).

Figure 1 comes from “Benchmarking Enterprise Risk Management Practices in a Derivatives Firm,”<sup>1</sup> a 2004 article originally published in *The Actuary* magazine. The message to actuaries then (and now, and forever) is: Traditional actuarial roles *are* risk functions.

The next component of the risk lens is the well-known “Three Lines of Defence Model” (see Figure 2).

I adapted this to the “Three Lines of Reserving Defense Model,” as shown in

Figure 3.

This model frames reserving department standard practices in a three-layer escalation process. Quarterly or monthly monitoring can take many forms. In *riskspeak*, monitoring looks for key risk indicators (KRIs), which have thresholds that trigger responses when tripped. One well-known monitor in use at many companies is Actual vs. Expected (A vs. E). Companies using A vs. E have developed “KRI-type” thresholds for what constitutes “actual is sufficiently worse than expected to warrant investigation.”

Advances in computing power open possibilities for companies to employ more advanced monitoring, including

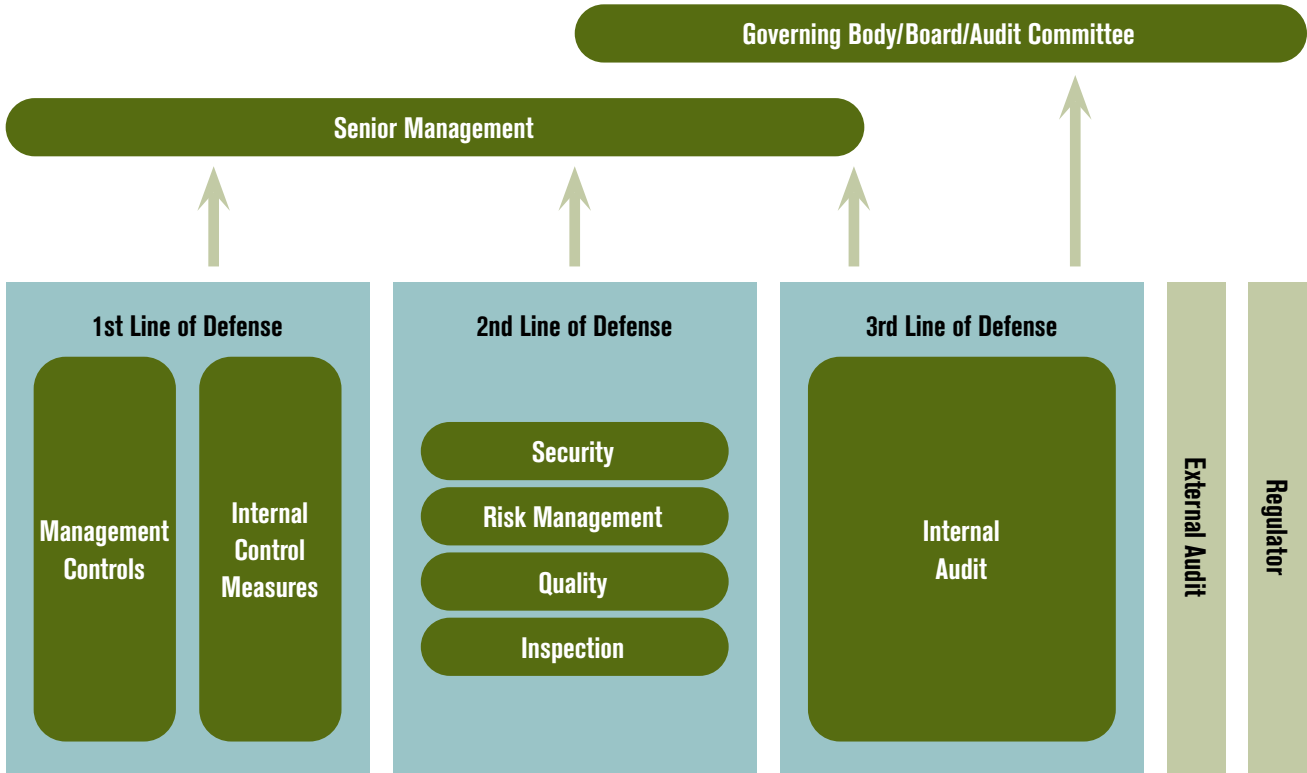
Figure 1. Derivatives Trading Operation — Risk Functions vs. Actuarial Practice Equivalents

Area	Derivatives Roles and Responsibilities	Actuarial Equivalents
1. Risk Monitoring and Analysis	<ul style="list-style-type: none"> <li>Monitor position and price data</li> <li>Evaluate risk exposures</li> <li>Identify and monitor limit violations</li> <li>Analyze potential scenarios</li> <li>Summarize and report on risk exposures</li> <li>Reconcile with other areas</li> <li>Perform back-testing</li> </ul>	<ul style="list-style-type: none"> <li>Monitor <b>reserve</b> and price data</li> <li>Evaluate risk exposures</li> <li>N/A (<i>The monitoring of underwriting authorities is usually done within the underwriting risk management area.</i>)</li> <li>Analyze potential scenarios</li> <li>Summarize and report on risk exposures</li> <li>Reconcile with other areas</li> <li>Perform back-testing (e.g., <b>reserve run-off tests, experience analysis</b>)</li> </ul>
2. Quantitative Analysis	<ul style="list-style-type: none"> <li>Determine modeling for new products</li> <li>Design new quantitative models</li> <li>Test new modes</li> </ul>	<ul style="list-style-type: none"> <li>Determine modeling for new products</li> <li>Design new quantitative models</li> <li>Test new modes</li> </ul>
3. Price Verification	<ul style="list-style-type: none"> <li>Verify prices of complex derivatives</li> <li>Track changes in pricing models</li> </ul>	<ul style="list-style-type: none"> <li>Verify prices of <b>complex policies or treaties, or blocks of business</b></li> <li>Track changes in pricing models <b>and rates</b></li> </ul>
4. Model Development	<ul style="list-style-type: none"> <li>Develop new models for system</li> <li>Develop risk analysis tools</li> <li>Maintain historical return data</li> </ul>	<ul style="list-style-type: none"> <li>Develop new models for system</li> <li>Develop risk analysis tools</li> <li>Maintain historical <b>reserving and pricing data</b></li> </ul>
5. System Development and Integration	<ul style="list-style-type: none"> <li>Develop infrastructure to support processing</li> <li>Accept feeds from other systems</li> <li>Automate data scrubbing and translation</li> <li>Develop database to support risk data</li> </ul>	<ul style="list-style-type: none"> <li>Develop infrastructure to support processing</li> <li>Accept feeds from other systems</li> <li>Automate data scrubbing and translation</li> <li>Develop database to support risk, <b>pricing and reserving data</b></li> </ul>

<sup>1</sup> <https://www.soa.org/library/newsletters/the-actuary-magazine/2004/december/ben2004december>

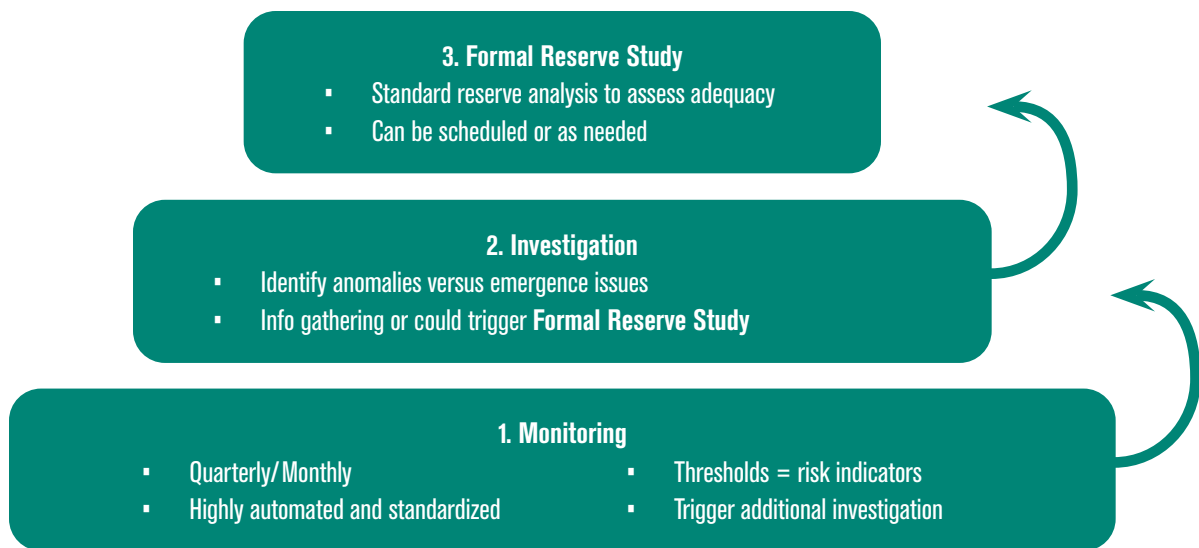


**Figure 2. The Three Lines of Defense Model**



Source: Adapted from the European Confederation of Institutes of Internal Auditing /Federation of European Risk Management Associations Guidance on the 8th EU Company Law Directive, Article 41, <https://www.iaa.nl/SiteFiles/ECIIA%20FERMA.pdf>.

**Figure 3. Three Lines of Reserving Defense Model**



what is known as “actuary in a box.”

This is a risk term from capital modeling in the Solvency II world. It refers to the modeling of reserving risk, which is the volatility of “actuarial best estimate” (ABE) in future modeled calendar-year scenarios. Think of it as follows: The capital model simulates reported loss in a future time period and a mechanical approach (actuary in a box) calculates the ABE for that scenario. A risk monitor could be based on change in mechanical ABE.

The next level response is investigation, aimed at first rooting out anomalies (or errors) versus true emergence issues. Anomalies are sent back to the operations of the company (e.g., claims, underwriting processing) for correction. True adverse emergence triggers the third level, formal adequacy assessment — what is commonly called “reserve studies.”

This distinction among the lines of reserving defense helps frame the difference between monitoring, investigation and actuarial reserving work product — assessment of reserve adequacy. It also sets the stage for introducing advanced techniques, such as machine learning. Innovative approaches can be positioned in a *first line* capacity, as risk monitors, with no misunderstanding that they represent a “second opinion” of reserve adequacy. They are simply there to highlight areas for we humans to focus.

### Actuarial challenge

This is a formal Solvency II requirement, serving as a check-and-challenge of all key actuarial assumptions. Think of it as

an “internal external view.” An actuarial challenge analysis is performed independently of both pricing and reserving. The scope spans planning, pricing, results monitoring and reserving. Its natural home is therefore risk.

### IBNR allocation *is* capital allocation (and not in a good way)

This is because IBNR is deep-in-the-money earmarked risk capital — and everyone knows what I think about allocating capital!<sup>2</sup> The main problem with allocated capital is *its meaning*. The reality is, regardless of the allocated capital, the company is responsible for the full value of any claim. Looking at allocated IBNR, what is the meaning of allocating IBNR to a segment in an amount that is less than the typical limits of the policies that segment sells? If we are telling that segment, “Too bad — you need to fund your own losses with your IBNR allocation,” then what are they supposed to do about the highly likely deficit situation when a limit loss exceeds the funds available? (A “limit loss” is a loss maxed out at either a policy or contract limit.) And if we are not saying you must fund your own losses, then what does the IBNR allocation *mean*?

In response to this unfortunately common problem, some reinsurance finance leaders (where the issue is often more acute than in insurance) have floated the idea of a *central “large loss” IBNR account* — no allocation of IBNR at all. That is my kind of answer! When large losses arrive, regardless of the business segment, fund them from the central large loss IBNR account. Reserving regularly assesses the adequacy of

the large loss IBNR account in total and tracks marginal changes over time.

One more comment: I understand some IBNR allocation is mandated by regulatory reporting requirements. In that case, we should strive to have it be as formulaic (inexpensive to produce) as possible.

### Net reserving

Looks like what we do is:

- (i) Assemble a triangle of losses net of whatever reinsurance programs were in place over time.
- (ii) Apply standard methods.
- (iii) Hope “homogeneity” applies.

Sounds fine if we have had the same reinsurance structure in place for many years or if we only had quota shares (which we can easily adjust for in typical reserving software). More commonly, though, companies have changing reinsurance programs over time, including excess of loss treaties (and let’s not even go there on facultative). What then is the most accurate approach for calculating net reserves?

We can look for assistance in standard practices of reinsurance broker actuaries. They provide the analytics to support cost-benefit comparison among alternative proposed reinsurance programs. They do this with proprietary software that calculates granular net loss distributions from input gross loss distributions. If we assume the worst case, a very different reinsurance program every accident year, then our proposed new method would perform, by accident year, gross-to-net modeling like the broker actuaries. This requires individual claim level reserve analysis, which is

<sup>2</sup> Mango, D. (2005). “Insurance Capital as a Shared Asset.” *ASTIN Bulletin*, 35(2), 471-486. doi:10.1017/S0515036100014343. [https://www.casact.org/sites/default/files/database/astin\\_vol35no2\\_471.pdf](https://www.casact.org/sites/default/files/database/astin_vol35no2_471.pdf)

growing more popular around the world. (See “Beyond Triangles: Capturing Insights from New Analytic Technology,” *Actuarial Review*, September/October 2021.)

### The central question

Most companies perform periodic formal adequacy assessments — a common schedule among reinsurers is that every segment is formally studied no less frequently than annually. In between the formal assessments, companies have some kind of “system” that responds to actual emergence, with the response involving the movement of funds from the IBNR account to the case reserve

account.

The “central question” is: How should the system respond? A risk person would focus on the system performance — what do we want these interim, system-based indications to tell the business leaders? Here’s a simple example:

- Booked IBNR = \$10M
- New claim = \$5M
- Three main “System Response” Options:
  - Booked IBNR \$10M → \$5M  
**Hold Ultimate, erode IBNR**
  - Booked IBNR \$10M → \$10M  
**Hold IBNR, increase Ultimate**
  - Booked IBNR \$10M → More

than \$10M

***Increase IBNR, increase Ultimate even more***

Remember, this is our system’s response *in between formal reserve studies*. Which interim signals best serve management? How about that central IBNR account idea?

Hopefully, you all found these explorations and musings helpful. Send us any thoughts you have on some of these open questions to [ar@casact.org](mailto:ar@casact.org). ●

---

*Donald F. Mango, FCAS, is group chief actuary and chief risk officer at Everest Reinsurance Company in Warren, New Jersey.*



Expertise. Insight.  
Solutions.®

## UPDATE YOUR PREFERENCES FOR PRINT PUBLICATIONS



For more information, visit <https://bit.ly/3sOhouL>.



## IN MY OPINION By C.K. (STAN) KHURY

# Undivided

*“There go my people, I must hurry and catch up with them for I am their leader.”—Mahatma Gandhi*

For more than 45 years, I have had the privilege of serving the CAS in numerous capacities, from a committee member all the way through leadership positions including the president. I have participated in and witnessed the CAS pass through several growth cycles in all phases of its operations. One of those phases included the successful introduction of professional staff to the CAS in 1991.

Throughout, I have gained a special appreciation for a key ingredient that has served the CAS well: The CAS membership has nearly always been united in supporting the board’s key endeavors, virtually all members pulling in the same direction. In earlier days, the relatively small size of the CAS enabled formal and informal communications to take place easily among the membership. So, when the board contemplated serious initiatives, they moved forward with confidence, generating little or no dissension. If the board did not sense reasonable unity of objective from the membership, it didn’t go any further. As the CAS grew, sustaining this aspect in the life of the CAS became more difficult.

In recent times, three major board initiatives ran into problems when the board tried to effect major changes without first obtaining the “the consent of the governed.” One was the agreement-in-principle that the CAS entered into

with the Society of Actuaries in 2018 to merge the two organizations. The board moved without assessing the views of the membership. Once the membership became aware of the board’s action, strong opposition emerged almost immediately and, as a consequence, the board leadership decided to canvass the membership. It soon became very clear that the membership opposition was strong, deep and serious. To the credit of our leadership, the entire project was pulled, and ultimately no permanent harm was done. Looking back, it might have been wiser to poll the membership views in advance of entering into the agreement with the SOA.

The second was the board’s decision to rescind the ratemaking principles in 2020 only to reverse itself in 2021 after serious objections and concerns were raised by members.

The third was the recent attempt to reorganize the CAS in significant ways, increasing the role of the executive staff and diminishing the role of CAS members in key leadership positions. Even though the board was nearly unanimous in deciding to approve and to recommend the changes for adoption by the membership, the measure failed to meet the stringent standard for amending the bylaws.

One of the troubling aspects of this episode was that the membership was not given a serious opportunity to comment on the proposed changes. That, in turn, caused a grassroots effort to open new avenues of communication (i.e.,

creating a website to serve as a home for views of the membership) that members could use to express themselves on the issues. This effort, without a doubt, was a significant factor that produced the defeat of the proposed organizational changes. Regardless of one’s view on the merits of the actual proposals, the absence of a serious opportunity for the rank-and-file membership to participate in the deliberative process (I mean beyond just voting up or down) was, again, a major defect in the process. The results, of course, demonstrated that.

These three instances indicate that the board may have lost contact with the membership. Embarrassing outcomes such as these are evidence that this is the case. If the CAS membership (beyond using a committee or a task force) is truly engaged in the process of formulating a proposition, then any proposition that is approved by the board should reflect the views of the membership and easily sail through, without much objection. If that’s not the case, then the board may not have its finger on the pulse of the membership, and the membership is deeply divided on the pertinent issues.

Unhappily, this is the place in which the CAS again finds itself. The hopeful thing is that there is a very good way to avoid such situations in the future.

I believe the board needs to find a way to connect with the membership in a serious and direct way and get feedback on all key changes that it might propose for adoption before it actually



does so. It is important to note that I am not advocating that the board formulate a policy or a change and then go out to “sell” it. Quite the contrary. I am advocating the board find a way to involve the membership in an active way in the very construction and modification of key policies and changes.

Fortunately, we have a great model that is available for such use. A model that has been long in use and has been very effective in shaping outcomes while dealing with a much larger constituency. Here I am referring to the exposure process the Actuarial Standards Board (ASB) has used effectively for many years. For a refresher, the ASB (through its various committees) formulates a proposal; adopts it or a close variant of it for exposure; sends it out to every member of the American Academy of Actuaries; collects comments, reactions and suggestions; revises the first draft and resubmits it to the target population and provides a reconciliation for every comment that is received. This process may be repeated as often as necessary until a final product has been produced

that is reflective of all views. The process has worked very well for many years.

The specific suggestion is that the board of directors adopt an explicit procedure that any major changes to policy, organization or other important aspects of life of the CAS be subject to an exposure process similar to that the ASB successfully has used for many years.

Finally, an area where such a policy could be very helpful is the recent adoption of the Diversity, Equity, and Inclusion policies by the board. While I am fairly certain that these changes were well-intentioned by its authors, from the informal soundings I have been able to make, these ideas are producing much controversy and counter-productive division among the membership. Regardless of what the board perceived as the merits of these policies it is yet another example where the board may have lost contact with the membership. To be sure, the ideas advocated by those policies are not self-evident truths. To adopt them without direct input from the membership at large is a serious omission, and the adverse effects of such

omission will continue to harm the CAS in ways we cannot even imagine at the present time. I am not necessarily advocating the repeal of such policies, nor am I suggesting their further advancement. I am, however, advocating that these policies be revisited with adequate input from the membership on all aspects of these issues, beginning with “given the objective requirements for admission to membership in the CAS, should the CAS have any policies like these at all,” all the way to the actual expressions of policies on the subject. The outcome will be the outcome. But the consultative process that is essential to producing sound, widely supported policies — policies that have been examined closely in broad daylight — is indispensable.

Should the board act on this recommendation, I earnestly believe that the CAS can, once again, remain undivided. ●

---

*Stan Khury is a retired CAS member and past president who resides in Fort Worth, Texas.*

IT'S A PUZZLEMENT By JON EVANS

# Proof of Crypto Mining Work

Almost all of the “work” that Bitcoin miners do consists of adding a number, called a “nonce,” to a block of valid transactions and calculating the value of the SHA-256 hash function applied to the resulting text. SHA-256 is open source, with code and *calculational*<sup>1</sup> webpages readily available online. SHA-256 inputs an exact text string (including capitalization, spaces, etc.) of any size and outputs a deterministic, but highly unpredictable and extremely output-sensitive, 256-bit number. The Bitcoin network rewards the first miner to find a nonce that results in a hash with at least a certain minimum number of leading 0s in binary representation, or, equivalently, smaller than a certain power of 2.

For example, the hash of “Casualty Actuarial Society” in hexadecimal format is:

“d1aa983e2ffe98ea44818e-9f99eaac4df244090e8e95d104728b6fc7f-556faa6.”

When a nonce of 12 is appended to form “Casualty Actuarial Society12” the hash becomes:

“026223566604bb544569c5e85b-d0f366a21131685bba28b71b9ad57-ecc77167a.”

The leading 0 in hexadecimal corresponds to 4 leading 0s in binary representation, or equivalently that the number is smaller than  $2^{252}$ .

This month’s puzzle is to find a nonce that when appended to “Casualty Actuarial Society” results in a hash with at least 20 leading binary 0s (same as at least 5 leading 0s in hexadecimal representation), or equivalently smaller than  $2^{236}$ . The smaller the hash, the better. So,

send us the nonce with the smallest hash you can find!

### Which Number is Larger?

This short puzzle was stated as follows:

Let  $k = 10^a$  where  $a = 10^{1,000,000,000,000}$ .

Which number is larger, the  $k^{\text{th}}$  root of  $k$ ,  $\sqrt[k]{k}$ , or the  $(k+1)^{\text{th}}$  root of  $k+1$ ,  $\sqrt[k+1]{k+1}$ ?

What if  $k$  is some other positive integer?

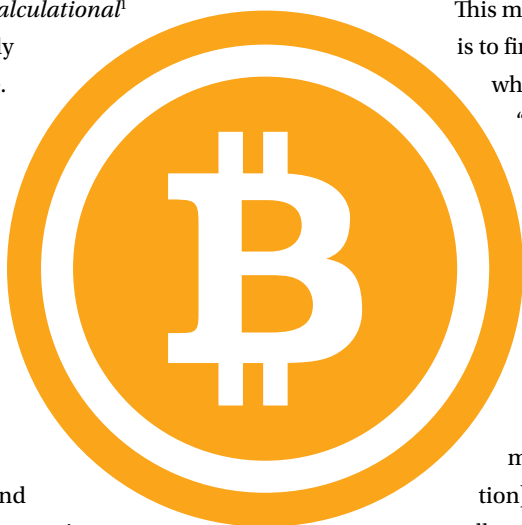
Many readers resorted to differential calculus, but simple algebra will suffice to solve this puzzle.

Let  $x(k) = \sqrt[k]{k}$ . For  $k \geq 3$ ,  $x(k) > 1 + 1/k$ . This can be proven by applying the

Binomial theorem:  $(1 + 1/k)^k = 1 + 1 + (k - 1)$  terms  $< 1/2$ . So,  $(1 + 1/k)^k < (k + 3)/2 \leq k$ , for  $k \geq 3$ . Hence, by contradiction, it must be that  $x(k) > 1 + 1/k$ .

Now for  $k \geq 3$ , suppose  $x(k+1) \geq x(k)$ , then  $x(k+1)k \geq k$ . Consequently,  $x(k+1)k+1 > k(1 + 1/k) > k + 1$ . Again, by contradiction, it must be that  $x(k+1) < x(k)$  for all  $k \geq 3$ .

Solutions were also submitted by Shyam Bihari Agarwal, Andrea Altomani, John Berglund, Bob Conger, Ian Drayer, Yocheved Ephrathi, Clive Keatinge, Eamonn Long, Edward Lotkowski, Jerry Miccolis, Tomasz Serbinowski, David Skurnick, Matt Stephenson and David Uhland. ●



**Know the answer?**  
Send your solution to  
[ar@casact.org](mailto:ar@casact.org).

<sup>1</sup> calculational (adj.): of, pertaining to, or employing calculation. (Yes. It’s a real word.)





# Elevate Your Insurance Industry Research

Strengthen your assessment of public and private insurer performance and industry trends with *Best's Financial Suite*—the source for unparalleled ratings, data and analytics covering the insurance industry worldwide.

**Learn more: [sales@ambest.com](mailto:sales@ambest.com)**

21.FIN001C

**Our Insight, Your Advantage™**





**Casualty Actuarial Society**  
4350 North Fairfax Drive, Suite 250  
Arlington, Virginia 22203 USA  
Phone: 703-276-3100, Fax: 703-276-3108  
www.casact.org

PRESORTED  
STANDARD MAIL  
U.S. POSTAGE PAID  
LUTHERVILLE, MD  
PERMIT NO. 171



**Sally Ezra • Claude Penland** ACAS, MAAA

actuaries@EzraPenland.com • (800) 580-3972

**EzraPenland.com**

## Our Mission Statement

Ezra Penland Actuarial Recruitment was established by Sally Ezra and Claude Penland, partners with over 40 years of combined industry experience. Our goal is to be the leading actuarial recruitment firm in the world while serving the long-term needs of clients and actuaries.

Our educated, knowledgeable and highly-trained staff will always exhibit business ethics, integrity, empathy and strong listening skills to help you reach your business goals.

