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Domestic Perils

2020—A Pivotal Year for Homeowners Insurance

2020 CAS Volunteer Award Winners: In Their Own Words

The Importance of Pronouns: A Nonbinary Actuarial Analyst's Perspective

March-April 2021

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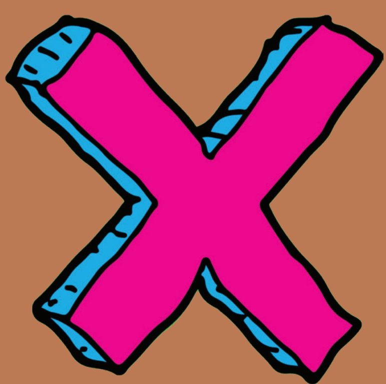
departments



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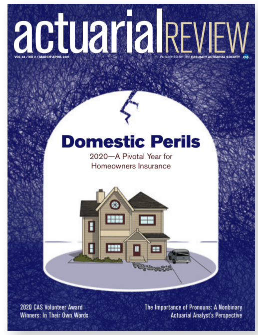

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editor's NOTE By ELIZABETH A. SMITH (SHE/HER), *AR* MANAGING EDITOR

Taking a Good Look

A comedian once talked about looking back at the person you were five years ago. "Remember the stupid mistakes you made back then?" he asked the audience. "Well, you're probably being stupid right now — and it's going to take you five years to figure that out."

Some of us don't need five years. A year ago, in this column, I wrote these words: "The flu may still be a more dangerous prospect than COVID-19." I just ordered some crow from Uber Eats. It should be arriving soon.

Something that is not a mistake is *AR*'s coverage of COVID-19 and its effect on insurance. This story is still unfolding in several aspects of modern life, but hope is just around the corner in the form of vaccines to combat this disease. COVID-19 has had an impact on home life for many of us who have been teleworking since the start of the pandemic. When we're not having virtual meetings or supervising children's schoolwork, we have a lot of time to assess the conditions of our homes. We see a lot of things. Things we have been staring at for months. Maybe it's new staircase carpet or worse, a heat pump replacement, but something is likely to need fixing.

Insurers have been taking note too. Our cover story explores homeowners insurance and makes some striking observations on market conditions, weather vulnerabilities and the "COVID occupancy effect."

The CAS Committee on Professional Education seems to be in the business of observation. For this Ethical Issues column, the committee takes a good look at the mother of all Actuarial Standards of Practice — ASOP 1. Don't be deterred by the introductory nature of this meta ASOP. It is vital to understanding all the other ASOPs.

Also, in this issue, *AR* guest contributor, Arius Johnson, gives their take on pronoun disclosure in the workplace; Grover Edie wonders if the pandemic has made us lose our way of interacting with each other; and CAS President Jessica Leong conducts another video interview — this time she's talking to Kathy Antonello, the CAS president-elect. In addition to the feature story on the 2020 CAS Award Winners, please visit *AR* Web Exclusives to see the three Rodermund Award Winners say a few words about being honored.

I hope you enjoy what you see in this issue!

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

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Follow the CAS

From Actuary to CEO: A Conversation with Kathy Antonello

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

"I moved to Reno [Nevada from Boca Raton, Florida] about 18 months ago for a new adventure and to become chief actuary of Employers. I guess in the back of my mind, I've always hoped that someday I would step into the CEO role if that opportunity presented itself, and it came about sooner than I thought," said Kathy Antonello, FCAS. She's Employers Holdings' incoming CEO and the CAS president-elect. In my second interview in the series, we talked about how she made the move from actuary to CEO.

Jessica Leong: Tell me more about Employers Holdings.

Kathy Antonello: The company itself used to be the State Industrial Insurance System (SIIF) for Nevada, a monopolistic state fund providing workers' compensation insurance to all Nevada employers. After experiencing financial difficulty, SIIF went through the transformation of becoming Employers, a private mutual, and then converted and became a publicly traded company, and so there have been a lot of changes over the last 20 years. For the next few months I'll be trying to learn everything from the retiring CEO, Doug Dirks, transferring as much knowledge as possible . . . and I'm doing the same thing at the same time with you and [CAS Board Chair] Steve [Armstrong] at the CAS.

I spent the first 15 years of my CAS career working very hard and raising my family . . . After my kids began to leave for college, that's when I said, "Well, it's time for me to give back [to the CAS]." —Kathy Antonello

JL: And how did you get involved at the CAS?

KA: I will be the first to admit that when I became an actuary the second time on the CAS side, my position in life was similar to where you are right now . . . I was very busy with my career and I had three children who were four, three and one. I spent the first 15 years of my CAS career working very hard and raising my family. I didn't have a lot of extra time to dedicate to volunteering for the CAS.

After my kids began to leave for college, that's when I said, "Well, it's time for me to give back [to the CAS]." So, I joined the CAS Board. Working alongside so many talented executives is very rewarding. I'm constantly learning, which will undoubtedly help me in my role as CEO of Employers.

JL: So many questions for you. First of all, do you mean to tell me that you did your last few CAS exams while you had a four-year-old, a three- year-old and a one-year-old?

KA: Yes, because I didn't start taking CAS exams until I had two very young children. I can remember the three days before an exam — my husband has always been one of my biggest supporters in my career — he'd watch the children and I would check into a hotel across town and do nothing but study for 72 hours straight. I'd even eat all my meals at the hotel because it was really hard to get a lot done at home. Working full time during the day and then trying to study at night with three kids of that age was a little difficult.

JL: You were at NCCI in the '90s, and then you went back and became their first female chief actuary, is that right?

KA: Yeah, that's right. I was there for about four and a half years and then I left to become chief actuary for a company across town called Lumbermen's [Underwriting Alliance]. I stayed there for about 12 years when Dennis Mealy, who was the chief actuary at NCCI, announced his retirement. I got a call from someone asking if I would be interested in interviewing. The six years that I was chief actuary at NCCI were some of the most rewarding of my career.

JL: And then from NCCI you moved to Employers. Why did you make that move?

KA: As much as I loved NCCI — I worked there twice — I really enjoy having clear success metrics. Getting filings approved is incredibly important for the industry and a lot of work goes into that. However, I wanted to work for a profit-driven company that has tangible metrics like target combined ratios and sales goals. I missed that environment.

President's Message, page 8


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President's Message
from page 6

JL: And did you move with an eye towards "one day I want to become the CEO."

KA: I did. I've always thought, "Boy, that would be the ultimate achievement" … and I've always thought of myself as a business person and actuary. I wouldn't call myself an actuary's actuary. Because all aspects of the business are interesting to me, I would find myself getting involved in HR matters or having a strong opinion on a marketing strategy. I just wanted to take everything I've learned over these 35 years of being an actuary and apply it to the bigger picture. So yeah, it was something I really wanted.

JL: Not very many actuaries make it to the CEO job. How did you make that transition?

KA: You know, I think it's as simple as setting your sights on whatever you want to achieve. For me it was showing my worth in multiple areas of the business and just constantly trying to get involved in different projects. I've learned that I need to . . . push myself outside of my comfort level, like doing the "State of the Line" [presentation] at NCCI. I'll never forget the first one I did, my knees were literally shaking, and somebody had to push me out on the stage from behind the screen. Once I was out there, it wasn't so bad. I don't think many actuaries would want to get up on the stage in front of 800 people and do an hour long presentation. The only way to grow is to push yourself outside of your comfort zone. I won't stop doing that anytime soon.

COMINGS AND GOINGS

Andy Doll, FCAS, has been appointed to president and chief executive officer of Capital Insurance Group. Doll was previously senior vice president and chief operating officer at CIG.

Pinnacle Actuarial Resources has named **Aaron Hillebrandt, ACAS**, principal and consulting actuary. Hillebrandt joined Pinnacle in 2013 and has been in the property-casualty insurance industry since 2007.

Michael Kessler, FCAS, has been appointed division president of Chubb's global cyberrisk insurance business. Kessler was previously vice president and chief reinsurance officer at Chubb.

Indiana Farm Bureau Insurance has promoted **Jeff McDonald, FCAS**, to senior vice president of the property-casualty companies. McDonald began his career with Indiana Farm Bureau Insurance in 2009 as director and chief actuary, product management solutions.

Jeffrey Hay, FCAS, has been appointed to senior vice president and chief underwriting officer of Donegal Insurance Group. Hay brings over 25 years of personal and commercial lines experience to Donegal Insurance Group.

Laura Maxwell, FCAS, MAAA, CSPA, has been promoted to director and consulting actuary at Pinnacle Actuarial Resources, Inc. (Pinnacle). Well-regarded as an authority on professionalism considerations and actuarial standards of practice, Maxwell is involved in many industry actions. She serves on the CAS *E-Forum* Committee.

Pinnacle has also promoted **Jordan Paszek, ACAS**, to consulting actuary. Paszek has been with the company since 2015, most recently in an associate actuary role. His extensive experience includes conducting actuarial studies for captives, self-insureds and traditional insurance companies.

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

ACTUARIAL REVIEW *LETTERS POLICIES*

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

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

IN REMEMBRANCE

In Remembrance is an occasional column featuring short obituaries of CAS members who have recently passed away. These obituaries and sometimes longer versions are posted on the CAS website; search for "Obituaries."

The Professorial Actuary

Nassar Hadidi (FCAS 2001)

1942-2020

Nasser Hadidi died unexpectedly on August 16, 2020 in Colfax, Wisconsin.

Born one of five brothers in Shiraz, Iran, he earned a BS in statistics from the American University of Beirut and a Ph.D. in statistics from Virginia Tech in Blacksburg, followed by post-doctoral research at Norway's University of Oslo. There he met his wife, Grazyna, a Polish chemistry student. The couple spent their honeymoon driving from Oslo to Shiraz. He taught statistics at Iran's Pahlavi University and eventually became dean of the College of Arts and Sciences. He was a founding member of the Iranian Academy of Science and was deeply committed to modernizing the Iranian education system. He and his family left Iran in 1978 because of the Iranian Revolution and moved to the U.S., where he became a statistics professor at the University of Wisconsin-Stout, a post he held for over 30 years. Actuary was his second career and he proudly served on the CAS Examination Committee.

Deeply grateful to be in the U.S., Hadidi saw the country as a beacon of hope and opportunity, and he was optimistic about its future. He is survived by his wife; children Larissa (Brian) Scott and Cyrus (Michelle) Hadidi; brothers Rassule and Mansour; and seven grandchildren. His parents and two of his brothers preceded him in death.

L'Attuario

Anthony "Tony" Iafrate (FCAS 1995)

1960-2020

Anthony "Tony" Iafrate, loving husband of Vicki (Riggle) Iafrate, died surrounded by his family after an acute brief illness.

Born in Jamaica, New York, to Arcangelo and Rosina Iafrate, Iafrate earned B.S. and master's degrees in economics from Hofstra University in Uniondale, New York, and Stony Brook University, respectively. He enjoyed motorcycle riding, gardening and watching soccer, especially his favorite team, Roma of the Serie A in the Italian League. A proud Italian American, he loved making Italian dishes for family and friends. He and his wife liked traveling, especially to Italy where he could speak Italian.

He worked as an actuary for Gen Re Insurance in Stamford, Connecticut, for 27 years. His last post was with The Hartford Insurance Group as the chief product officer for middle and large commercial. Iafrate was a long-time mentor and guest speaker for Columbia University's Actuarial Science Program, which has set up a memorial fund for him.

Iafrate is survived by his wife; children, Autumn, Daniel, Mathew, Michael and Skyler; stepdaughters Jessica (Brandon) Primm and Emily Steele; a grandson, Mason Primm; a sister, Diane Iafrate; mother-in-law, Marge Riggle; and many other relatives, co-workers and dear friends.

CALENDAR OF EVENTS

May 23-26, 2021
Virtual Spring Meeting

June 8-9, 2021
Virtual Seminar on Reinsurance

September 13-15, 2021
Casualty Loss Reserve Seminar

November 7-10, 2021
Annual Meeting

Spring 2022
Actuarial Colloquia
(hosted by the CAS)

IN MEMORIAM

Stanley A. Dorf (FCAS 1965)
1931-2020

Glenn O. Head (ACAS 1953)
1925-2012

Chester Toren (ACAS 1966)
1920-2015

John S. Ripandelli (ACAS 1960)
1918-2018

Elisabeth Stadler Pader (FCAS 1990)
1950-2020

Donald C. Weber (ACAS 1959)
1925-2012

Discipline Announcement: Public Reprimand of Manalur Sandilya

The Discipline Committee Panel of the Casualty Actuarial Society (CAS), acting in accordance with the CAS Bylaws and with consideration of the findings from the Actuarial Board for Counseling and Discipline (ABCD), voted unanimously to publicly reprimand Mr. Manalur Sandilya for materially violating Precepts 1, 3 and 4 of the Code of Professional Conduct (Code). The Appeals Panel of the CAS Board of Directors affirmed this decision. Public reprimand is rendered in situations where the violation of the Code is sufficiently serious that there is an obligation on the part of the CAS to notify the public of the discipline, but where there are mitigating circumstances that preclude suspension or expulsion of the subject actuary.

Sandilya was engaged by an insurance company domiciled in India to prepare and finalize the 2015-2016 Incurred But Not Reported (IBNR) Report and Financial Condition Report (FCR), as required by the Indian regulatory authority.

Sandilya materially violated Precept 4 of the Code by failing to ensure that his work was clear and appropriate to the circumstances and the intended audience. The regulatory authority, an intended user of his work, requested that Sandilya provide detailed calculations of the IBNR, including the methodologies used to produce these estimates. His estimates for automobile liability were materially lower than estimates derived using the paid loss development method, the regulator's preferred method. Sandilya misrepresented the methodologies used in his analysis and failed to provide the regulator with an explanation of the rationale that he had used to derive his estimates. This failure caused the regulatory authority to conclude that Sandilya had materially violated the applicable regulations governing his work product and resulted in the regulator's not recognizing or accepting any work prepared by Sandilya for a period of two years subsequent to the regulatory finding.

Sandilya appealed the regulatory authority's decision and the appellate court modified the suspension to that of a warning. The appellate court noted that it was unable to understand why the appellant could not put forward these factors during discussion with the regulator or company officials and record the same clearly, and it further concluded that these are symptoms of dereliction of due care and attention expected from a professional, particularly a senior one.

The work for which Sandilya was engaged is governed by regulatory guidance. Specifically, Sandilya indicated he was governed by Circular No. 11 titled "Guidelines on estimation of IBNR Claims provision under General Insurance Business" and the 2008 "Manual for Estimation of Provision for IBNR and IBNER Claims in General Insurance Business."[1] In performing his work, Mr. Sandilya materially failed to comply with this relevant regulatory guidance and, therefore, materially violated Precept 3 of the Code.

Finally, Mr. Sandilya materially violated Precept 1 of the Code by failing to perform Actuarial Services with skill and care by:

a. Failing to appropriately document, disclose and communicate the methods and assumptions used in his analysis to his principals, the ABCD and the Discipline Committee Panel.
b. Misrepresenting the methods and assumptions used in his analysis of the health and motor liability lines of business in both the IBNR Report as well as the FCR.
c. Providing no basis for the range of IBNR estimates provided in the addendum to the FCR.
d. Inaccurately responding to the regulator's inquiries with respect to the methods used and the rationale for his estimates.

[1] Both of these references are published by The Insurance Regulatory and Development Authority of India.

CAS Releases Results of Career and Workplace Survey

As the pandemic continues into 2021, members of CAS Student Central report that they benefit from virtual career fairs, value transparent and accountable DE&I initiatives, and seek mentors and academic year internships. These and other findings are part of the results of a comprehensive survey of virtual recruitment practices that was released in early February 2021.

Covering a variety of recruitment topics, the survey results offer pertinent information to actuarial hiring managers, candidate program coordinators and recruiters about the career preferences of those in the actuarial talent pipeline.

An infographic illustrating the results is shown in the following pages.

CAREER AND WORKPLACE SURVEY

STUDENT CENTRAL

Providing actuarial hiring managers, candidate program coordinators, and recruiters with information about the actuarial talent pipeline

SURVEY RESPONDENTS

362 Participants FROM **105** Universities

ETHNICITY

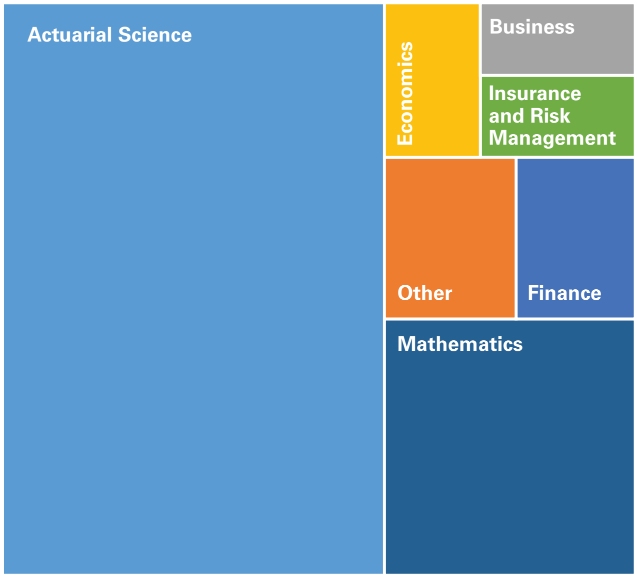
46% Non-Hispanic White

9% Hispanic, Latino, or Spanish Origin

13% Black or African American

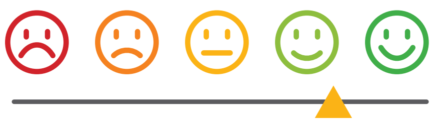
32% Asian

MAJOR



VIRTUAL INTERNSHIPS

How They Rate Overall Internship Experience (1–5 Scale)



80% Interested in participating in a part-time internship during the academic year, if offered by employers

VIRTUAL CAREER FAIRS

59% Attended a virtual career fair this calendar year

53% Found the experience to be equal to or better than an in-person career fair

Drawbacks of Virtual Career Fairs

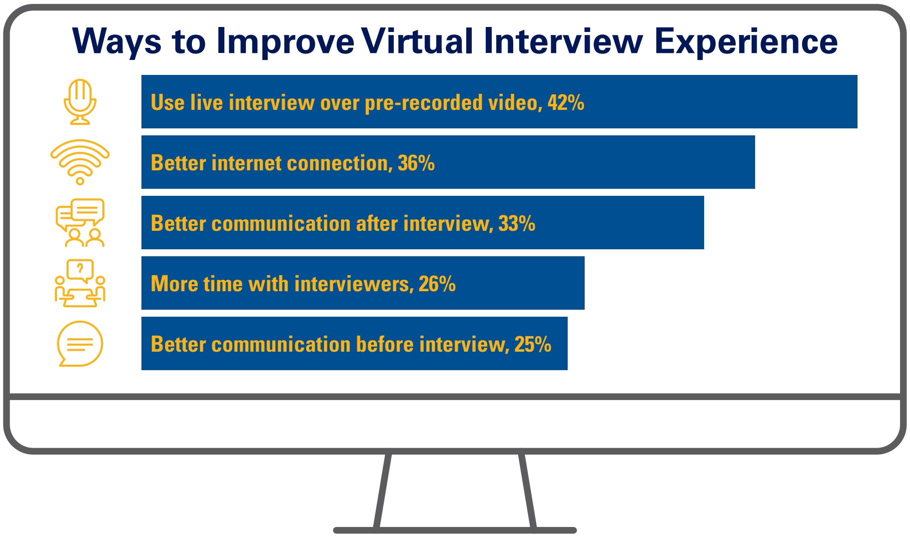
1. Less personal/ harder to connect
2. Not enough time/ feel rushed
3. Limited number of interactions

CAREER AND WORKPLACE SURVEY

STUDENT CENTRAL

VIRTUAL INTERVIEWS

45%
Completed five or more virtual interviews this calendar year



JOB SEARCH CONSIDERATIONS

Top aspects of Diversity, Equity and Inclusion (DE&I) valued in employer

Preferred platforms when communicating with recruiters and future employers

80% Email
52% Video Chat
43% Phone
37% LinkedIn

Attention-grabbing recruitment strategies

STUDENT CENTRAL

2021 CAREER AND WORKPLACE SURVEY

TOP FACTORS IN EVALUATING INTERNSHIPS

1. Opportunities for full-time employment, 74%
2. Valuable work assignments, 70%
3. Access to mentor(s), 64%
4. Type of actuarial industry work, 56%
5. Location, 48%

TOP FACTORS IN EVALUATING FUTURE EMPLOYERS

1. Growth potential, 66%
2. Salary, 64%
3. Flexibility – work/life balance, 61%
4. Culture, 50%
5. Training opportunities, 49%

The 2020 CAS Volunteer Awardees: In Their Own Words

About a third of the CAS membership volunteers every year. Of that group, the CAS honored 12 exceptional volunteers during last year's annual meeting who were nominated by their peers. Some go above and beyond for a focused and finite project over the course of a year. Some are new to volunteering and the CAS but have shown themselves to be outstanding leaders. Others are long-time volunteers who have devoted themselves to elevating and advancing the actuarial profession throughout their careers. With National Volunteer Week happening on April 18-24 of this year, we thought it was the perfect time honor these volunteers by giving them an opportunity to speak out on their experiences volunteering with the CAS — why they do it, what they enjoy most about it and what aspect stands out.

The New Members Awards

Recognize volunteer contributions during an individual's first five years from their most recent credential.

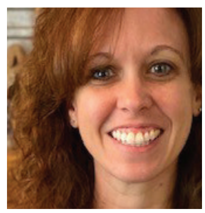
Scott Keim (FCAS 2016)

Recognized for his work with the Syllabus and Examination Committee.

"After spending hundreds of hours studying for exams, I decided to volunteer on the Exam Committee to learn more about the exam process. I was amazed by the amount of effort that goes into creating and grading exams by hundreds of volunteers. It's been rewarding to have the opportunity to work with other Fellows from around the world and collaborate with actuaries outside of my workplace. It's exciting to be able to give back to the actuarial community and contribute toward improving the exam process. I look forward to continuing to volunteer for the CAS and watching the exam process evolve."

Alisa Havens Walch (FCAS 2015)

Recognized for her work with the University Engagement Committee and the CAS Student Central Summer Program.



"I started volunteering to give back to the Society and to help advance their university presence. Being a university professor, I thought I could bring a unique perspective to my committee. Volunteering has always been a mutually beneficial experience for me. While I hope that my volunteer work has helped others, it has definitely helped me, my career and my students.

"[What I enjoy the most is] helping shape the future of the CAS, being involved in projects with tangible results and meeting needs for academics and university students. The CAS Summer Program is a great example. Working groups in the University Engagement Committee had spent years putting together case studies for the classroom and case study competitions. Because these projects were already put together, the CAS was able to leverage that work and very quickly create a high-quality Summer Program for hundreds of university students with canceled internships due to COVID-19. Several of my students participated in the program, and they were so grateful for the opportunity. I loved seeing case studies I had worked on being put to a new use and was amazed with what was created in such a short timeframe.

"I've met some wonderful people volunteering, both volunteers and CAS staff. They have been encouraging, supportive, and a joy to work with. I have grown a lot professionally through volunteering, and I have my committee chairs, CAS leadership and CAS staff to thank for that."

Kiki Wang (ACAS 2018)

Recognized for her work on the RPM Seminar Planning Committee.

"I wanted to have the opportunity to work with people outside of my company and learn about things that are different from my day-to-day work, so I responded to the request for volunteers even though I was slightly worried about how much I was able to contribute without many years of industry experience and networking. The experience turned out to be very fulfilling, and I continued to volunteer year after year.

"I help the RPM Committee to lead the innovation and emerging topics track and coordinate sessions on relevant topics. I am excited that I can research and select topics that are most relevant to the future of the industry; I have met a lot of amazing speakers during the process. The trust and openness of my peers and the teamwork also make volunteering more fun.

"What I learned from volunteering is that it requires commitment — the more you give, the more you gain from the process."

Above and Beyond Achievement Awards

Recognizes outstanding volunteer contributions during the previous year.

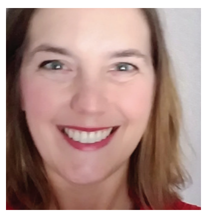
Anthony Bustillo, FCAS

Recognized for his work on the Microlearning Task Force and the InFocus Seminar Planning Committee.

"I volunteer for the opportunity to give back to the CAS. We would not exist as a successful industry organization without all that the CAS staff and CAS member volunteers have given to it. I feel privileged to be part of the volunteering philosophy and legacy. The most enjoyable part of volunteering is meeting new people and catching up with other CAS members. The unexpected move to virtual committee meetings enabled me to see other volunteers who I may not have seen otherwise (as past meetings were held via conference calls). One aspect that stands out for volunteering for the CAS is to encounter the wonderful CAS staff. They are the glue that holds the whole organization together and do it with a sense of purpose and enjoyment."

Erin Olson, FCAS

Recognized for her work on the University Engagement Committee and leading the CAS Student Central Summer Program.



"I love the freedom to be creative in how we address the problems we're trying to solve or determine new resources we want to provide to students and academics. I get to work with other actuaries across the country to get diverse perspectives on the challenges that our stakeholders are facing and brainstorm ways that we can best be of service to them. The CAS staff makes volunteering such a rewarding experience. Tamar [Gertner] and Margaret [Kerr] are so talented and dedicated. I love working with them to come up with great ideas and see how they make them a reality."

Pam Sealand Reale, FCAS

Recognized for her work on the RPM Seminar Planning Committee.

"One of the things I've always loved about the CAS is how its members believe so strongly in it and want to help it succeed at the highest level possible. CAS Volunteering isn't usually seen as a matter of doing one's duty or compliance, but a true desire to participate and make a difference. That true sense of community is what motivates me most to volunteer."

Brent Rossman, ACAS

Recognized for his work on the Leadership Development Committee.

"I volunteer because I think actuaries are uniquely positioned to excel as leaders. The work of the Leadership Development Committee resonates with my passion to help actuaries develop as leaders. I get to meet and work with great people that share a similar passion and help the CAS achieve its goals. Volunteering also allows me to flex the creative parts of my brain that may not get used in other parts of my daily work. This in turn stretches me and helps me develop new skill sets. I really enjoy getting to connect with others on my committee. The diversity of opinions and experiences from everyone brings a wealth of opportunities for us to help other CAS members. When committee members are passionate about volunteer projects, I think that is contagious and spills over into the rest of our lives."

Jason Russ, FCAS

Recognized for his work on the Syllabus and Examination Committee.

"[I volunteer] to contribute to the community — we have all received so much as a result of being members of the CAS. It is only right to give back as we can. I enjoy the sense of accomplishment, of doing something of value for the community. The part of volunteering that stands out the most is meeting and interacting with people from all over — people who I would not otherwise meet."

Jim Weiss, FCAS

Recognized for his work on the RPM Seminar Planning Committee.

"I have had exceptional role models throughout my career who encouraged me to get involved and connected me with volunteer opportunities that suited my development and interests. My favorite part of volunteering is learning from other volunteers and CAS staff whose views have been shaped by different sets of experiences and mentors than my own. CAS volunteerism is unique because it creates an ego-free environment where everyone from chief actuaries to students can collaborate as peers towards a common purpose."

The Matthew Rodermund Memorial Service Award

Recognizes CAS members who have made considerable volunteer contributions to the actuarial profession over the course of their careers.

John Buchanan, FCAS

Recognized for volunteering with the CAS for over 30 years.

"I was very lucky to have a first boss who emphasized that (especially since the CAS is very small — I was just the 874th Fellow since 1914) once you pass the exams, you should give back through volunteering. Starting off with the Exam Committee, I could see how important it was to give back in whatever way that could help future generations — even if that meant tough grading! One of my favorite parts when setting up a panel or doing a research paper was to reach out to other adjacent professionals like underwriters, claims, climatologists and educators. It was always very enjoyable to get reviews that showed how much the audience appreciated the "outside" insights and opportunities to learn from each other. Having been involved in quite a few

international collaborations, it was always inspiring to connect on a personal level to generate new creative combined results. In the end you realize that while giving, both you and the industry are also receiving through volunteering."
[See Buchanan's acceptance speech on *AR* Web Exclusives.]

Ann Conway, FCAS

Recognized for volunteering with the CAS for over 30 years.

"I started volunteering as a way to build a professional network outside of my employer. My first gig was on an exam committee, which wasn't surprising, as that's often where new Fellows start out. I assumed I was going to find a group that was determined to fail candidates as frequently as possible — and was surprised to find out the opposite was closer to reality. After that, my volunteering morphed into various areas: professional education, Regional Affiliates, technical subjects and strategic issues. I get a lot of enjoyment out of volunteering (see below), but I also volunteer to recognize all of those volunteers who came before me and built the profession we share today. Volunteering allows me to pay that "debt" forward so that others will enjoy the same opportunities I have enjoyed.

"There aren't too many other places where you get to work with so many interesting and smart people. The lack of politics is great — in some of my other volunteer gigs, politics is just a reality that often gets in the way of getting things done. The people I've worked with in the CAS just aren't wired that way.

"Extra credit point for the CAS staff: Over the tenure of my volunteerism, it's been great to see the change in the volunteer model. When I started, the CAS staff had very limited roles on committees. That's changed significantly — and the partnership with staff has allowed us to do much more than we could have imagined even a decade ago. There's a flexibility in opportunities. You can be a big (in terms of hours) volunteer or a little one — or anything in between, depending on what else you're trying to balance in life and your daytime role. "
[See Conway's acceptance speech on *AR* Web Exclusives.]

Nominate CAS Members for Volunteer Awards

Do you know someone that you believe deserves to be recognized for a CAS Award?

Please visit the CAS website under the volunteer tab (https://www.casact.org/awards-prizes-scholarships), where you can find more information on award eligibility.

The nomination window will open in mid-May 2021, so look for that announcement! In the meantime, feel free to download the forms and fill them out at any time. Once the nomination window is open, we will accept your nomination form. We encourage nominations from any and all members. If you have any questions, email Mikey Bevarelli at mbevarelli@casact.org.

Ronald T. Kozlowski, FCAS

Recognized for volunteering with the CAS for over 30 years.

"I volunteer because I believe in our profession and our specific area of expertise. Being an actuary isn't something that you accomplish and then sit back and enjoy. It requires a lifetime of learning. I want to help facilitate that. I enjoy interacting with people. My volunteer activities have focused on interacting with others and working on developing relationships. I enjoy focusing on international relations, continuing education and reaching out to college students.

"I love traveling internationally — the people, the cultures and the scenery. Representing the CAS in Asia and the Caribbean helps me connect with people and promote the CAS designation."
[See Kozlowski's acceptance speech on *AR* Web Exclusives.]

Graphical Representation and Regression Formulation of Link Ratios

Insureware
Innovative Statistical Solutions for P&C Insurance

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.

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

Mack:IL(C)

Triangle | Selected Exp/Inf/Prem | Summary

Data Type Cumulative   Type Incurred losses   Scale Units   Cat. Original

Accident Years vs Development Years

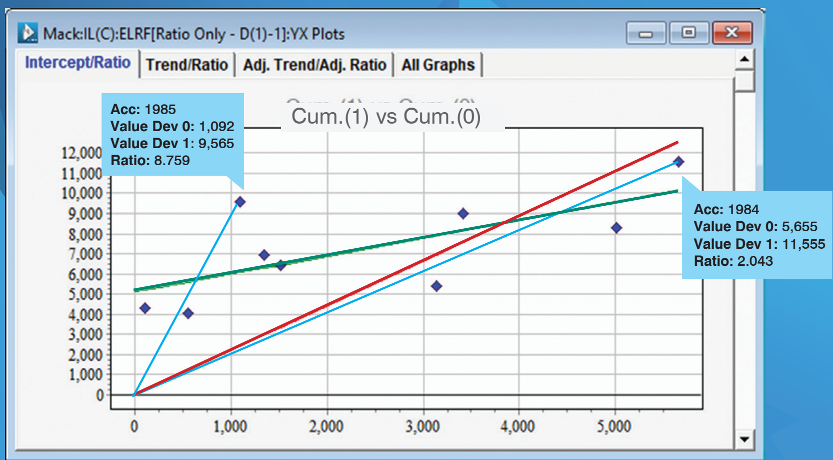
	0	1	2	3	4	5	6	7	8	9
1981	5,012	8,269	10,907	11,805	13,539	16,181	18,009	18,608	18,662	18,834
1982	106	4,285	5,396	10,666	13,782	15,599	15,496	16,169	16,704	
1983	3,410	8,992	13,873	16,141	18,735	22,214	22,863	23,466		
1984	5,655	11,555	15,766	21,266	23,425	26,083	27,067			
1985	1,092	9,565	15,836	22,169	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

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,

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

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 $e(w) = v * x(w)^{delta}$

For the following values of delta (0, 1, 2):

- 0, or constant variance, the weighted least squares estimated 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:

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

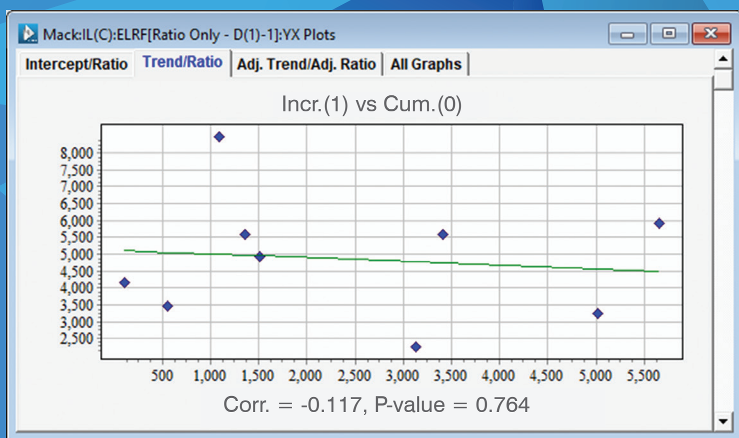
where y(w) – x(w) is the incremental data point.

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 $b-1=0$.

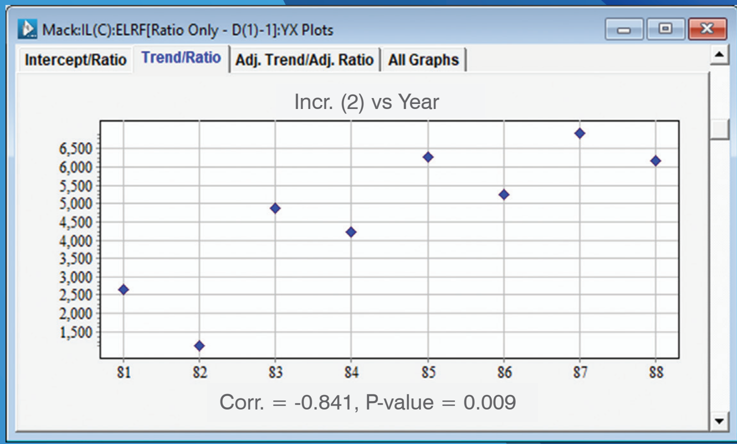
In this case, the reduced model only contains an intercept term.

$y(w) – x(w) = a + e(w) \dots (4)$

In this model, the incrementals across the accident years are random numbers from a distribution with mean a, and variance, 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:

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

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.

Mack:IL(C):ELRF[Best dellta=0?1]:Regression Table

ELRF Parameter Estimates

Development	Intercept			Trend			Ratio			
Period	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

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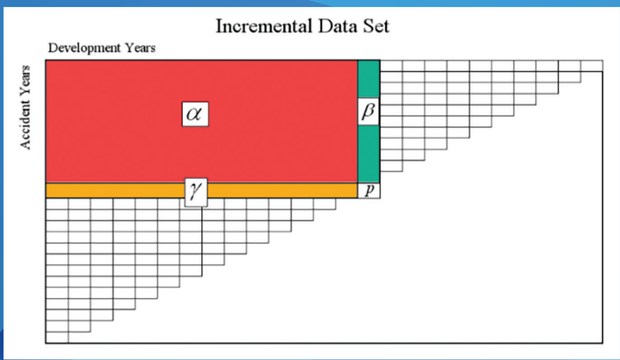


Consider any triangle with incremental values where:

- 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

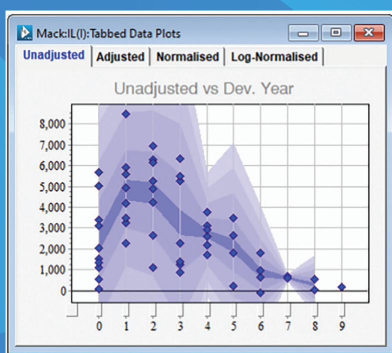
$$p = \beta\left(\frac{\alpha+\gamma}{\alpha}-1\right) = \frac{\beta\gamma}{\alpha}$$

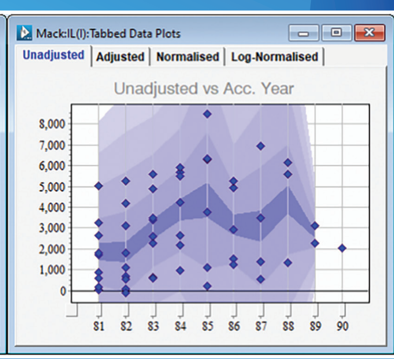
If you cumulate along the accident years. QED.

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

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.

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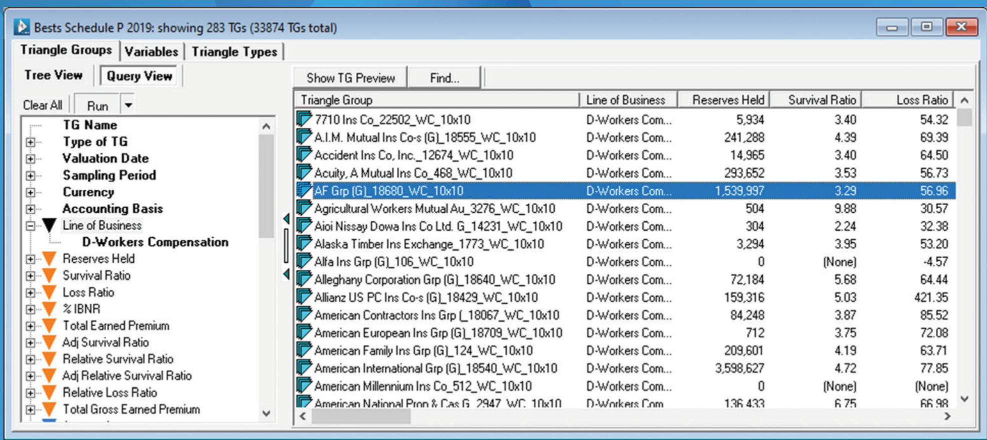
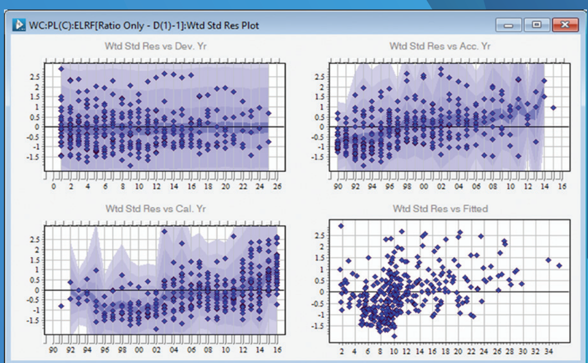
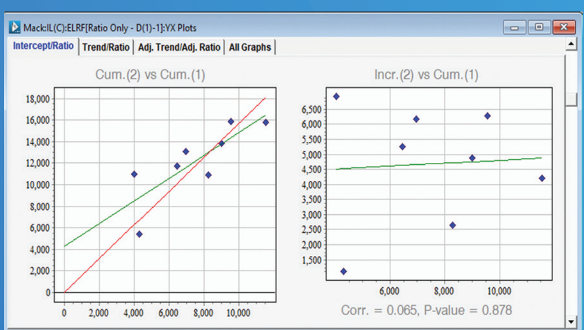




The Extended Link Ratio Family (ELRF) modeling framework provides diagnostics for testing assumptions.

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

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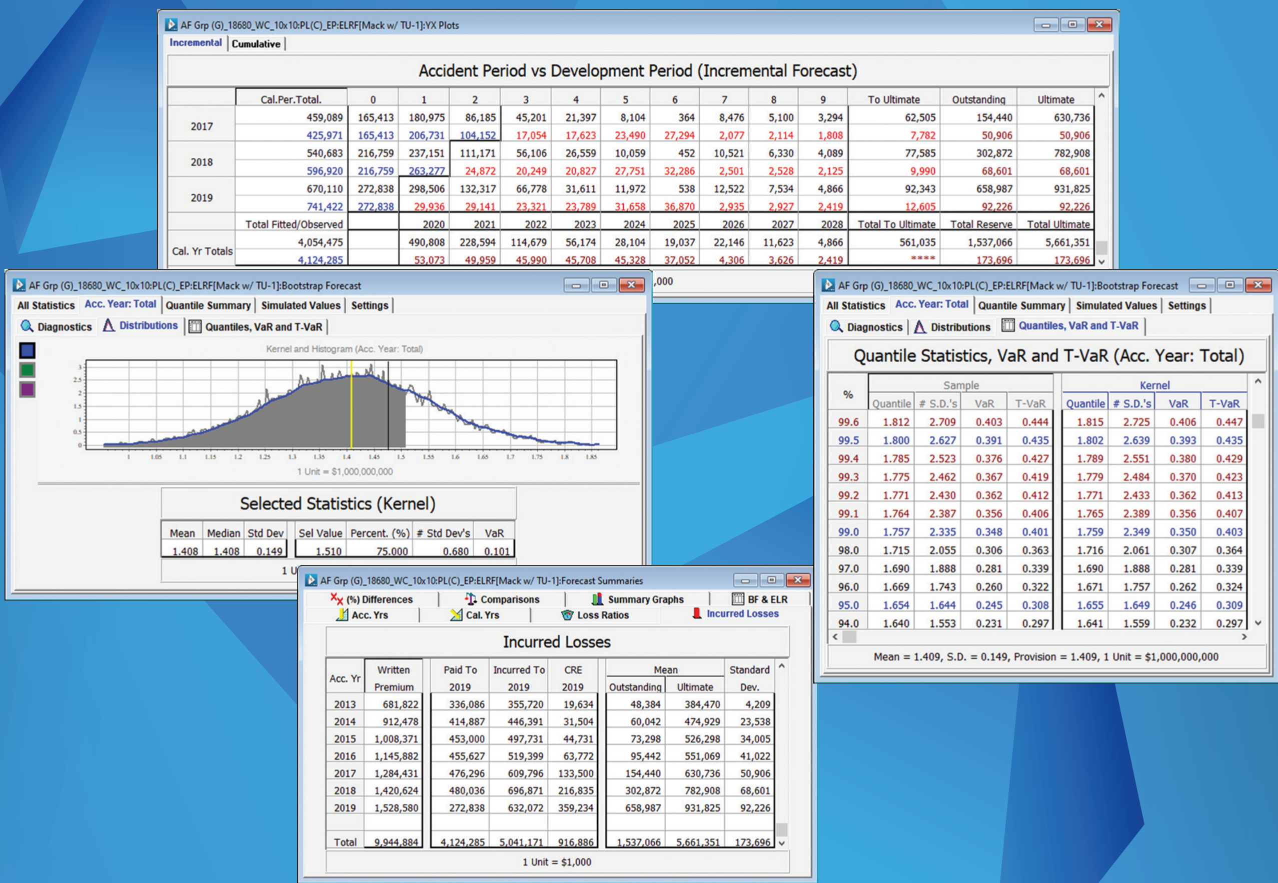

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Domestic Perils

2020—A Pivotal Year for Homeowners Insurance

By ANNMARIE GEDDES BARIBEAU

Insurers can't control the weather, but they can do more to reduce homeowners claims.

The year 2020 introduced new wrinkles in homeowners insurance. While insurers know that weather perils will continue to pressure loss costs upward, they could not have anticipated the COVID-19 pandemic or its influence on private dwelling owners and claims.

Weather events and natural catastrophes, which are perennially responsible for the lion's share of losses, continue to worsen. From West Coast wildfires to Midwest tornados and hailstorms to East and Gulf Coast hurricanes, and most recently the freezing temperatures in Texas, insurers are feeling Mother Nature's wrath in losses.

Since weather-related insurance costs are pressuring coverage affordability issues, homeowners insurers are taking a more serious look into the percentage of claims that residents can possibly prevent to reduce expenses. Meanwhile, homeowners appear to have invested more in making homes more livable than in claim-mitigating maintenance.

Market Conditions

"Overall, the combined ratio for the industry for the first nine months is virtually unchanged from 2019," offers Robert P. Hartwig, clinical associate professor at the finance department and director for the Center for Risk and Uncertainty Management at the University of South Carolina. "If it weren't for the fact that 2020 was the third most costly year for insured disasters, the combined ratio would have shown a decline," he observes.

Before the major weather events and pandemic, homeowners insurers began 2020 with little profitability, according to the most complete data currently available from 2019. The year 2019's net combined ratio is 98.6, which is similar to the five-year average from 2015 to 2019 at 99.1, according to A.M. Best data provided to the Casualty Actuarial Society.

"The sluggish economy has not impacted premium growth in the homeowners line," says Hartwig. He observes that for the first nine months of 2020, direct written premium grew 5.5% compared to the same period in 2019, which is similar to the 5.3% growth in premium for 2019 compared to 2018.

Premiums are expected to increase in 2021. For homes valued under $1 million, premium is expected to climb 5% to 7%, and 7% to 9% for those over $1 million, according to the survey report "Insurance Marketplace Realities 2021-Personal Lines." Released by Willis Towers Watson in November 2020, the report bases these predictions on large- and middle-market risks.

For homes located in areas prone to natural catastrophe (CAT), the price of coverage jumped 20% to 50% with contract limitations. Homeowners who filed CAT-related claims saw premiums rise 50% to 100%, causing some homeowners not to renew their policies. "There are tighter underwriting standards because there have been increases in loss ratios in the past couple of years," says Tyler E. Banks, national practice leader for personal lines at Towers Willis Watson.

Notably, the most recent five-year period includes the beginning of the record-breaking years of weather-related losses starting in 2017 (see *AR* July-August 2018). Not surprisingly, the combined ratios for the years 2017 and 2018 were an unprofitable 107.2 and 104.0, respectively. However, the average loss and LAE ratio was lower in the second half of the recent decade than in the first. Specifically, from 2015 to 2019, the loss and LAE ratio was 69.5, compared to 72.2 during the first half of the decade from 2010 to 2014, according to A.M. Best data.

Loss frequency, including CATs, for the four quarters ending September 2020 was 4.98 per 100 households, which is close to the average of 5.08 for the five years ending in September 2020, according to Fast Track Monitoring System data provided by the Insurance Information Institute. Claim costs continued to rise. For the four quarters ending in September 2016 compared to the same period ending in September 2020, average claim costs climbed 14% from $9,745 to $11,145.

The average claim cost for losses not attributed to natural catastrophes, according to Fast Track data, climbed 25% from $10,212 for the four quarters ending in September 2016 to $12,854 for the four quarters ending in September 2020.

Weather Vulnerabilities

Weather events are becoming a much

Figure 1. Cumulative By Line Underwriting Experience — Net Premiums Written

LINES OF BUSINESS	Year	Net Premiums Written (000)	Net Premiums Earned (000)	Losses & Adj Expenses Incurred[1] %	Total Underwriting Expenses Incurred[2] %	Dividends to Policyholders[1] %	Combined Ratio After Div %
HOMEOWNERS MULTIPLE PERIL	2010	61,120,043	59,526,577	76.3	30.0	0.5	106.9
	2011	63,457,899	62,604,064	92.0	30.0	0.4	122.3
	2012	66,930,528	64,876,078	73.5	30.1	0.5	104.1
	2013	71,926,271	69,423,069	59.9	29.9	0.5	90.4
	2014	76,959,015	74,571,911	62.5	29.4	0.5	92.4
	2015	79,489,235	78,005,918	62.0	29.3	0.5	91.9
	2016	80,252,958	80,068,092	63.5	29.3	0.4	93.2
	2017	82,343,366	81,313,520	77.6	29.1	0.4	107.2
	2018	88,385,429	85,793,636	74.5	29.0	0.5	104.0
	2019	92,262,667	89,758,997	69.2	28.8	0.6	98.6
	TOTALS	763,127,411	745,941,862	70.7	29.4	0.5	100.6

The data in this spreadsheet was sourced from Best's Financial Suite - P/C, US and is subject to change. Updated data is continuously available in our Financial Suite products in the BestLink online service.

Source: A.M. Best. Used with permission.

[1] Ratio to net premiums earned.
[2] Ratio to net premiums written.

more significant issue, says Roosevelt C. Mosley, principal at Pinnacle Actuarial Resources, "because CAT losses are not just at the coasts but throughout the country." The year 2020 ushered in another annum of unrelenting weather events in the United States. A derecho in Midwestern states last August was the third most severe weather event since 1980 with CPI-adjusted costs over $10 billion from damage to infrastructure and crops, according to a news release from the National Oceanic and Atmospheric Administration's (NOAA) National Centers for Environmental Information in January 2021.

On the East and Gulf Coasts, there were 30 named hurricanes, breaking the previous record of 28 in 2005. Meanwhile, according to NOAA, the Western U.S. experienced the most active wildfire year on record, with five of the six largest fires in California history and the three largest fires on record in Colorado.

All told, there were 22 separate weather disasters each costing an estimated $1 billion or more in total losses, according to NOAA. The 2020 experience broke the previous record of 16 occurring in both 2011 and 2017.

If the trend of pure catastrophic natural disaster losses increases as observed the past two decades, the 2021 to 2030 time period will see an average of $45 billion in CAT losses per year, Hartwig says. During the years 2000 to 2010, the average annual cost of CAT losses was $20 billion to $25 billion, which increased to an average of $35 billion annually during the decade of 2011 to 2020.

Whether or not Mother Nature's mischief was categorized as a weather catastrophe, sources agree that the cumulation of non-CAT events are also having a noticeable impact on claims experience. "Clients are choosing higher deductibles to offset the increased cost to insure their homes," Banks observes. Deductibles are going up, he explains, due to loss ratio increases.

"It's the first time I have seen wildfire deductibles on an admitted homeowners policy," Banks observes. Specifically, deductibles are about 10% to 15% of a home's value," he notes, which is the standard practice of non-admitted carriers. He expects deductibles for wildfires and hail risk to become more common practice, as is already the case for earthquake, flood and wind coverage.

One contributor to loss ratios for 2020 is the rising cost of covering alternative living expenses, which, Banks observes, is increasing since homes are taking longer to rebuild. Supply chain interruptions also are raising material costs, he says.

Total reconstruction costs in the United States, including labor and materials, rose 9.1% from January 2020 to January 2021, according to "360Value Quarterly Cost Update," a first quarter U.S. report by Verisk. Pandemic-driven demand increases in lumber markets sent reconstruction costs soaring. Material costs increased in all categories, with lumber costs up 54% due to higher building activity, supply shortages related to the pandemic shutdown and lower winter productivity. Labor costs are also up. The labor costs for drywall installers/finishers, for example, rose the fastest at 13%.

Experts expect weather damage to homes to become a larger concern as climate change continues to undermine properties in places once considered safe to build. "There is no doubt that global warming is a serious issue

Whether or not Mother Nature's mischief was categorized as a weather catastrophe, sources agree that the cumulation of non-CAT events are also having a noticeable impact on claims experience.

impacting the insurability of certain homes," Banks says. "Unfortunately, it is being left to state governments as the insurer of last resort to fill in vacated insurance options," he notes.

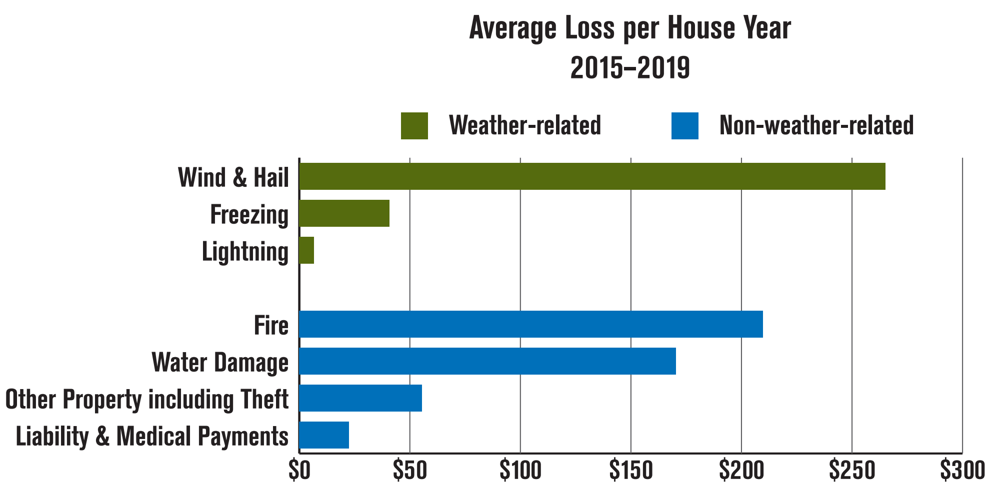
CAS staff actuary Ken Williams observes that affordability is becoming a larger concern. The combination of rising rates and shifting to deductibles based on the percentage of a home's value can create hardships for average homeowners, he explains. In a February 2021 post, the online real estate marketplace company Zillow reports that the average cost of a home nationwide is $266,222; a 1% deductible can be financially burdensome for the average homeowner as it is more than quadruple a $500 deductible and double a $1,000 deductible.

Personal lines insurers are concerned about auto insurance profitability. This is due to competition as well as COVID lockdowns reducing driving, ridesharing and driverless technology. As a result of this, Williams says that they are looking to homeowners insurance to help make up the difference in profit.

Now, insurers gently encourage claims mitigation by promoting maintenance or, sometimes, Internet of Things technology. As premiums and deductibles continue to rise, homeowners might feel a greater incentive to pay closer attention to risk. "We have spent more time analyzing causes of loss [that are] more clearly human-related," says Raul Retian, senior director of personal lines actuarial products at ISO/Verisk.

The effort is not easy. Fire as a cause of loss can be due to activity inside or outside the home, such as a wildfire, he explains. Similarly, the role of weather on water losses is not clear. Looking at claims data by pure premium for the five-year average of the years 2015 to 2019, weather losses during those years cost the average homeowner in the U.S. an average of $313 annually, which is 40.6% of losses, according to ISO/Verisk data. (See Figure 2.) The wind and hail category is the most common cause of loss at $265 per household. Non-weather claims combined, however, are about 59.4% of losses or $458 total.

Figure 2. Average Loss per House Years 2015–2019



Source: ISO/Verisk 2015–2019 Cause of Loss Experience Forms HO-2, HO-3, HO-5, HO-7

The COVID-Occupancy Effect

While property insurers expect the weather to have the most significant impact on homeowners insurance costs, there was no predicting a worldwide pandemic or its modern-day implications. When the Spanish flu closed down public activity starting in 1918, insurers generally covered fires only. Now that homeowners insurance is more comprehensive, the lockdowns in response to the COVID-19 pandemic have introduced new wrinkles in homeowners insurance.

In 2020 certain causes of loss typically constituting about five to ten percent of all losses behaved as "we might have expected due to COVID-19," says Retian, who observes that theft, medical payments and liability all saw frequency decline in 2020. Theft likely declined due to insureds being home, he explains, while social distancing protocols meant that there were likely fewer liability and medical claims arising from having guests in the home. Claims from water-related losses, he adds, were about the same as previous years.

Since the pandemic transformed the home from the "place to hang one's hat" to the center of people's lives, insurers have been learning the risks and benefits of higher home occupancy while anticipating what the "new normal" for the home will mean. Unquestionably, Americans have been staying at home more in the past year. Eighty-five percent of 5,000 Americans surveyed by HomeAdvisor report they spent more time at home, according to the referral service's "State of Home Spending" report released in November 2020. Seventy-one percent of Americans surveyed by the Pew Research Center

reported working from home.

For private dwelling insurers, there are several implications for more people staying at home. Constant home occupancy has its advantages and disadvantages. Depending on how an insured is living in their residence, occupancy can reduce the frequency and severity of some claims while boosting others.

Neos, the first provider of connected home insurance in the United Kingdom, reveals that during the lockdowns in England in 2020, overall loss ratios dropped by over 30%. "This is simply a function of people being home and [fewer] claims due to reduced crime and people on hand to quickly react to any at-home disasters, such as burst pipes," says Jon-Michael Kowall, an insurtech advisor. "Further, Neos has leveraged data on over 50,000 policies to better understand new risk factors. Based on two years of data, customers who are always home have a loss ratio that is nearly half the loss ratio for customers who are vacant from the home working a standard schedule of 9 to 5."

The opportunity for the forward-thinking insurer is in replicating this loss cost reduction, Kowall explains. One approach is to introduce smart home technology that creates virtual occupancy or simulates or even enhances human occupancy to provide a competitive advantage and reduce claims. (Note: *Actuarial Review* will be taking a closer look at Internet of Things technologies in a future issue.)

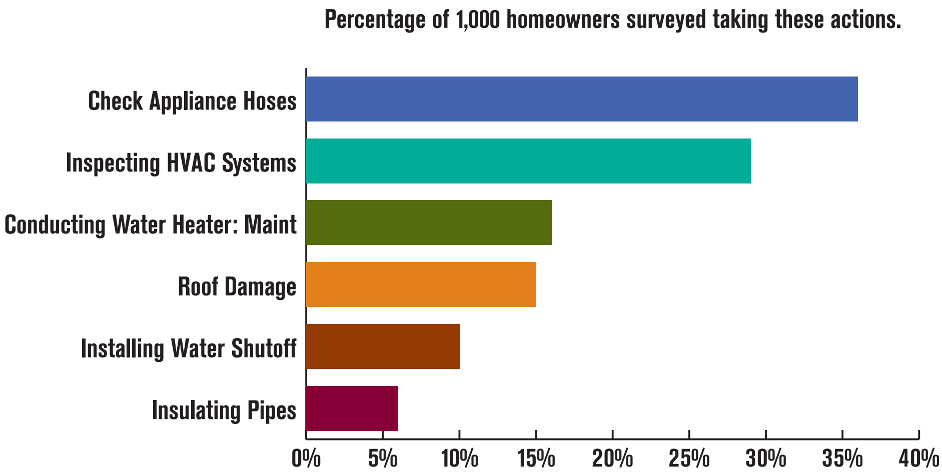
Seventy percent of respondents in the HomeAdvisor survey say they are cooking more, explaining the uptick in kitchen fires. "We saw a few more kitchen fires and smaller things like that because people were at home and cooking more than ever before," observes Todd Lehmann, vice president and chief actuary of Quincy Mutual Group. "However, we saw fewer maintenance types of claims related to wind and hail damage or frozen pipes."

Greater home occupancy also impacted how Americans spent money in their personal living space. Garages are seeing greater use for additional storage, a home gym or home office, according to the "America at Home" survey conducted in October 2020 by Gazelle Global Research and sponsored by three women who work in the commercial real estate industry.

The motivation for home improvements changed in 2020 compared to 2019, reports the Home Advisor survey. The top reason for home improvement spending in 2020 was to suit lifestyle needs better; pre-pandemic in 2019, the top reason was to replace or repair damage, defect or decay.

Released in December 2020, Chubb's fourth annual Homeowners' Risk Survey found that one-third of those surveyed had not invested in home maintenance because of COVID-19 and 45% said the pandemic reduced the ability of contractors to handle maintenance needs. Compared to 2019, homeowners are less concerned about day-to-day upkeep in 2020, as 60% expressed this concern, down from 72% in 2019, according to the survey of 1,000 homeowners that represents 25 million U.S. households. The respondents also were less concerned about external or weather-related damage

Figure 3. Annual Homeowners' Risk Survey



Data courtesy of Chubb. Used with permission.

than the year before. In 2019 75% of respondents expressed such concern, which dropped to 38% in 2020.

When it comes to home protection behaviors, according to the Chubb survey, most respondents do not do what the insurer considers to be the easiest home maintenance efforts. The 2020 survey respondents reported that they check appliance hoses periodically (36%), inspect home heating systems (29%), perform water heater maintenance (16%), look for roof damage (15%), install water shutoff (10%) and add pipe insulation (6%).

Homeowners indeed shifted their focus to adapting their homes to enhance livability during the pandemic. Total spending for home improvements, on average, grew by more than $4,000 for households completing home projects, rising 44% from $9,081 in 2019 to $13,138 in 2020, according to the HomeAdvisor report. Average home maintenance spending increased by $2,087 from 2019 to $3,192 in 2020. Sixty-three percent of respondents reported noticing more areas for improvement around their homes.

Remodeled properties might be more valuable and leave dwelling owners underinsured, Lehmann says. “I think occupant characteristics are important and predictive but tough to maintain,” Lehmann says. “You may know who owns the house; you don’t know how its use changes over time.” Insurers can send questionnaires during renewals, but the response rate is generally poor, he says.

Homeowners insurers continue to struggle with collecting adequate premium for the actual risk of a home, Mosley says. “People tend to equate the cost of purchase to replacement,” he says. Another issue Mosley points out is that “sometimes the standard contents coverage percentages don’t have a relationship with value of content in home.”

Since people are staying at home longer than usual, insurers, who are often updated on homes at the sales transaction, might be in the dark for a greater duration. Redfin reports a new record of 25.1% of U.S. homeowners have been living in the same place for more than 20 years, up from 14.3% in 2010, according to a post by the real estate brokerage in January 2021. In 2020 the typical homeowner had lived in their home for 13 years, an increase from 8.7 years in 2010.[3] People are living in their homes longer for myriad reasons, including low interest rate refinancing, high agent fees and aging-in-place desires.

Home improvements related to the Internet of Things technology is something else insurers should keep an eye on, Mosley says, because some of it is expensive to cover and cannot be seen from a traditional drive-by inspection. The technology also introduces potential cyberhacking risk. Generally, homeowners insurers do not cover cyber breaches and identity theft, but more are starting to, Mosley says.

The Future

Since greater home occupancy due to COVID-19 has become a more important factor to homeowners insurers, the question becomes: How much will Americans continue to stay home when it is no longer necessary? Many Americans in the Pew survey, 54%, say they

Internet of Things technology is something else insurers should keep an eye on, Mosley says, because some of it is expensive to cover and cannot be seen from a traditional drive-by inspection. The technology also introduces potential cyberhacking risk.

[3] https://www.redfin.com/news/homeowner-tenure-2020/

More than ever, the critical relationship between homeowners insurance companies and their customers needs to be strengthened to improve retention and risk mitigation.

want to continue spending more time at home after the pandemic ends.[4] The "America at Home" survey reveals that more than two-thirds of nearly 4,000 respondents of all age groups say they plan to continue using the backyard to entertain family or friends, use rooms for combined purposes and reorganize more to create increased storage.

Although working from home remains popular, its permanence will vary. The Pew survey offers that 31% of respondents struggle to feel motivated when working from home and 43% find meeting deadlines and completing projects to be difficult.

"The constant back talk is, 'Man, I am productive, but I am having to work more hours,'" says Troy Korsgaden, president and consultant for Korsgaden International, which serves insurance carriers, agents and brokers. Korsgaden sees that employers will also have to figure out which employees need supervision, since not everyone engages, and determine the best ways to collaborate.

Some employers, including the federal government, are making permanent adjustments by looking to move offices away from downtowns and bringing work closer to their employees to save rent and cost of living expenses. Lockdowns are limiting going to restaurants and stores, but how much Americans will want to return to those places that manage to remain open is uncertain.

Conclusion

Recent developments demonstrate that the homeowners insurance line will gain greater prominence on the property-casualty insurance radar screen. Increasing weather losses, the rise and continuation of home occupancy and the expected reduction in auto insurance profits will compel homeowners insurers to take a more granular look at its risk mitigation, claims, data and underwriting practices.

More than ever, the critical relationship between homeowners insurance companies and their customers needs to be strengthened to improve retention and risk mitigation.

Because severe weather events and natural catastrophes dominate homeowners insurance losses, and since they are expected to become the new normal, customer involvement will be necessary to curtail potential coverage affordability. The Chubb survey sends a strong message that homeowners are not sufficiently investing in basic home maintenance practices. Insurers would do well to discover ways to improve the customer relationship to prevent potential claims toward the mutual goal of coverage affordability. Strong insurer-insured relationships would also go a long way toward ensuring customers are appropriately covered.

Homeowners insurance companies that can anticipate and provide products and services to strengthen their value propositions will enjoy a competitive advantage.

Annmarie Geddes Baribeau has been covering insurance and actuarial topics for more than 30 years. Her blog can be found at www. insurancecommunicators.com.

[4] Pew Research Center study, "How the Coronavirus Outbreak Has – and Hasn't – Changed the Way Americans Work," https://www.pewsocialtrends.org/2020/12/09/how-the-coronavirus-outbreak-has-and-hasnt-changed-the-way-americans-work/

The Importance of Pronouns: A Nonbinary Actuarial Analyst's Perspective

By ARIUS JOHNSON (THEY/THEM)

When I graduated college and entered the workforce as a gender nonbinary[1] actuarial analyst, I was nervous about coming out in my workplace. I interviewed and was hired using my *deadname*.[2] It took encouragement from my supervisor to go by my actual name, Arius (yes, like the modeling software), before I felt comfortable doing so. I was still not out as nonbinary when I made this very public name change in the office. My work persona was still detached from my true self.

Before coming out as nonbinary, I recall an instance when my supervisor corrected a stranger about my pronouns via email. The stranger couldn't tell my gender from my name (not a bug, but a feature!) and my supervisor told them to use binary pronouns that fit my work persona at the time. I felt that I was hiding myself and realized that I couldn't stay in the closet forever.

Months later, I finally worked up the courage to come out. In practice, this mostly meant asserting my pronouns and getting my coworkers on board with using "they" and "them" when referring to me.

Up until this point, I had been in a bubble. In my personal life, my friends and partners had been using my pronouns with ease. I'd become accustomed to this level of understanding and respect. I was excited to be "out" in the office and let my coworkers know more about me. I invited questions and wanted to have a dialogue so that my colleagues could understand a key aspect of my existence.

But the initial results of coming out in the office were less than ideal. People were afraid to ask questions at the risk of offending me, even as I encouraged their curiosity. I was getting misgendered[3] every day and felt more alone than ever. I was fortunate to have the support of my supervisor, but even he took a while to consistently use the correct pronouns. I didn't think I'd ever be accepted, let alone understood, by my colleagues. I cried in my cubicle. I cried in the bathroom. I cried in front of my supervisor. I felt deflated by the crushing weight of being so invisible.

Some days, I wondered if it was even worth it, if I should have stayed in the closet and just let them misgender me. If they didn't *know* they were misgendering me, then it's not disrespectful, right?

So, how do we solve this problem? How can people feel confident that they'll be accepted if they come out as transgender in the workplace?

As you may have guessed, there is no single, simple answer to this question. But certain small acts can go a long way toward making your transgender colleagues more comfortable.

The simplest way is pronoun disclosure: Put your pronouns in your email signature, in your LinkedIn bio or name, and on your professional profiles. The CAS is launching a feature that will allow members to add their pronouns to their member profiles, and I encourage you

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[1] *Nonbinary* (adjective) — an umbrella term that describes anyone whose gender falls outside the binary categories of man and woman.
[2] *Deadname* (noun) — a name, usually assigned at birth, that a person no longer wants to be called.
[3] *Misgender* (verb) — to use incorrectly gendered terms for someone; for example, using "he" pronouns for someone whose pronouns are "she/her/hers."

to add yours as soon as possible.

When we normalize disclosing our pronouns, we form habits that affirm our transgender friends and colleagues and make it easier for them to share their identities with us. It can make all the difference between feeling alone and feeling connected, between staying at a workplace and quitting.

You may think that this is all going a little too far and that you don't have any transgender colleagues, so it doesn't apply to you. To that, I answer, "Not that you know of, and not yet."

In addition to disclosing your pronouns, make a habit to check the pronouns in other people's email signatures before assuming theirs. Remember that you can't tell someone's gender based on their name or appearance. In an ideal world, we'd default to using gender neutral words to describe folks until we find out their pronouns. In reality, our culture makes it difficult to not make assumptions or avoid putting people into gender-based boxes. Try to resist the urge. See how it feels to say, "that person over there" instead of "that man" or "that woman."

When introducing yourself in a meeting, especially if there are new faces, say your name and pronouns. In Zoom meetings, for example, you can even add your pronouns to your name badge. Encourage your colleagues to do the same if they feel comfortable, but don't force anyone to do so.

You may think that this is all going a little too far and that you don't have any transgender colleagues, so it doesn't apply to you. To that, I answer, "Not that you know of, and not yet." Although you may not know it now, it's possible that someone you already work with is transgender and doesn't feel comfortable or safe coming out. As the actuarial career expands and time goes on, more transgender folks will inevitably join the workforce. I think you'll find that adding your pronouns to your professional profile is a small, easy step with a possibly excellent payoff: creating a welcoming, safe environment for your transgender colleagues.

As an actuary, I must include a caveat. I highly encourage cisgender[4] folks to disclose their pronouns; however, if you are transgender, do whatever is most comfortable for you. Coming out is still not an easy process, and it is different for everyone. If you don't feel safe disclosing your true pronouns right now, that's okay!

Notes on the language and etiquette of pronoun usage:

1. When asking someone what their pronouns are, try to avoid asking for *preferred* pronouns. The word "preferred" implies that certain pronouns are better than others, but that any pronouns would be fine. This is typically not the case, although some people are okay with any/all pronouns or more than one set of pronouns. "What are your pronouns?" and "How should I refer to you?" are great alternatives to asking for preferred pronouns. Pronouns are not a *preference*; they are powerful identity signifiers that are meaningful to the individual using them.
2. The three most common sets of English language pronouns are "he/him/his," "she/her/hers" and "they/them/theirs." Many other pronoun sets exist but are relatively rare in comparison as they have been created by and for transgender people more recently. Less familiar pronouns are just as legitimate as the more common ones! Please be respectful.
3. If you get someone's pronouns wrong, don't make a big show of apologizing or make excuses about why it's difficult to use their pronouns. This can make your colleague feel uncomfortable and invalidated. Instead, just correct yourself and move on. Practice using their pronouns correctly when you're alone to avoid making that mistake again.
4. If you have questions, we are here to help. Please reach out to the Sexuality and Gender Alliance of Actuaries (SAGAA) and be sure to follow our LinkedIn page [https://www.linkedin.com/company/sagaactuaries/] and Instagram [https://www.instagram.com/sagaactuaries/] to learn about our upcoming events and initiatives.

Arius Johnson (they/them) is a board member for the Sexuality and Gender Alliance of Actuaries (SAGAA) and an actuarial analyst in Tampa, Florida.

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[4] *Cisgender* (adjective) — describes someone whose gender identity matches the gender they were assigned at birth.

ETHICAL ISSUES

Actuarial Standards of Practice: What Are They Good For? You Must Get to Know ASOP No. 1

Ethical Issues is written by members of the CAS Committee on Professionalism Education (COPE). The column's intent is to stimulate discussion among CAS members. Therefore, positions are sometimes stated in such a way as to provoke reactions and thoughtful responses on the part of the reader. The opinions expressed by readers and authors are for discussion purposes only and should not be used to prejudge the disposition of any actual case and do not modify published professional standards as they may apply in real-life situations.

"Let's start at the very beginning.
A very good place to start."
—*Oscar Hammerstein and Richard Rodgers*

The author was instructed that the text of this article should be between 1,400 and 2,000 words. ASOP 1 does not contain that many words in total, which would make the following not a "summary," but an "expansion." Two notes on this: a) This is a lie, ASOP 1 contains over 2,500 words, and b) this diversion counts as 66 words toward the minimum.

Any CAS member who has attended a professionalism session sponsored by the Professionalism Education Committee (COPE) will know that COPE focuses much of its content on the Actuarial Standards of Practice (ASOPs), which are promulgated by the Actuarial Standards Board (ASB). The ASOPs, along with the CAS Code of Conduct (Code) are the professionalism documents to which we mainly refer both in presentations and in the Course on Professionalism.

ASOP 1 is indeed an ASOP in and of itself. It is an ASOP about ASOPs. A "meta-ASOP," you might say.

ASOP 1 is the "Introductory Actuarial Standard of Practice." Do not let the name deceive you. Do not think of it as you would to the "introduction" or "preface" of a book which you may very well skip over to begin your reading. Here's a test: Did you read the "Introduction" above for *this* article? To emphasize that point, in 2004, the ASB recognized the importance of the content of what was previously the Preface to the ASOPs and created the initial "Introductory Actuarial Standard of Practice." In March 2013, the "Introductory ASOP" was designated as "ASOP 1" "to reinforce that the Introductory ASOP contains guidance" and, as such, was similar to all other ASOPs. The previous ASOP 1, "Nonguaranteed Charges or Benefits for Life Insurance Policies and Annuity Contracts" (yawn!), was renumbered as ASOP 2.

ASOP 1 is indeed an ASOP in and of itself. It is an ASOP about ASOPs. A "meta-ASOP," you might say.

Just as with all other ASOPs, ASOP 1 is presented in four sections. For ASOPs that follow ASOP 1, the four sections are standardized. Appendix 1 of ASOP 1 lists these four sections. Each section and Appendix 1 will be discussed individually in the following paragraphs. Direct quotes from ASOP 1 will be presented throughout, especially when discussing the critical points made in the ASOP Standard. At the beginning of the discussion of each section, a quote taken directly from that section will be highlighted. These quotes capture the essence of why this Introductory ASOP is the most important ASOP.

This review, while comprehensive, is not meant as a substitute for reading and studying ASOP 1. That task is up to the individual practitioner. However, reading this article might qualify as professional continuing education (CE) hours.

Section 1. Overview

"ASOPs are binding on members of the U.S.-based actuarial organizations when rendering actuarial services in the U.S."

While the ASOPs that follow ASOP 1 address specific topics or activities performed by the actuary, ASOP 1 "sets forth principles that have been broadly applicable to the work of the ASB since its inception, and it carries the same weight and authority as other ASOPs."

The subsequent ASOPs instruct what the actuary "should" or "can" do and what the actuary "should consider" doing. ASOP 1 provides the "teeth" behind what happens if the actuary "doesn't," "cannot" or "doesn't consider." In Section 1, the teeth begin to get bared by the quotation at the beginning of this section. The text goes on to offer the caveat that ASOPs "are not the only considerations that affect an actuary's work." Additional considerations such as legal or regulatory requirements, requirements of the employer or an actuarial association, or even the actuary's professional judgment may also play a part in the actuary's work and conclusions. As such, "the ASOPs provide a basic framework that is intended to accommodate these additional considerations."

Section 2. Definitions, Discussions, and Related Guidance

"Failure to follow a course of action denoted by either the term 'must' or 'should' constitutes a deviation from the guidance of the ASOP."

Section 2 of ASOP 1, just as Section 2 of all the subsequent ASOPs (more on that later) contains definitions of words or terms that are used in that ASOP. A key difference for definitions in ASOP 1 is that the definition of words and terms in this Introductory ASOP are intended to be applicable to *every* ASOP, unless defined differently in a specific ASOP. In all other ASOPs, definitions presented in Section 2 are only for use in that specific ASOP. This is explained in ASOP 1 as "definitions can and do differ among ASOPs, reflecting different uses of language in various segments of the profession."

Not every important term is defined within the ASOPs. In such cases, "the actuary is expected to interpret a term in a straight-forward manner, consistent with the common usage of the term." This is essentially another application of actuarial judgment. Any questions about the meaning of a specific term should be directed to the Actuarial Board for Counseling and Discipline (ABCD).

Among the terms that are specifically defined in ASOP 1 are the "Terms of Construction": "Must," "Should" and "May." As expected, each of these terms have specific definitions, and imply certain levels of responsibility and potential implications for the actuary who does not follow the guidance suggested by these terms, as they are presented in any ASOP.

Must — "As used in the ASOPs means that the ASB does not anticipate that the actuary will have any reasonable alternative but to follow a particular course of action."

Should — "Indicates what is normally the appropriate practice for an actuary to follow when rendering actuarial services."

The actuary may determine that for various reasons it is not "reasonable or practical" to follow the practice outlined as a "must" or "should" (please read the ASOP for more details on what may cause this conflict). All is not lost when the actuary deviates from the guidance of an ASOP. While "(f)ailure to follow a course of action denoted by either the term 'must' or 'should' constitutes a deviation from the guidance of the ASOP, the actuary in this instance should refer to ASOP 41, 'Actuarial Communications.'" ASOP 41 gives the actuary a course to follow (including documentation, of course) in the event the actuary needs to deviate from the instructions of any ASOP.

An example of a situation that is *not* a deviation regarding the instruction "should" is given in this subsection. The ASOP states that the actuary "should consider" a certain action or process. The standard does not say the actuary "should" perform that action or process. If after consideration, the actuary judges that such an action is not appropriate, the failure to take that action is not considered a "deviation" (which is defined in Sec. 2.4) from the standard.

May — "As used in the ASOPs means that the course of action described is one that would be considered reasonable and appropriate in many circumstances."

Clearly less stringent than either "Must" or "Should," "May" is used when a course of action may not be reasonable or appropriate in all circumstances. When "May" is used in an ASOP, it is not intended to indicate that alternate courses of action are considered impermissible.

As mentioned earlier, terms defined in ASOP 1 are terms that will have the same definition across all ASOPs. Other terms defined in Section 2 are:

- Actuarial Services
- Actuarial Soundness
- Deviation
- Known
- Materiality
- Practical or Practicable
- Principal
- Professional Judgment
- Reasonable
- Reliance
- Significance/Significant

For discussion of these important terms, please refer to ASOP 1.

Section 3. Purpose and Format of Actuarial Standards of Practice

"ASOPs identify what should be considered, done, documented, and disclosed when rendering actuarial services."

Section 3 addresses the purpose of the ASOPs by discussing what they are (and are not) intended to represent, in addition to what the ASOPs allow the actuary to do. Perhaps this section is best presented with a list.

According to ASOP 1, Section 3, the ASOPs:

- Are intended for **use by actuaries who are qualified to make use of them** by virtue of having the necessary education and experience to understand and apply them (see Precept 2, Qualification Standards, of the Code). Other individuals should consider obtaining the advice of a qualified actuary before making use of, or otherwise relying upon, ASOPs.
- Are intended to provide guidance for dealing with commonly encountered situations. **Actuaries in professional practice may also have to handle new or non-routine situations not anticipated by the ASOPs.**
- **Are principles-based and provide the actuary with an analytical framework for exercising professional judgment** and identify factors that the actuary typically should consider when rendering a particular type of actuarial service.
- Allow for the actuary to use professional judgment when selecting methods and assumptions, conducting an analysis and reaching a conclusion, and **recognize that actuaries can reasonably reach different conclusions when faced with the same facts.**
- **Provide guidance (in) situations where the actuary deviates from the guidance of an ASOP**, such as when applicable law supersedes the instructions of ASOPs.

The ASOPs are ***not***:

- Making an attempt **to dictate every step and decision in an actuarial assignment.**
- Intended to shift the burden of proof or the burden of production during litigation, and **deviation from one or more provisions of an ASOP should not, in and of itself, be presumed to be malpractice.**
- Meant to be narrowly prescriptive and **neither dictate a single approach nor mandate a particular outcome.**

Not all ASOPs will apply to all tasks. Most ASOPs are task-specific and the actuary is responsible for determining which ASOPs do apply to the task at hand.

Section 4. Compliance with ASOPs

"ASOPs are binding upon actuaries. Failure to comply with an applicable ASOP results in a breach of the Code."

Section 4 of ASOP 1 begins with the quote directly above. The quote continues with "(s)uch breaches subject the actuary to the profession's counseling and discipline processes," which *may* lead to the involvement of the ABCD. This section discusses compliance with the ASOPs and their applicability to the specific situations. While the ASOPs are indeed binding, ASOP 1 states that "(a)ctuaries should take a good faith approach in complying with ASOPs, exercising good judgment and professional integrity." On the other hand, it warns that it is not appropriate to make a "strained interpretation" of the ASOPs' provisions.

Not all ASOPs will apply to all tasks. Most ASOPs are task-specific and the actuary is responsible for determining which ASOPs do apply to the task at hand. Further to this, the Applicability Guidelines can be found at https://www.actuary.org/content/applicability-guidelines-actuarial-standards-practice-0. If no ASOPs apply, the actuary *may* refer to the guidance in the related ASOPs but is not required to do so. If the actuary believes that the ASOPs have conflicting provisions and there is no clear hierarchy of which should apply, they should use professional judgment and may want to contact the ABCD for confidential guidance.

ASOP 1 fits into the rare category of ASOPs that apply more broadly to many different types of actuarial services. It is similar in this regard to ASOP 23 (Data Quality) and ASOP 41 (Actuarial Communications).

Most importantly, "[t]he ASOPs make specific provision for those situations where the actuary is required to or deems it appropriate to deviate from one or more provisions of an ASOP. It is not a breach of an ASOP to deviate from one or more of its provisions if the actuary does so in the manner described in the ASOP, including making the disclosures related to the deviation as required in such ASOP and in ASOP No. 41."

Appendix 1

One item alluded to earlier in this article comes from Appendix 1 and concerns the organization of ASOPs. Except for ASOP 1, the four sections of each ASOP are standard:

- Section 1 discusses the scope, cross-references and effective date of the ASOP.
- Section 2 defines or discusses certain terms used within the ASOP.
- Section 3 provides an analysis of issues and recommended practices.
- Section 4 addresses communications and disclosures.

Conclusion

As you now know, the "Introductory Actuarial Standard of Practice" provides critical and essential information on the applicability of the ASOPs along with potential remedies to the actuary in the event the actuary deems it necessary to deviate from the guidance. The answer, in that case — as always — is "document, document, document" and "disclose, disclose, disclose." The ASOPs are better understood and become more powerful once you are familiar with ASOP 1.

For more information, visit the Actuarial Standards Board website http://www.actuarialstandardsboard.org/standards-of-practice/.

Spotlight on Diversity

To illustrate its commitment to and progress on diversity, equity and inclusion (DE&I) initiatives, the CAS has developed a series of infographics showing its current state of diversity.

In honor of March's Women's History Month, *AR* presents the first in this series, Women in the CAS.

The CAS welcomes member feedback on the Spotlight on Diversity infographics. Please email Mallika Bender at mbender@casact.org.

CAS SPOTLIGHT ON DIVERSITY 2020
WOMEN IN THE CAS

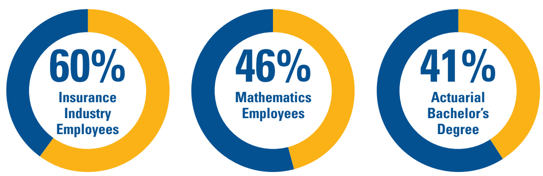
Membership data as of June 2020 and candidate data for 2019 exams

The CAS is sharing demographic data of members and candidates, along with our goals for demographics in the future, to be transparent about our diversity and hold ourselves accountable.

Female CAS Members and Candidates Today

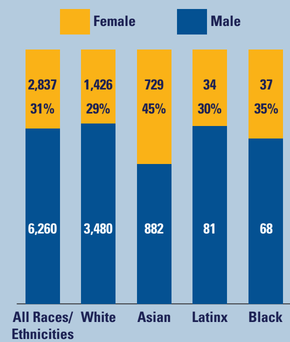
Out of 99% of members and 94% of candidates reporting gender information.
The CAS recognizes other gender identities besides male and female and is actively tracking this data.

Comparison to External Benchmarks

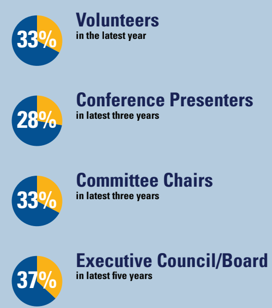


Insurance Industry Employees in 2019 based on Bureau of Labor Statistics Current Population Survery
Mathematics Employees from 2014–2016 based on Pew Research Center analysis of American Community Survey
Actuarial Science Bachelor's Degree Conferred in 2017–2018 based on National Center for Education Statistics Digest of Education Statistics

Gender Breakdown of CAS Members by Race/Ethnicity



Percent of Female CAS Members in Leadership Roles



CAS GOALS FOR FEMALE REPRESENTATION

2026–2030: 45% OF NEW MEMBERS
2031–2035: 50% OF NEW MEMBERS

YOU CAN HELP US GET THERE

JOIN THE DIVERSITY IMPACT GROUP AND SHARE YOUR IDEAS TO INCREASE FEMALE REPRESENTATION

AT COMMUNITY.CASACT.ORG

If you want to make sure that your demographic information is included in these metrics, please log on to the CAS website and update your membership profile.

IN MY OPINION By GROVER EDIE, *ACTUARIAL REVIEW* EDITOR IN CHIEF

Lockdown 2021 — Will Our Social Skills Ever Be the Same?

By the time this issue of the *Actuarial Review* is published, we will have been living with the impacts of COVID-19 for a year or more. For those of us who lost friends or relatives, the impact will be forever. Some of us will never recover from the financial impact of losing a job.

I started this piece with a list of all the things I missed under this situation, but that alone caused me to reach my word limit. I'll leave it to you to make up your own list — but keep it and make sure you celebrate being able to do those things currently prohibited if and when things return to "normal."

When we went to work, rather than working from home, we socialized with co-workers and shared in their celebrations and sadness. We empathized, sympathized and so forth. We shared our lives with them, and they shared their lives with us. A bad day at the office didn't seem so horrible compared to someone's aunt going through chemotherapy or another person's kid not getting into the school they worked so hard to enter. Our ups and downs could be put into perspective.

It is as if many of us "retired" all at once. We no longer go into the office, or if we do, it is under far different circumstances. We generally don't socialize with co-workers — no going out to lunch or drinks after work. And forget about any company bowling, baseball, softball or basketball teams or other activities. With much of our social life centering around our jobs, this work disruption has also disrupted our social lives.

I have a big concern about how this new lockdown environment will affect our abilities to socialize with each other. These lockdown effects don't apply just to those who work in offices. Students are affected by virtual learning and limited or no sports, social events or other extracurricular activities. Sports events are social events for the fans. Social skills are important to our personal and professional lives and, like any skills, if you stop using them, they start to languish. Relationships can fade, and we can lose touch with each other.

Younger people, who are used to texting friends and family, might not be as aware of the curtailment in socialization. Lockdowns are driving us all even faster to being social on electronic devices. But shutting down opportunities to interact with others personally, rather than electronically, denies younger people helpful learning experiences as they mature. For us older people, we are in jeopardy of losing the in-person social skills that we already possess.

I hope that the impact of lockdowns on our social skills will not be permanent.

Now that work and home are in the same location, new social issues have arisen. I can no longer go to work to get away from my home life because I now work from home. I have difficulties leaving work for the same reason. Relationships at home can become stressed with the lockdown. Too much togetherness with a spouse, partner, child or other family member can strain the relationships.

When I started working at home, I needed to make sure that my wife Diane and I weren't adding friction to our relationship. That took a lot of work, and things are still being fine-tuned. Recently, I added a sign at the front of my office that reads "I am attending a webinar." A red, yellow or green sticky note attached to the sign means "please don't disturb," "you can disturb if necessary" or "come on in, it isn't a big deal," respectively, but they only help when I remember to display the notes.

Video meetings and virtual conventions are not the same as in-person meetings. Video meetings are like a series of mini-presentations. In video meetings, one person talks and the others listen. These meetings are one-to-many versus allowing one-to-one or one-to-few. Side conversations can happen during video meetings in the chat window, but they are tricky and certainly not as frequent as side conversations at an in-person meeting or a convention. It is much more difficult to know someone or catch up with someone you know in a virtual, "not-in-person" environment. My conversations using virtual meeting chats tend to be safe and not very personal or revealing.

Everyone's situation is so different, and their personal socialization needs so varied, that I am not comfortable suggesting any solutions. I just want people to be aware of my concern. ●

IT'S A PUZZLEMENT By JON EVANS

Multiply Them All Together

The positive rational numbers are all the numbers formed as the ratio of two positive integers, reduced to lowest terms for uniqueness by removing factors common to both the numerator and denominator. Some people say that the product when you multiply all the positive rational numbers together is 1. Is this true? If not, what is the value of the product? Also, given two positive rational numbers $q2 > q1 > 0$, what is the product of all the rational numbers on the closed interval $[q1, q2]$ when multiplied together? What about the product of all the rational numbers in the open interval $(q1, q2)$?

Deserts of Prime Numbers

The following is Bob Conger's detailed solution.

If we are seeking a desert of size k, begin by calculating $(k + 1)!$ Call this result K. K is divisible by every integer from 1 to $k + 1$. Then, $K + 2$ is divisible by 2; $K + 3$ is divisible by 3; $K + 4$ is divisible by 4, and $K + (k + 1)$ is divisible by $(k + 1)$. Thus, we have k sequential integers, none of which are primes.

Puzzle solutions:

- How big can such a desert be? No limit, it can be as large as you want, as the construction above works for any value of k.
- A starting integer for a desert of size k is $[(k + 1)!] + 2$. This is not the smallest starting point for a desert of size k. A smaller one would be the product of all the primes between 1 and $k + 1$ (inclusive), plus 2. (Proof very similar to the above.)
- Maximum number of non-overlapping k-size deserts: infinite. Any integer multiple of K plus 2 would start a desert. (Proof essentially the same as above). Since $K > k + 1$, these deserts would not overlap one another.

Solutions were also submitted by Andrea Altomani and Clive Keatinge.

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

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