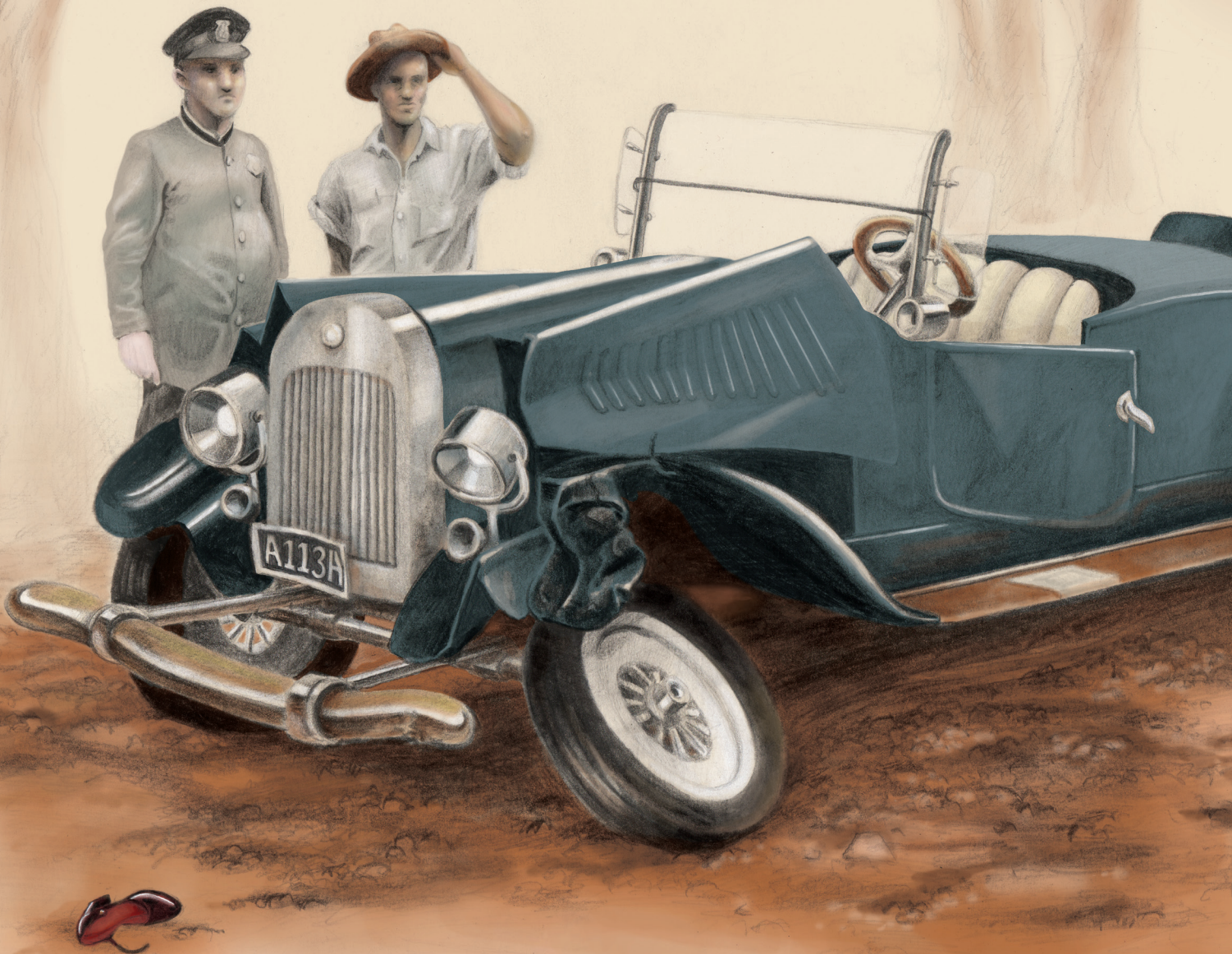


# actuarial REVIEW

VOL 42 / NO 3 / MAY-JUNE 2015

PUBLISHED BY THE CASUALTY ACTUARIAL SOCIETY 

## An Accident in the Country: *Injury and Accountability in the Early Auto Era*



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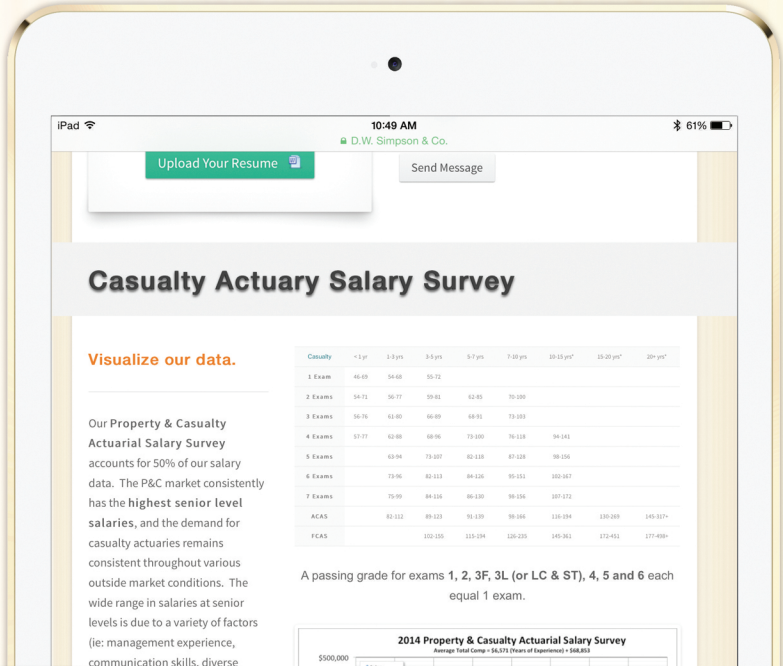
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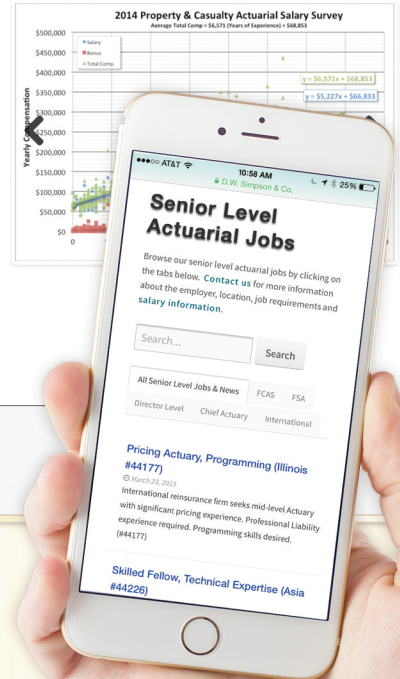
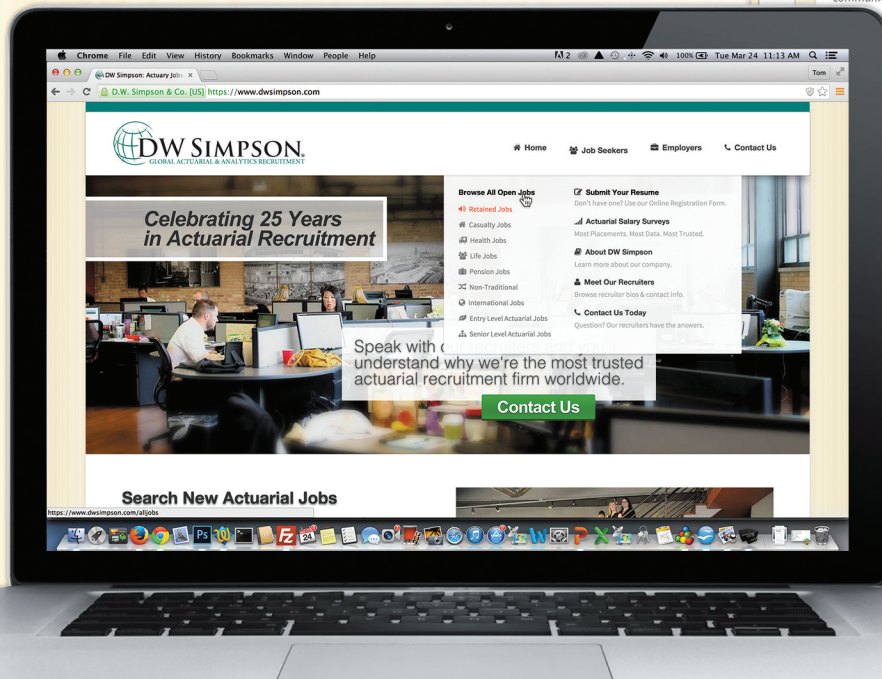


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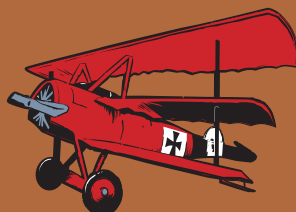
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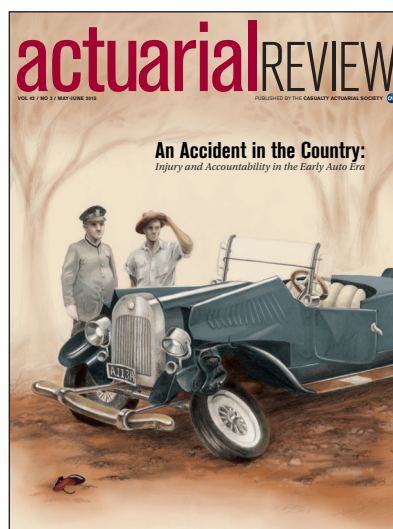
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### An Accident in the Country: Injury and Accountability in the Early Auto Era

BY LIZ HAIGNEY LYNCH

An automobile casualty illustrates the beginnings of how Americans will grasp the unsettling implications of the burgeoning fleet of motor vehicles on the road.

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## editor'sNOTE By GROVER EDIE

# Studying History and Moving Forward

This issue offers a nice mix of the historical and futuristic, from the nascent days of automobile liability insurance to the nurturance of singular type of employee, the smart creative.

Our cover story, "An Accident in the Country," tells of an incident nearly 100 years ago in the Catskills of New York that forever changed the lives of a family. Author Liz Haigney Lynch relates the story of her relative, Kunigunde Scholling, who was one of the first automobile fatalities in the United States. Sobering as well as personable, the article harkens back to a "Wild West" for automobiles — a time before uniform traffic safety rules and liability coverage were mandatory. The article also reminds us that we are not just in the "numbers business"; we are in the people business as well.

Continuing in a historical vein, our Explorations column looks at a little-known IBNR method developed by the late F.E. de Vylder, a professor and researcher whom guest columnists Eric Blanke and Jeremy Smith deem an actuarial forefather. "Exploring Vintage Actuarial Methods" invites us to think about some of the historical underpin-

nings of our modern methods.

Speaking of the recent past, Jim Lynch reports on three sessions of the recent CAS Ratemaking and Product Management Seminar, which was held March 9-11 in Addison, Texas. His recaps help those of us who did not attend be more in tune with current events and trends in the industry — and might help some of you who did attend better remember what you heard.

Looking to the future, Robert Walling III's opinion piece, "The Battle for Smart Creatives," is an excellent description of how Google fosters innovation and creativity in its employees. The article also hints at what may be our toughest competition as actuaries. I hope all CAS members, especially those involved with admissions and exams, will read this piece and take it to heart.

Finally, the column "25 Years Ago in the AR," which was the brainchild of then AR Editor in Chief Walter Wright, offers a view of our association's past and timeless sentiments. In this issue's column, the late Matt Rodermund's comments are as noteworthy today as they were a quarter of a century ago. It's a must read. ●

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

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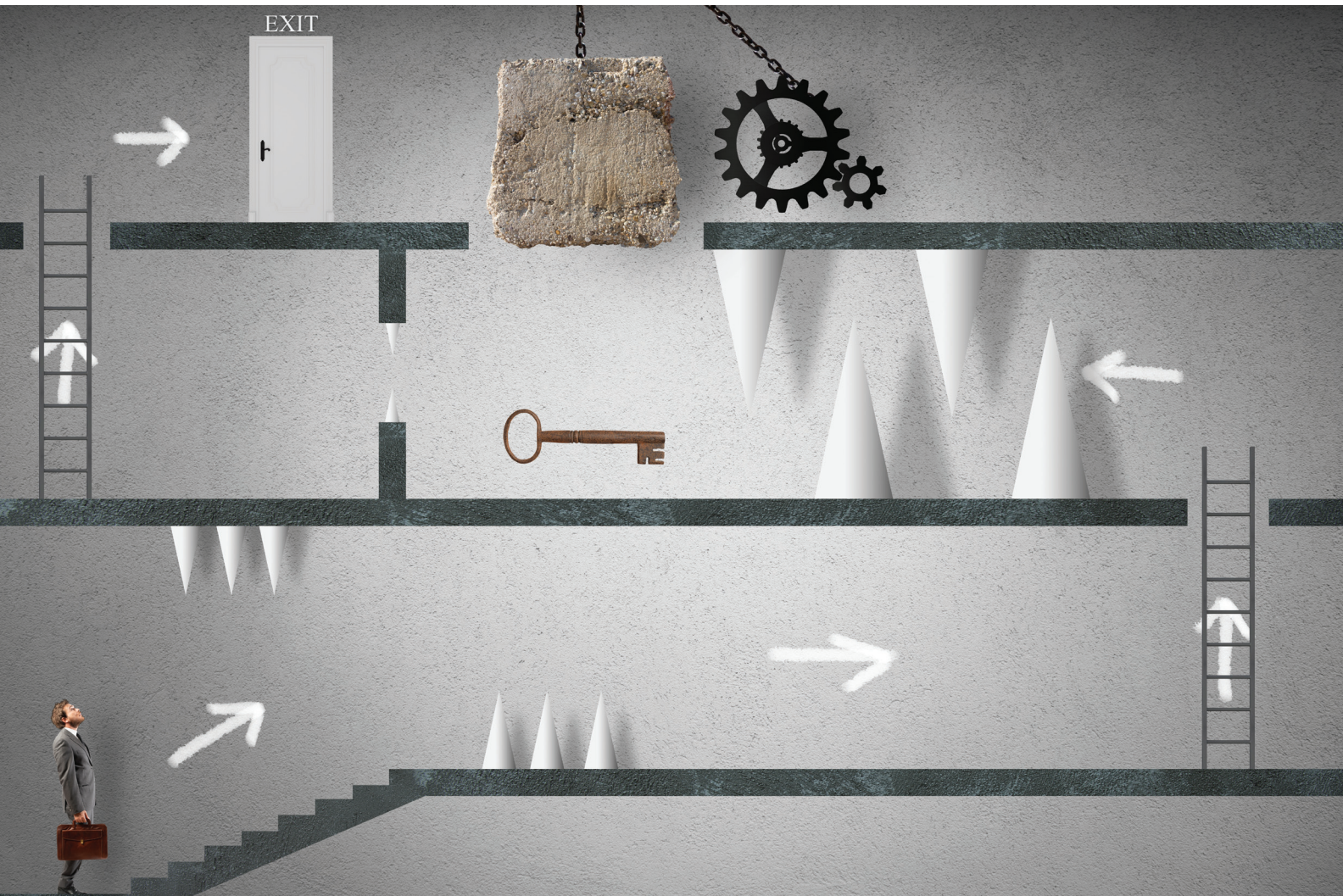
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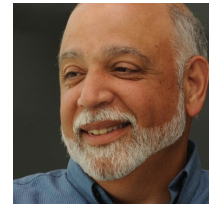
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## Why Should the CAS Exist?

As we all know quite well, the CAS is an actuarial organization with a focus on certain areas of risk and insurance; consequently, that focus gives us some unique views when we speak to other actuaries. Yes, there are other actuarial organizations that specialize, such as consulting actuaries and actuaries whose focus is on pensions, retirement and health and welfare benefit programs. But the education of most actuaries around the world is built around fundamentals of actuarial science and at least some core knowledge in all or most areas of common actuarial practice.

At a CAS Board meeting last August, Board Member Jessica Leong posed a strategic question: “Why does the CAS exist?” This question was quite apropos as the board had just heard the review of the previous year’s accomplishments under the CAS Strategic Plan. Leong told the board about the author Simon Sinek’s TED Talk, “Start with Why.” His TED Talk video and book of the same name, as well as his website ([www.startwithwhy.com](http://www.startwithwhy.com)), provide some useful insights for facing both personal and organizational challenges. Sinek observes how successful organizations communicate and sell themselves. Sinek believes that many organizations communicate in questions in the following order: What? How? Why? Sinek says that such order of these questions is the exact opposite of how the most successful organizations communicate: Why? How? What?

Sinek applies his observations about the order of these questions to Apple:

**Why?** — Apple *believes* in challeng-

ing the status quo and *believes* in thinking differently. This message defines the organization and its mission in the world.

**How?** — Apple makes beautiful products. This is how the organization distinguishes itself.

**What?** — Apple sells computers. This describes **what** the organization does.

## Why do we believe that it is better for actuaries to be qualified in the casualty field (non-life, property/casualty or general insurance) by the CAS rather than an actuarial organization that broadly qualifies actuaries across all areas of specialization?

The preamble to CAS Mission Statement reflects the **what** of the CAS:

The CAS focuses on supporting casualty actuaries who are committed to achieving their full professional potential while maintaining the highest standards of conduct and competence.

And the **how** of the CAS is implicitly reflected in the Definition of a Casualty Actuary:

A casualty actuary is a professional skilled in the analysis, evaluation and management of the financial implications of future contingent events primarily with respect to general insurance, including property, casualty, and similar risk exposures. A casualty actuary has practical knowledge of how these various risks interact with each other and the environ-

ment in which these risks occur.

The CAS Mission Statement and CAS Vision Statement further support the **why** of the CAS.

The purposes of the Casualty Actuarial Society are:

- To advance the body of knowledge of actuarial science applied to general insurance, including prop-

erty, casualty and similar risk exposures.

- To expand the application of actuarial science to enterprise risks and systemic risks.
- To establish and maintain standards of qualification for membership.
- To promote and maintain high standards of conduct and competence.
- To increase the awareness of actuarial science.
- To contribute to the well-being of society as a whole.

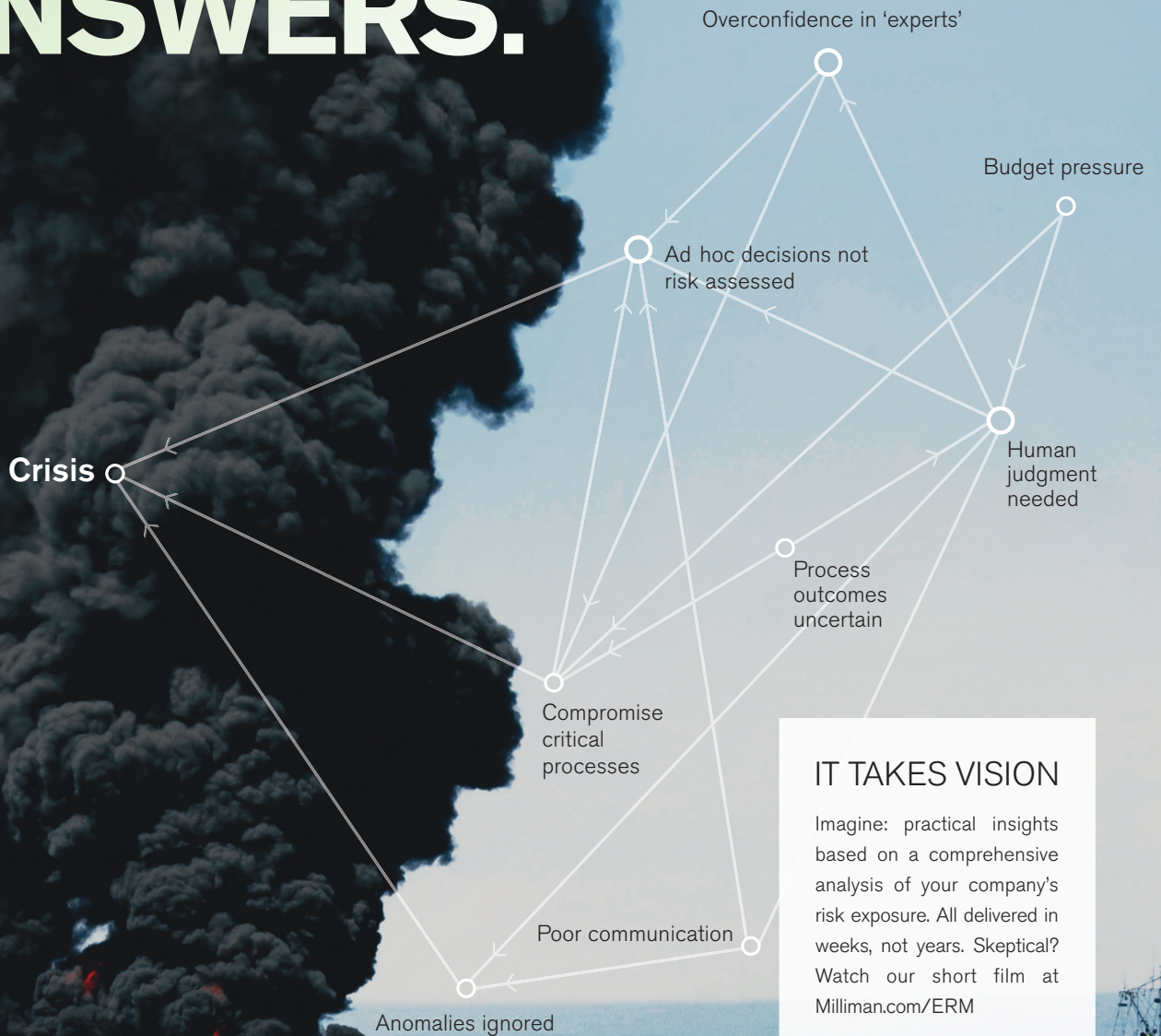
Actuaries are recognized for their authoritative advice and valued comment wherever there is financial risk and uncertainty.

The takeaway from Sinek’s Ted Talk, however, is that the **why** should

*President’s Message, page 8*



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## President's Message

from page 6

be more explicit and attempt to best express the beliefs and inspirations for the CAS in society — why does the CAS do what it does? For example, **why** do we believe that it is better for actuaries to be qualified in the casualty field (non-life, property/casualty or general insurance) by the CAS rather than an actuarial organization that broadly qualifies actuaries across all areas of specialization?

Our **why** might be stated as “To provide society with the quantitative analyses needed to manage the financial consequences resulting from property/casualty risks.”

Said in terms of **what** we believe, it may be stated as, “We believe that CAS actuaries can provide society with the quantitative analyses needed to manage the uncertain financial consequences from property/casualty risks.”

This sounds very consistent with the mission, vision and purposes of the CAS, but the question remains: Why should there be a separate actuarial organization for just P&C risks? Sinek describes finding your **why** in terms of beliefs — your community is defined by shared beliefs, and those who share your beliefs are drawn to you and your community. Over 100 years ago, the actuarial community was intently focused on mortality risk. It is certainly understandable that the characteristics associated with human mortality were of great interest to society for hundreds of years as they are today. However, the quantitative analysis of mortality risks is quite distinct from the quantitative analysis of property/casualty risks. The development of the life insurance industry and various social security and

## So why should the CAS exist? Because the CAS is a community defined by the shared beliefs of actuaries whose specialty is solving actuarial problems in property/casualty risks, and those actuaries who share our beliefs are drawn to the CAS and our community.

retirement income programs has been focused on the financial consequences of the risks of mortality and longevity of individuals. For property/casualty risks, the risk characteristics of concern are quite different.

So having a separate actuarial organization that focuses on property/casualty risks would seem to be a very natural community. There are parallels in the specialization of other professions, such as medicine, engineering and the physical sciences. The closest example of such specializations in the insurance field is with other insurance professionals, such as underwriters. The underwriting profession in the U.S. has a long history of professional training and credentialing from separate organizations — the Chartered Property/Casualty Underwriters Society and the American Society of Chartered Life Underwriters. Each of those two organizations has flourished in their specialized areas of insurance underwriting and has expanded their training to other related types of professionals. The common driver has been the needs of the insurance industry and the community of professionals that defines itself based on those needs.

So the suggestion to merge actuarial organizations or that one actuarial organization would provide a better way to meet the needs of the actuarial profession seems to ignore the need for specialization. More importantly, a professional community defines itself based

on shared beliefs and the common problems and solutions that those professionals are most interested in. The CAS has long established itself as meeting the needs of the insurance industry that has also specialized in property/casualty risks, either by choice or by laws and regulations that apply to those insurance companies.

The CAS is the third largest actuarial organization in the world that provides its own actuarial credentials by examination. So the idea that specialization can be better served by a property/casualty section within one actuarial organization not only ignores the needs of the industry that CAS members have served for many years, but also ignores the incredibly strong, vibrant and durable community of actuaries that the CAS has become.

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

Please share your reactions, ideas and suggestions by leaving a comment on the CAS Roundtable Blog, where this column has been posted. ●

## COMINGS AND GOINGS

**Kai Tse, FCAS**, will serve as CFO & COO, Asia, in Berkshire Hathaway Specialty Insurance's (BHSI) newly established Hong Kong office. Tse comes to BHSI with more than 20 years of experience in numerous leadership roles in insurance, banking, private equity and risk financing.

Magna Carta Companies has appointed **Grace H. Yang, FCAS, MAAA**, as vice president and chief actuary. Yang has nearly 20 years of industry experience having served in a progression of actuarial positions with Milliman in America and the NMG Consulting Group in Asia. Most recently she was an independent consulting actuary working with FTI Consulting.

**Elizabeth Riczko, FCAS, MAAA**, has expanded her role at Westfield Insurance as group underwriting and product leader. She is now responsible for leveraging analytics and a deep understanding of risk to establish underwriting and pricing practices and manage the product portfolio. Riczko joined Westfield in 2007 and previously served as the group analytics leader with responsibility for driving the execution of business, agent and customer analytics across the enterprise. Prior to joining Westfield, Riczko spent several years with Ohio Casualty Group.

**Greg Haft, FCAS**, has been appointed head of catastrophe at PartnerRe, subject to Bermuda immigration approval. Based in Bermuda, Haft is responsible for PartnerRe's worldwide catastrophe reinsurance business. Haft joined PartnerRe in 2013 from Markel

Corporation, where he was managing director, head of U.S. property catastrophe underwriting. He has more than 20 years of industry experience.

**Jim Partridge, ACAS, MAAA**, has been named president of insurance company operations at Glatfelter Insurance Group (GIG). Partridge most recently served as GIG's senior vice president of operations and chief actuary. A GIG associate since 2000, Partridge previously held positions at GEICO and Penn National Insurance.

Kingstone Companies has appointed **Benjamin Walden, FCAS, MAAA**, to the board of directors of its subsidiary, Kingstone Insurance Company (KICO). Walden has also been promoted to senior vice president at KICO with direct responsibility over underwriting and information technology as well as actuarial services. Walden has more than 25 years of experience holding leadership positions in a variety of corporate environments, including two other New York-based carriers. ●

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

### ACTUARIAL REVIEW LETTERS POLICIES

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## CALENDAR OF EVENTS

### Interactive Online Courses

"Understanding CAS Discipline  
Wherever You Practice"

"Introduction to Predictive  
Modeling"

[www.casact.org/education/  
interactive/](http://www.casact.org/education/interactive/)

**June 1-2, 2015**

Seminar on Reinsurance  
Hilton Philadelphia at Penn's Landing  
Philadelphia, PA

**June 11-12, 2015**

Enterprise Risk Management  
Symposium  
Gaylord National Resort &  
Convention Center  
National Harbor, MD

**September 9-11, 2015**

Casualty Loss Reserve Seminar  
(CLRS) & Workshops  
Omni Hotel at CNN Center  
Atlanta, GA

**November 15-18, 2015**

CAS Annual Meeting  
Philadelphia Marriott Downtown  
Philadelphia, PA

**March 14-16, 2016**

Ratemaking and Product  
Management (RPM)  
Seminar & Workshops  
Disney's Yacht & Beach Club Resort  
Orlando, FL

## CAS Seeks Nominations for Service Awards BY MATT CARUSO

The CAS wants to recognize significant volunteer contributions and we need your help. Please nominate a worthy CAS volunteer for the 2015 Above & Beyond Achievement Award (ABAA), the 2015 New Members Award (NMA), or the 2015 Matthew Rodermund Memorial Lifetime Service Award.

The ABAA is made annually to CAS members who have made a contribution that is clearly outside of expected volunteer responsibilities and duties. Every CAS member who is not a current board member or officer is eligible to receive this award. Keep in mind that an extraordinary effort can be shown in an

assignment of limited scope as well as on a larger task.

The NMA recognizes significant volunteer contributions by members within five years of receiving their most recent credential. New members are a valuable volunteering resource for the CAS and this award was created to recognize their efforts.

The Matthew Rodermund Service Award was created to recognize CAS members who have made noteworthy volunteer contributions to the actuarial profession over the course of a career. The award was established in 1990 in honor of Matt Rodermund's years of CAS volunteer service. Volunteer contribu-

tions could include committee involvement, participation in CAS meetings and seminars, volunteer efforts for Regional Affiliates or special interest sections, and involvement with other actuarial organizations. Past presidents are not eligible.

Nominations are due by June 30, 2015, and the winners will be announced at the 2015 CAS Annual Meeting in Philadelphia. Nomination forms can be found at <http://www.casact.org/volunteer>. Send nominations and direct any questions to me at [mcaruso@casact.org](mailto:mcaruso@casact.org). ●

---

*Matt Caruso is the membership and volunteer manager for the CAS.*



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## Ashley Zamperini, Director of Admissions

**W**elcome to the CAS staff spotlight, a column featuring members of the CAS staff. For this issue, we are proud to introduce you to Ashley Zamperini.

- **What do you do at the CAS?**

I facilitate the entire examination process. My objectives include choosing exam dates, shipping exams to proctors, sorting the exams when they return, running the grading sessions and posting grades. I am also here to listen to candidates about how to make the examination process the best that it can be and ensure that our professional society succeeds in its quest for premier property and casualty certification.

- **What do you enjoy most about your job?**

I really enjoy working on the Candidate Liaison Committee. We publish *Future Fellows* four times a year, and I am always interested in what the committee thinks is important to communicate to the candidates. We switch it up between relevant articles about the industry and what candidates need to know when taking exams. There is a lot of effort and passion on the team, and I love being able to see that in a final product. I was very involved in my college newspaper, *The Cavalier Daily*, so it is fun that

I still get to continue working on a publication that is so important for our professional society. Another thing I enjoy is running the queries and seeing volunteers I work with attain their ACAS and FCAS designations. It always brings a smile to my face seeing someone on my committees have “PASS” next to their final exam. I admire their hard work and really enjoy seeing it being rewarded.

- **What is the hardest part about your job?**

It is always so painful to have to inevitably tell a candidate — it happens every sitting — that he or she missed the registration deadline and that no exceptions are made!

- **Hometown:**

I was born and raised in Northern Virginia; however, the Zamperini family is originally from Verona in Northern Italy. I am frequently asked if I am related to the Olympian and World War II survivor Louis Zamperini. The answer is yes! He is my grandfather's first cousin.

- **College and degree:**

The University of Virginia, American Studies.

- **First job out of college:**

I was a human resources assistant at the CFA Institute. It was great to gain exposure to the world of professional certification right out of college.



Ashley Zamperini

- **Describe yourself in three words:** Humble, calculating, witty.
- **Favorite weekend activity:** Cheering on my WAHOOS! But don't talk to me about the NCAA tournament; that wound is going to take a while to heal.
- **Favorite travel destination:** Dubrovnik, Croatia was the most magical place to which I have traveled. It has the bluest waters, the pinkest flowers — all set against a backdrop seemingly straight from the medieval period. Plus, they had the best gyros ever.
- **One interesting or fun fact about you:** My first car was a Mini Cooper with checkered mirrors. ●

---

Alice Chambers is the marketing and communications coordinator for the CAS.

## MEMBER PROFILE BY MATT CARUSO

## Meet Delvin Cai: Leader of the CAS's Newest Regional Affiliate

## CAS最新成立的地区分会

Education gained through life experience, work and the classroom is an essential factor in one's career. Delvin Cai, FCAS, has used his education in China and the United States to establish himself in the actuarial profession, and he credits his success to his learning experiences from these two distinctive cultures and business environments.

Cai grew up in Chengdu and Shanghai, cities in China each with populations over 20 million. With large classrooms and demanding academic curriculum, he quickly learned personal discipline. He came to the U.S. through an exchange student program, attending Snohomish High School, just north of Seattle, Washington. He returned to China for his senior year of high school and obtained high scores in both the college entrance exam in China as well as the international test of English as a foreign language. He won a scholarship to Macalester College in St. Paul, Minnesota, where he obtained his BA, double-majoring in mathematics and economics.

Macalester, affectionately referred to by its student body and alumni as "Mac," is a liberal arts college that traditionally welcomes international students. Cai's graduating class was 20 percent international, and he made friends with students from India, Norway, Israel, Jamaica and other countries. "I really love the friendliness of the campus and in the Twin Cities," he said. "I carry that

friendliness with me today." Macalester is a sociable campus; during semester finals members of the Macalester faculty serve food to students studying late at night in a ritual called the "midnight breakfast."

After his junior year of college, Cai pursued an internship at Towers Perrin (now Towers Watson) in Minneapolis and started his journey to becoming an actuary. At Towers Perrin, Cai met CAS member Amy Bouska. His goal was to return to China in business, so Bouska directed him to pursue the CAS general insurance track. He also conducted his honors thesis with Bouska on the issue of terrorism insurance.

There's a saying in China that "everything is possible but nothing is easy." After achieving his ACAS in 2008, Cai returned to his home country, but he wasn't fazed by the thought of hard work. "Going back to China was not a daunting decision as there were already a couple dozen CAS members when I arrived," he said. The CAS was playing an active role in the development of local general insurance regulation and Cai was happy to be part of that effort. He currently works for Towers Watson in Shanghai. "I love that Shanghai is a mix of financial professionals, architects and chefs interpreting the East meeting the West," he said.

Cai became an FCAS in 2009 and has been an active CAS volunteer since earning his ACAS in 2008. He served a term on the CAS Leadership Development Committee and serves on the Asia



Delvin Cai

Regional Committee. Likewise, he has been instrumental in developing the new Asia CAS Regional Affiliate and will act as its first president. "Volunteering for CAS and our actuarial community is a fulfilling experience that allows me to do what I love and do it often," he said.

Cai's career development in China and the United States has paid off, and he now represents the CAS in the cosmopolitan city of Shanghai. The rigorous educational upbringing in China and the positive attitude he acquired in Minnesota influence both his personal and professional life. He is an example of how different educational experiences — from grade school through college and internships — can confidently guide one's life and career. ●

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*Matt Caruso is the membership and volunteer manager for the CAS.*



# CAREER CENTER

**The Casualty Actuarial Society is pleased to announce the launch of the new CAS Career Center!**

## JOB SEEKERS:

- **FREE and confidential resume posting** — Make your resume available to employers in the industry, confidentially if you choose.
- **Job search control** — Quickly and easily find relevant job listings and sign up for automatic email notification of new jobs that match your criteria.
- **Easy job application** — Apply online and create a password-protected account for managing your job search.
- **Saved jobs capability** — Save up to 100 jobs to a folder in your account so you come back to apply when you are ready.

## EMPLOYERS:

- **Unmatched exposure for job listings** — CAS represents the largest audience of qualified property and casualty actuaries.
- **Easy online job management** — You can enter job descriptions, check the status of postings, renew or discontinue postings, and make payments online.
- **Resume searching access** — With a paid job listing, you can search the resume database and use an automatic notification system to receive emails when new resumes match your criteria.
- **Job Posting Solutions** — Save time and money by choosing a job listing package that best fits your company's needs. **Post internship positions for FREE!**
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## IN REMEMBRANCE

In Remembrance is an occasional column featuring short obituaries of CAS members who have recently died. Longer versions of these obituaries are posted on the CAS website at <http://www.casact.org/pubs/proceed/index.cfm?fa=pastind>.

### THE COMPANY MAN

#### Earl F. Petz (FCAS 1952) 1925-2012

Earl Petz was an Illinois Institute of Technology graduate and a Navy veteran, who spent his entire actuarial career with one company: the Lumbermen's Mutual Casualty Company — part of Kemper Insurance Companies. He retired from Kemper in 1991 as chief actuary.

Petz earned his ACAS in 1951 and his FCAS 1952. He was a Fellow of the Canadian Institute of Actuaries and a member of the American Academy of Actuaries, the latter in which he was very active, serving on its Admissions Committee in 1978 and the Committee on Social Insurance in 1980.

In 1973 he published a discussion of the PCAS paper, "Allocated Loss Expenses Reserves," by Allie V. Resony, and in 1974, he published the paper, "Testing and Evaluating Loss Expense Reserves," in the *Proceedings of the Insurance Accounting and Statistical Association*.

Petz also played bassoon for the Evanston Symphony Orchestra in Illinois.

He is survived by his wife, Roberta, and daughter Jeri. His daughter Susan predeceased him.

### WIFE, MOTHER, BUSINESSWOMAN

#### Abbe B. Gasparro (ACAS 1996) 1963-2013

Abbe Gasparro was a giving person, ready with a smile and a kind word.

Born Abbe Binkowitz in Brooklyn, New York, on November 17, 1963, Gasparro graduated from Rutgers University with a BA in math in 1985. She married Don Gasparro in 1993 and earned her ACAS while working in various posts for American Re-Insurance Company in Princeton, New Jersey. She was vice president for the company from 1998 to 2002.

Gasparro took a break from business to raise her children, Dominick, Vincent and Gianna. She was involved in their school and her local community. She returned to the actuarial field around 2010; her last post was vice president for Everest Reinsurance Company in Liberty Junction, New Jersey.

She is survived by her husband of 20 years, Don; her children; her father, Joel Binkowitz; and her brother and sister-in-law, Bruce and Rachel Binkowitz. Her mother, Rhonda Binkowitz, predeceased her.

Contributions may be made in Gasparro's name to the Carcinoid Cancer Foundation, 333 Mamaroneck Avenue 492, White Plains, New York 10605.

### A SON OF FINLAND

#### George A. Rudduck (ACAS 1975) 1938-2013

George Rudduck loved Finland.

He was born June 4, 1938, in Grand Rapids, Minnesota, an area of vast Nor-

dic immigrant settlement. This Finnish fascination led to his involvement with the Finlandia Foundation of Colorado, an organization devoted to preserving the Finnish culture. He and his wife joined the group after moving to the Denver area in the 1980s, when he began work for Tillinghast. He was the group's webmaster and accounting officer.

In a memorial tribute, Dan Kammunen of the Finlandia Foundation of Colorado called Rudduck a loyal and faithful servant and thanked him for his many years of wisdom, advice and work.

He earned a mathematics degree from the University of Minnesota-Duluth in 1961 and served in the Army National Guard for Minnesota and North Carolina.

Rudduck is survived by his wife, Helen; children Scott Rudduck of Highlands Ranch, Colorado, and Liisa Mulbrecht of Woodlands, Texas; and five grandchildren; and a brother and two sisters.

### LEARNER AND TRAVELER

#### Scott Andrew Martin (ACAS 1995) 1968-2013

Scott Martin made it a point in his life to live and work in different places — to learn what life had to offer in other climes.

Born in the Kitchener/Waterloo area of Ontario, Canada, he graduated from the University of Waterloo in 1992 and headed to Canada's West Coast to work for the Insurance Corporation of British Columbia in Vancouver. From 1997 to about 2004, his career allowed him to work in Barbados with P&C



Limited, Toronto with KPMG LLC and St. Paul, Minnesota with St. Paul Fire and Marine Insurance Company. He finally made his home in Seattle where his last post was as vice president and chief actuary with Mattei Insurance Services, Inc.

Martin died suddenly from a seizure at his home on August 16, 2013. He is survived by his parents, David and Rowena; brothers Brett in England and Craig in Australia; and special friend Tove.

#### FAMILY FIRST

**Jill A. Frackenhohl Jordan  
(ACAS 2008)**

**1975-2014**

Jill Andrea Jordan of Morristown, New Jersey, died on June 7, 2014, at the age of 38. Jordan had a distinguished career in the insurance industry, the last 10 years spent at Crum & Forster where she was an assistant vice president and actuary.

Born Jill Frackenhohl on September 30, 1975, she grew up in Denville, New Jersey. She attended the University of North Carolina-Chapel Hill and earned a BS in math. She married her college sweetheart and together they had four children.

She found joy in creating special memories for her children. She especially enjoyed traveling with her family to North Carolina's Outer Banks and to Walt Disney World. Jordan was also the go-to person for ideas about home remodeling, weddings and vacation planning.

She is survived by her husband; children Edgar IV (Eddie), Cole, Tate and Carina; parents, Herb and Judy Frackenhohl; three sisters; and a large extended family.

#### NUMBERS, MUSIC AND FATHERHOOD

**Kevin J. Atinsky (FCAS 2004)**

**1970-2014**

Kevin Atinsky had a unique ability to derive insight from numbers. "He was always trying to understand the story behind the numbers," said Chad Karls, FCAS, a long-time colleague of his from Milliman in Brookfield, Wisconsin. Atinsky learned his craft at the firm, starting as an entry-level student taking exams and ultimately becoming a principal.

His inquisitive mind for numbers also translated into a deep passion for music. Songwriting was an outlet for his personal thoughts and he collaborated on several original pieces for his three-member band, Gypsy Son. Bandmate Paul Kueler, a colleague of his from Milliman, played bass to Atinsky's rhythm guitar. "Music was a language of expression for his life," Kueler said.

When he became a father, however, Kevin Atinsky turned his devotion to his children: Madeline, Alex and Marlee. Atinsky is also survived by his parents, his former wife and his brother-in-law William Heyman. His sister, Jodi L. Heyman, died in 2013.

#### So Many Times By Kevin Atinsky

One way to remember me,  
To reflect on times so fancifree.  
The key to success in life  
Is to walk on by in times of strife.

I've been there so many times.  
So many times so many times.  
And I thank you so deeply,  
So deeply, so deeply. ●

*CAS staffers Alice Chambers, Donna Royston, Sonja Uyenco, Elizabeth Smith and Cheri Widowski contributed to this article.*

## TWENTY-FIVE YEARS AGO IN THE AR BY WALTER WRIGHT

*Matt Rodermund's definition of a rich person, given at the CAS's 75th anniversary celebration, is worth repeating.*

### A Rich Person (According to Matt Rodermund)

**A** rich person is one who:  
Has enough money to pay his bills and enough extra to indulge in some of life's pleasures.  
Loves his family.

Knows that his family loves him.  
Knows that he has the liking and respect of his friends and colleagues.

Enjoys his occupation and knows he is earning his wages.

Has talent in and enjoys activities other than his occupation, such as music, painting, writing, gardening, carpentry, photography or other.

Is generous and enjoys being so.

Can laugh and can cry.

Has had the experience of receiving ovations for individual effort.

Has sufficiently good health to be able to enjoy all the foregoing.

Has had sufficient pain or sorrow or discouragement to appreciate even more keenly the good things mentioned above.

If this definition of a "rich person" is accepted, then you'll know what a rich person I am.

(The use of the words "he," "him" and "his" above is generic, not sexist.) ●

# An Accident in the Country:

By LIZ HAIGNEY LYNCH

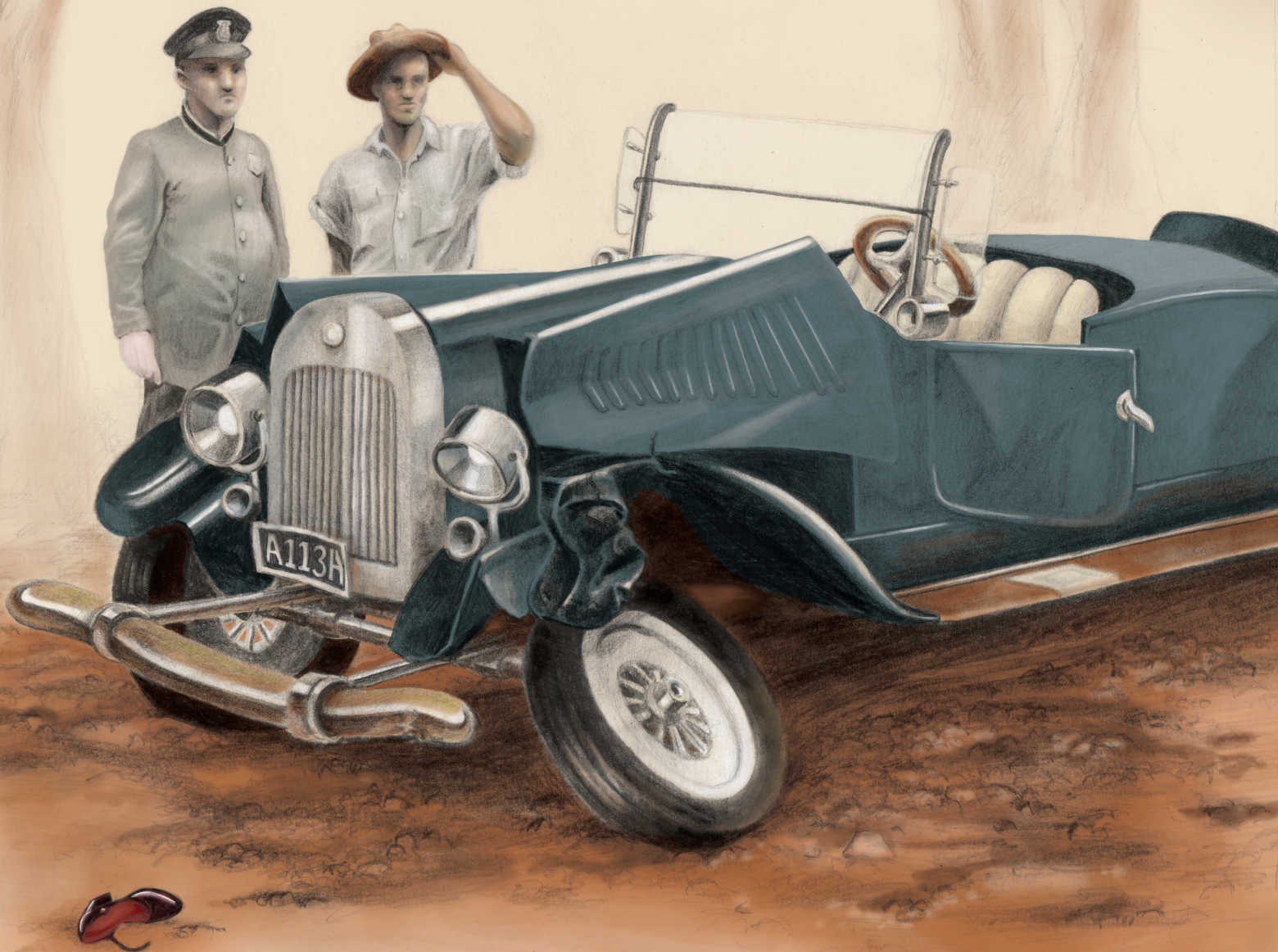


ILLUSTRATION BY GRAPHEK DESIGN STUDIO.

# *Injury and Accountability in the Early Auto Era*

*An automobile casualty illustrates the beginnings of how Americans will grasp the unsettling implications of the burgeoning fleet of motor vehicles on the road.*

In the hot days of August 1921, my grandfather's sister, a German-born immigrant named Kunigunde Scholing, left her flat in Manhattan with her four-year-old son for the thick green forests of the Catskills.

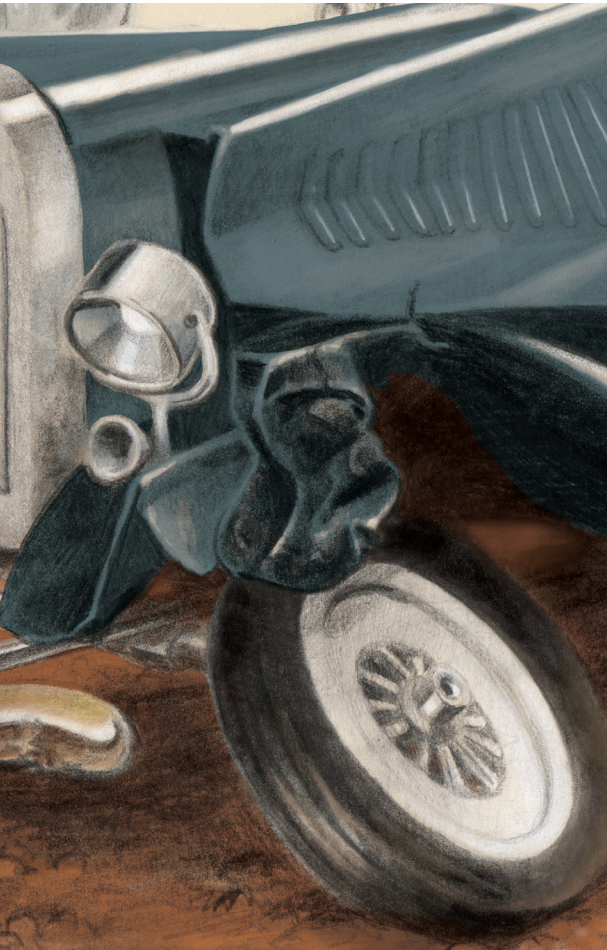
Kuni, as family and friends called her, was a summer boarder near the hamlet of Phoenicia in New York's Ulster County, in one of the many farmhouses catering to city-slicker visitors. But her rustic holiday wouldn't last very long.

On the evening of August 12, 1921, Kuni and her son joined a small troop of city visitors strolling along the shoulder of a curving, two-lane state highway. They weren't the only ones out that night. A Packard roadster steadily approached their backs from the south.

As the vacationers meandered past a roadside cemetery, the combination of dark highway, pedestrians and cruising automobile proved predictably violent. Early reports suggest that the group had little time to react when the car plowed into them from behind. Remarkably, Kuni's little son, walking a few steps ahead of her, escaped without a scratch.

But Kuni was barely alive. Along with two other injured women, she was carried onto the bed of a truck commandeered from a nearby works project, and jolted 30 miles down the highway to a hospital at the county seat of Kingston. Her companions eventually recovered, but Kuni was not so lucky. She died at Kingston three weeks later, never regaining consciousness.

Kuni's nearly forgotten story springs back to life in newspaper items and court documents with unusual detail for an obscure working-class immigrant. Her death was news for a peculiarly 1920s reason. Kuni was an automobile casualty just as Americans began to grasp the unsettling implications of the burgeoning fleet of motor vehicles on their roads — costs reflected in her widower's legal struggle to establish accountability and compensation.



**Nobody was sure what the rules were. When horse-drawn wagons, cars and pedestrians jostled for access, who should be where? If somebody got hurt, how could they be compensated?**

As the United States moved beyond the horse-and-buggy era, it was accelerating into a new and dangerous frontier — and everyone was struggling to keep up, the insurance industry included. Consider:

- The rate of automobile ownership in the United States tripled during the 1920s, testimony to a growing fascination with the freedom and mobility of cars.
- New car owners meant many new, inexperienced drivers, with rough-and-tumble results. Ulster County was typical: Within a few weeks of Kuni's accident, the Kingston newspaper reported that a Studebaker and a Paige sedan cracked up "on the Ashokan boulevard"; that a woman riding on the back of a motorcycle was hurt when a car knocked her off; and that a minister's car was nearly run off the road by an automobile crammed with raucous young men, apparently drunk.
- In 1921, safety amenities we take for granted today, such as highway stripes, roundabouts, traffic lights and stop signs, were still in the talking stages in most of the country. The first traffic light in New York City would not be installed for another two years.

The "private pleasure car," which had started the 20th century as an exotic toy for the adventurous and the well-to-do, was muscling its way into everyday life. But nobody was sure what the rules were. When horse-drawn wagons, cars and pedestrians jostled for access, who should be where? If somebody got hurt, how could they be compensated?

These wide-open questions assumed increasing urgency as the Jazz Age partied on. In 1928, the authors of an article in the University of Chicago's *Journal of Business* cast a worried eye on the steady upward trend of auto accident injuries and fatalities over the prior decade. "The evidence indicates quite conclusively that the automobile as an instrument of injury and death has stubbornly defied all of the preventive measures now being employed," they wrote.

Kuni's was one of 11,050 auto-related deaths in the U.S. in 1921, compared to 9,097 four years before, according to figures analyzed by the *Journal of Business* authors. A modern estimate puts the total of U.S. traffic deaths in the 1920s at over 210,000, "three or four times the death toll of the previous decade."

Such statistics inevitably led to discussions of determining liability and compensation. As the *Journal of Business* writers wondered: "May it not be that the solution ... lies in the further development in [the] field of the insurance method of dealing with risks?"

Good question.

By 1921, motor-vehicle insurance had existed for a while. Travelers wrote the first policy back in 1898. By the time of the first World War, 45 companies were writing this business, as noted by G.F. Michelbacher in a 1918 CAS *Proceedings* article.

Still, at the time of Kuni's accident, there was nothing mandatory about insuring a car. The 1920s were the "free-choice" era of auto insurance. As one legal study of motor-vehicle liability in the United States described it: "The early motorist was restricted more in the use of his motorcar than in his option of whether to purchase liability insurance."

So much for exchanging information and waiting for the claims adjuster. Going

to court was a more likely route for redress, assuming the driver who hit you had any ability to pay.

That was the route taken by Kuni's widower, William Scholing, who, a few weeks after her death, brought suit in Ulster County for \$50,000 (about \$650,000 in present-day dollars) against the owner of the Packard involved in the accident. According to newspaper accounts, this was Charles R. O'Connor, a member of a prominent family in neighboring Delaware County and a former federal Prohibition enforcement officer for the state of New York.

Initially, the strategy was a winner for Scholing. Although it was nothing near their initial goal, he and his lawyer got an award of \$9,000 from an Ulster County jury when the case was heard in the fall of 1922.

This victory unraveled within months, however. First, O'Connor's attorneys successfully appealed the verdict and won a new trial. Then, almost exactly a year after the first trial, a second jury listened as the evidence was re-examined exhaustively and, perhaps, exhaustingly. "Scholing Is Stricken In Court," one headline noted over a story describing how Kuni's widower suffered a nervous collapse on the day the second trial opened.

Maybe Scholing could already sense the tide was turning. In any event, the second verdict cleared O'Connor, setting aside the \$9,000 judgment. And, despite a series of furious motions and affidavits from Scholing's attorney, this second result appears to have held. Kuni's widower would get no more satisfaction from the courts in Ulster County.

Kuni's death and her widower's court fight illustrate both the dangers of a newly mobile age, and the chanciness of redress in the insurance-optional era. Had the Packard's owner been insolvent, Scholing probably would have been advised not to bother seeking redress at all. And, as the story of his Ulster County lawsuit illustrates, a court action did not guarantee satisfaction, either.

One answer to this worrisome mix of rising injuries and uncertain outcomes was the limited-compulsory approach to liability insurance, a tack tried in Connecticut as early as 1925. By 1929, New York state followed suit with a law providing that a driver's license and registration be suspended if the driver was convicted of certain serious driving offenses, or if the driver failed to pay a judgment resulting from a serious accident. The license and registration would be regained only if the driver could furnish proof he could pay a specified minimum for bodily injuries and property damages caused in a future accident.

The aim was to minimize the number of reckless and financially shaky drivers on the roads, but drawbacks soon emerged. "The basic fallacy was that the unsafe or irresponsible [drivers] could be identified by specified past events," as one study puts it. A major flaw was requiring proof of financial solvency only *after* a driver had already failed to pay up in court. For who would bother suing a broke driver in the first place? By their own behaviors, truly reckless and insolvent drivers effectively put themselves beyond the reach of the limited-compulsory approach.

Massachusetts introduced the first completely compulsory auto insurance legislation in 1927. But the limited-compulsory, proof-of-financial-responsibility approach remained the norm in most states for the next several decades, adjusted from

**“May it not be that the solution ... lies in the further development in [the] field of the insurance method of dealing with risks?”**  
**—*Journal of Business*, 1928**

**The insurance industry remained leery of compulsory auto insurance for a long while, amid fears of politicized ratemaking, restricted discretion in underwriting practices and a higher potential for inflated or outright false claims.**

time to time but never entirely abandoned. The insurance industry remained leery of compulsory auto insurance for a long while, amid fears of politicized ratemaking, restricted discretion in underwriting practices and a higher potential for inflated or outright false claims.

But pressure for a more sweeping approach to what a 1968 survey called the “serious social problem” posed by auto-accident casualties eventually evolved into a nationwide trend, especially since New York (in 1956) and North Carolina (in 1957) by then had adopted their own compulsory insurance laws. Today, becoming the proud owner of one’s first car is inextricably entwined with attaining one’s first proof-of-insurance card. (Only New Hampshire continues to provide the option of proving financial solvency as an alternative to carrying auto insurance.)

No driver today hits the road serenely anticipating an accident. But it’s safe to say we travel secure in the knowledge that if we *are* unlucky, a firm structure of procedures will kick in to guide us, with insurance coverage a major player.

By contrast, my great-aunt Kuni’s long-ago roadside disaster took place in an era whose lack of signposts — both literal and legal — is almost impossible to fathom in a modern world where automobile travel is more regulated, more closely studied and certainly more insured.

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*Liz Haigney Lynch is a genealogist, editor and writer whose work has appeared in the Miami Herald, the Sun-Sentinel of Fort Lauderdale, and the Chicago Sun-Times.*

## In Predictive Modeling, Actuaries Essential to the Future

BY JIM LYNCH

An informal CAS survey of casualty actuaries showed that communication and business skills are among the top qualities that predictive modelers need to succeed in their careers.

Results from the CAS survey were revealed on March 11 at the final general session, “The Actuary in a Predictive Modeling World,” which was held during the 2015 CAS Ratemaking and Product Management seminar in Dallas. The survey responses clarified the importance of casualty actuaries in bringing predictive modeling to the insurance industry.

Led by Jessica Leong, FCAS, execution lead at Zurich Insurance North America, a panel of experts discussed the results. Panelists included Steven Armstrong, FCAS, chief pricing actuary for personal lines, mortgage services and crop at QBE North America; Alietia Caughron, Ph.D., a vice president at CNA; Sheri Scott, FCAS, a principal and consulting actuary at Milliman; and Kimberly Holmes, ACAS, a senior vice president at XL Group.

The first survey question asked respondents to name the desired characteristics of a top predictive modeler. The most popular answer was “good business knowledge,” followed closely by “understanding of statistics.” Other popular responses were “avid learner,” “communicating results,” “data expertise” and “good programmer.”

Panelists noted that the results demonstrate a need for quantitative experts like predictive modelers to understand both the business and the mathematical sides of their work. Com-

munication skills are important as well.

A good actuary has many of the same skills, noted Armstrong.

“While attention to detail remains a critical modeling skill, predictive modelers can’t lose sight of the bigger context of the work they are doing. It’s important to see the big picture,” said Holmes.

Survey participants were also asked to identify top statistical concepts that predictive modelers should understand. Generalized linear modeling (GLM), a mathematical tool on which modern ratemaking depends, was the top answer.

Other common responses were:

- Goodness-of-fit — a statistical notion of how closely a model fits the data that underlie it.
- Decision trees — tools that model decisions and their possible consequences.
- Correlation and causation — insurers need to show how their rating variables correlate with losses, but it is also helpful to demonstrate to regulators and business partners how the variables cause riskiness.
- A knowledge of statistics — this includes probability distributions and statistical formulae that insurers commonly use in predictive analysis.

Armstrong noted that the CAS offers many professional education programs on predictive modeling and will soon increase its testing on GLMs and other statistical models. “This is a fundamental skill we need to have on the CAS exams,” he said.

Sheri Scott said that she always in-

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for more info.

cludes an actuary on a predictive modeling team, but ideally she includes both a subject-matter expert actuary and a technically strong modeler who may not be an actuary, such as a data scientist.

She said, “The actuary is going to understand the business and will ensure the data and findings are used in an insurance-appropriate manner, but the data scientist will challenge the norms and create innovations. Although actuaries could serve both roles, each team member should contribute and challenge each other. The mix of backgrounds enhances the team. If you’re an actuary leading a team of predictive modelers, you want to understand what they are doing. You have to understand the basics and what solutions are out

there. You are a middle person between the business and the analysis.”

Finally, survey respondents identified the nonquantitative skills needed by actuaries, the top skill being communication. Other key nonquantitative skills were project management, networking, leadership, and business and industry knowledge.

Becoming a good communicator is not always easy, panelists agreed.

“You have to make a conscious effort at it,” said Holmes. “It didn’t matter how good I was at mathematics. If I couldn’t communicate my ideas, I couldn’t add any value to the business.”

To improve his communication style, Armstrong took improvisation classes in Chicago. “It’s a tremendous

way to learn communication skills,” he said.

To close the session, panelists considered the state of actuaries in predictive modeling, both today and in the future.

There is limitless potential, says Caughron. “The future is a data-driven world that will reward those who bring to the table an understanding of data and turning data into useful information. There is huge opportunity for actuaries.” ●

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*James P. Lynch, FCAS, is chief actuary and director of research and information services for the Insurance Information Institute in New York.*

## SEMINAR ON REINSURANCE

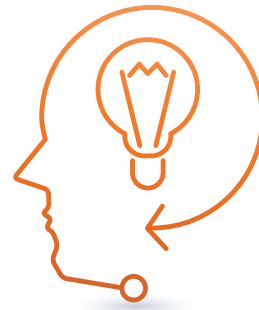
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# Picture This — Actuaries Help Management Visualize Results

BY JIM LYNCH



**B**usiness intelligence (BI) — the art of making sense from the vats of data that business leaders encounter — is a natural skill for casualty actuaries, according to a BI veteran.

Tony Beirne, FCAS, director at the professional services firm PwC (U.S.), said actuaries have the top-to-bottom knowledge of insurance organizations and the heavy volume of data they produce, which makes actuaries well-equipped to create the tools that people at all levels of the company need to do their jobs more efficiently.

Beirne presented a list of BI issues and solutions for actuaries in the concurrent session titled, “Actuarial Modernization and Business Intelligence,” at the CAS Ratemaking and Product Management Seminar held March 9-11 in Addison, Texas.

First, Beirne summarized the history behind business intelligence analysis. Initially, the idea was to deliver dense information to managers in a manner they could understand. In these early attempts, insurers tried to meld their enormous polyglot systems — accounting, underwriting, claims and rating — into a single data warehouse. Then each business unit formed reports out of the common warehouse.

“The warehouse is good,” Beirne said. “It’s one of the fundamental building blocks.” But it was developed more to capture history than to create reports. Often it was too slow and costly to develop to help management, as originally conceived.

The next step was the mini-mart, or

rather a cluster of mini-marts, all driven by information from the big warehouse. Each department got its own privately managed data store. That let each department create its own reports.

Slight differences in how they defined data, however, meant that the details from, say, the claims department, didn’t match the reports from accounting or actuarial. Looking for one answer, management might get three.

Now, BI experts work from the key questions companies want answered back to the data, Beirne said. They think about decisions they need to make and then create tools to help make those decisions. Beirne calls this “analytics-oriented decision making.”

The old method of creating reports started with the data. It was collected and analyzed, and then drove decisions. The new method starts at the end, with management asking, “What decision is needed?” Answering that invites the next question, “What insight will help make that decision?” and finally “What data answers this question?”

That final answer reveals what data need to be gathered into management reports. This involves managing and scrubbing much smaller datasets than in the old data warehouse days. It also means more accurate data and more timely reports.

Once the data are in place, the next step is to develop reports that management can understand and utilize for decision making. Property and casualty actuaries are in a perfect position to assist on such projects, said Prashant De, a manager in PwC’s Advisory Analytics

practice. Actuaries are already skilled at digging through data for important insights.

The next step is visualization, creating a dashboard or suite of reports that tell management in an instant what is happening within their organization. “Visualization is different from visuals,” De said. “Visualization helps management make decisions. Visuals look good.”

Report makers should consider how decision makers make their decisions in order to develop and adjust the reports to best meet their needs, De added.

An important step is to select the appropriate visualization software, De said. Some packages are free, but there is little support to ensure the software package works as it should. At the other end are highly packaged and controlled applications.

Business intelligence projects are a natural fit for actuaries’ abilities, Beirne reiterated. Actuaries have a high-level view of the company and are considered experts in maximizing the richness of the data. Actuaries are also uniquely positioned to help others understand the possibilities and limitations of data, said Beirne. He concluded by emphasizing that companies need to recognize that actuarial analyses can offer important insight that helps propel critical decisions. ●

## TED-Style Talkers Stress Actuaries and Innovation BY JIM LYNCH

**T**ED talks are perhaps the pinnacle of Internet thought leadership. In a TED talk — the acronym stands alone now but previously served as an abbreviation for Technology Entertainment Design — a dynamic speaker delivers original ideas in a mashup of performance art and college lecture.

True to the form, actuaries Claudine Modlin, Roosevelt Mosley and Kevin Mahoney worked the stage, sharing anecdotes and provoking thoughts on the subject of innovation and actuaries. The three were panelists for “Technology, Entertainment and Design (TED) Talks: Innovation,” a general session at the 2015 Ratemaking and Product Management Seminar, held March 9-11 in Addison, Texas.

First up was Modlin, a Fellow of the CAS and leader of global professional services company Towers Watson’s property/casualty pricing and product management team in the Americas. She described how actuaries can foster innovation.

In short: Being innovative is not something you’re simply born with; it has a process.

Insurers, like any business, need to remain relevant to a world that is changing quickly around us. “We want to be innovative like Netflix, not Blockbuster,” Modlin said.

Modlin posited that the first step in the process of innovation, understanding the problem, may be the hardest.

Usually actuaries are not asked to solve a problem, Modlin stated. They are asked to create a model that describes a problem; they need to zoom out to make sure they understand the entire prob-

lem, not just the portion of it that they are asked to address.

Modlin recommended that actuaries observe the people for whom they are creating analytic solutions — for example, the underwriters who will accept or reject risks, or the claims representatives who will manage a claim. The practice of close observation mimics the Japanese engineering concept of *Genchi Genbutsu*. Translation: “Go and see,” as in go and see what is happening before developing models to describe it.

“Observe that neighborhood as if you are a tourist,” Modlin said. Once you understand the full context, you’re much

### **Innovators build prototypes, learn from them and refine them. Actuaries need to resist the urge to always work start to finish aiming to get things right the first time.**

more likely to create a robust solution.

Finding solutions is the next step in the process. Solutions may well come from another field, or another industry. Around 15 years ago, she said, Progressive Insurance was looking for ways to quote insurance online. The company wanted to get customers to trust the online quote.

They found a solution in the practices of a non-insurer. Dell Computer would suggest a particular computer model based on customer inputs, quote a price for that computer, plus offer quotes for a more expensive version and a cheaper one. The insurer followed that idea.

“Someone must have gotten a computer from Dell and been inspired by that experience,” she said.

Modlin recommended brainstorm-

ing, making sure that each new idea builds upon a prior idea — and at the initial stage there are no bad ideas. She recommended finding both mentors and reverse mentors, the latter being techno-savvy people who can introduce new technology to older workers, or as Modlin put it, “Teaching the pope how to tweet.”

The final stage is execution.

Innovators build prototypes, learn from them and refine them. Actuaries need to resist the urge to always work start to finish aiming to get things right the first time. There are many opportunities for actuaries to support experimen-

tal design and iterative learning — in pricing, underwriting and distribution management.

Actuaries can create a culture that fosters innovation, Modlin said. They should help others around them to adopt a “growth mindset,” which emphasizes that hard work and dedication can expand one’s abilities.

“Each of us can be an innovator,” Modlin said. “You don’t have to be the next Steve Jobs or Elon Musk. You just have to be willing to flex your innovative muscle.”

The second speaker, Mosley, a CAS Fellow who serves as principal and consulting actuary at Pinnacle Actuarial Resources and leads their predictive analytics practice, focused on innovation opportunities that have been missed in the past — and the necessity of

## Actuaries can play a critical role in innovation, but they have to get past the stereotypical idea that actuaries need historical data to project the future.

taking advantage of opportunities like these in the future.

Mosley talked about two missed opportunities: generalized linear models (GLMs) — the complex mathematical equations that changed the way insurance is priced — and usage-based insurance. U.S. companies adopted GLMs in the 2000s, though they had been common in Europe and the United Kingdom a decade earlier. In addition, actuaries have not historically been in the forefront of encouraging early adoption of UBI.

The question: Why didn't U.S. insurers innovate in these areas earlier?

To address this, Mosley pointed to three mindsets that innovators have.

First, they don't focus on *thinking* of new things. (That's creativity.) Innovators focus on *doing* new things. GLMs were not new when the Europeans adopted them, he said, but were written about for years in statistical literature.

Second, as Mosley noted, innovators iterate their way to success: Experiment, fail, assess and repeat.

Third, innovators turn big data into big wisdom. On Twitter, Mosley said, "people are sharing details of their lives [for] free on the Internet for anyone to see.

"That information can give us information on what programs to develop and what to do to improve."

Actuaries can also apply their knowledge outside of traditional insurance, he said, citing actuarial applications in sports statistics and ridesharing.

"Being an actuary teaches you to think about problems in a particular way," Mosley said. In a sense, the risk aversion instilled in actuaries is itself valuable, he said, as it leads to "creating ways to get around that risk and move

innovation forward."

Mahoney, a Fellow of the CAS and vice president of analytics and research at The Travelers Indemnity Company, focused his presentation on a modest person who created a major innovation: Charlie Ward.

Ward was the software engineer who realized that offering free shipping would incent people to buy more. From this innovation, Amazon Prime was born. About 40 million households have signed up to date.

Though it has been around for about two decades, Amazon remains an innovator, Mahoney said. Amazon Prime relies on the economic principle of complementary products — one product is used to drive demand for another related product. In this case, by selling "free" shipping, Amazon creates demand for all of the other products it sells.

Insurers do that, too, Mahoney noted, with most insurers bundling homeowners and personal auto policies. He pictured a world in which insurers reach outside their products to find complements that would drive demand for insurance.

In his TED-style talk, Mahoney imagined a scenario set five years ago in which two people were in the right place at the right time: Two insurance people leaving a West Coast bar are waiting to catch a cab.

But there is no cab.

Inspiration strikes. Wouldn't it be great to hail a cab using a smartphone?

This scenario did occur, but it happened to two non-insurance people: They created Uber, a company worth, by

one recent estimate, \$40 billion.

Had those two people worked for insurance companies, Mahoney said, they would have instantly seen the insurance possibilities:

- Tailor insurance policies to the unique exposure drivers present. (They operate a personal auto sometimes and a commercial auto others.)
- Telematics: Use the app to track and price insurance for drivers.
- Branding opportunities: Have companies sponsor the app.

Looking back, the idea of ridesharing is hardly complex, Mahoney said. Tech people thought of it because their culture embraces innovation.

Actuaries can play a critical role in innovation, but they have to get past the stereotypical idea that actuaries need historical data to project the future, he said.

Like Charlie Ward, the Amazon software engineer, "We can be agents of change," Mahoney said. "But we have to be willing to change first."

"Actuaries are the software engineers of insurance," Mahoney stated. "It's people like us who come up with great innovations, people who have a deep understanding of their businesses."

"Who will be the next Charlie Ward?" Mahoney challenged. "Who will be the actuary in the right place at the right time?"

"Will it be you?" ●

---

*James P. Lynch, FCAS, is chief actuary and director of research and information services for the Insurance Information Institute in New York.*

EXPLORATIONS BY ERIC BLANCKE, ACAS, AND JEREMY SMITH, FCAS

## Exploring Vintage Actuarial Methods: The Least Squares IBNR Method of F.E. de Vylder

We are fortunate to work in a profession with a thriving body of research. Every year, innovative new articles appear, introducing new methods and generalizing older techniques. With all this progress, it can be easy to lose sight of the work done by our “actuarial forefathers.” It’s worthwhile and illuminating to occasionally survey older actuarial publications; they contain a wealth of practical, understandable methods.

In this article, we’ll discuss a triangle reserving method introduced in 1978 by F.E. de Vylder [1]. The de Vylder method is intuitive and relatively simple to implement in Excel.

We begin with a simple chain-ladder example, which we assume requires no introduction (Figure 1). In this case, the selected LDFs are based on a straight average of all available years.

There’s a fair amount of variation here, making the LDFs difficult to select. In the 12-24 column, could the 1.125 factor be an outlier? How about the 1.750 factor in the 24-36 column? This is a simple example, but experienced actuaries know that these factors can sometimes be very difficult to select when the observed factors are volatile. We take various indications (weighted averages, averages excluding the highest and lowest points, etc.), and try to make a selection that balances the conflicting information.

The de Vylder method can be used to “balance the conflicting information” in a formal sense. We will present the method by working through an example using the triangle from Figure 1. First, we display the triangle data incrementally, as in Figure 2.

Note that the “100” amount in accident year 2010, age 24, has been deleted from the incremental view. This is because the incurred loss and ALAE at age 12 for this year is missing — therefore, we don’t know the incremental amount incurred between ages 12 and 24.

Now suppose the ultimate loss and ALAE for each accident year is given by  $U_{2010}, U_{2011}, \dots, U_{2014}$ . Suppose there are fac-

tors  $p_{12}, p_{24}, \dots, p_{60}$  such that the incremental amount incurred at each development period, divided by the associated factor, equals the ultimate loss and ALAE. That is, reading from the top row of the triangle,

$$\begin{aligned} 75 &= U_{2010} * p_{36} \\ 25 &= U_{2010} * p_{48} \\ 10 &= U_{2010} * p_{60} \\ 200 &= U_{2011} * p_{12} \\ 0 &= U_{2011} * p_{24} \\ 50 &= U_{2011} * p_{36} \\ 50 &= U_{2011} * p_{48} \\ 200 &= U_{2012} * p_{12} \\ 25 &= U_{2012} * p_{24} \\ 55 &= U_{2012} * p_{36} \\ 350 &= U_{2013} * p_{12} \\ 25 &= U_{2013} * p_{24} \\ 400 &= U_{2014} * p_{12} \end{aligned}$$

In practice this set of equations will be contradictory and have no solution. As a compromise, we can look for a set of  $ps$  and  $Us$  that minimize the mean squared error (MSE).

We have  $MSE = (p_{36} * U_{2010} - 75)^2 + (p_{48} * U_{2010} - 25)^2 + \dots + (p_{12} * U_{2014} - 400)^2$ . We can simply set this equation up in Excel and use the Solver function to find optimal  $ps$  and  $Us$ . It’s also a good idea to add the constraint  $\sum p = 1$ . This essentially implies that the tail factor is 1.000. In practice we’ve found that this method can yield strange results without this constraint; that is, it doesn’t appear to be an appropriate method for selecting the tail. The tail can be selected by any number of other methods and incorporated into the development pattern. The resulting pattern is displayed in Figure 3, converted into development factor notation (the sequence of  $ps$  corresponding to the pattern below is  $p_{12} = 0.64, p_{24} = 0.04, p_{36} = 0.18, p_{48} = 0.11, p_{60} = 0.03$ ). Note that the de Vylder solution for Age 48 is 1.028, whereas the only observed historical value is 1.050.

“The Excel Solver” approach works,<sup>1</sup> but in de Vylder’s original paper he presents an interesting iterative approach

<sup>1</sup> In practice it is often necessary to run the Solver multiple times, until the squared error stops changing with each successive run.

Figure 1

Incurred Loss and ALAE (\$000)										
Acc. Yr	12	24	36	48	60	Acc. Yr	Incurred to Date	Cum. LDF	Ult Loss & ALAE	IBNR
2010		100	175	200	210	2010	210	1.000	210	-
2011	200	200	250	300		2011	300	1.050	315	15
2012	200	225	280			2012	280	1.230	344	64
2013	350	375				2013	375	1.740	653	278
2014	400					2014	400	1.854	742	342
						<b>Total</b>	<b>1,565</b>		<b>2,264</b>	<b>699</b>

	<u>12-24</u>	<u>24-36</u>	<u>36-48</u>	<u>48-60</u>	<u>60- Ult</u>
2010		1.750	1.143	1.050	
2011	1.000	1.250	1.200		
2012	1.125	1.244			
2013	1.071				
<b>Selected</b>	<b>1.065</b>	<b>1.415</b>	<b>1.171</b>	<b>1.050</b>	<b>1.000</b>
<b>Cumulative</b>	<b>1.854</b>	<b>1.740</b>	<b>1.230</b>	<b>1.050</b>	<b>1.000</b>

Figure 2

Incurred Loss and ALAE (\$000) - incremental					
Acc. Yr	12	24	36	48	60
2010			75	25	10
2011	200	0	50	50	
2012	200	25	55		
2013	350	25			
2014	400				

Figure 3

Comparison of de Vylder result with simple average						
		12	24	36	48	60
de Vylder	Age-to-Age	1.068	1.268	1.124	1.028	1.000
	Cumulative	1.566	1.466	1.156	1.028	1.000
Simple Avg	Age-to-Age	1.065	1.415	1.171	1.050	1.000
	Cumulative	1.854	1.740	1.230	1.050	1.000

to minimizing the MSE. We start by guessing a sequence of  $ps$ , say  $p_{12} = 0.50$ ,  $p_{24} = 0.30$ ,  $p_{36} = 0.10$ ,  $p_{48} = 0.05$ ,  $p_{60} = 0.05$ . Then, in order to minimize the overall MSE, we must in particular minimize the following sum:

$$(p_{36} * U_{2010} - 75)^2 + (p_{48} * U_{2010} - 25)^2 + (p_{60} * U_{2010} - 10)^2.$$

We minimize this by setting the derivative in  $U_{2010}$  equal to 0, i.e.,  $p_{36}^2 * U_{2010} - 75 p_{36} + p_{48}^2 * U_{2010} - 25 p_{48} + p_{60}^2 * U_{2010} - 10 p_{60} = 0$ , which implies  $U_{2010} = (75 p_{36} + 25 p_{48} + 10 p_{60}) / (p_{36}^2 + p_{48}^2 + p_{60}^2)$ . Substituting in our initial guess, we get  $U_{2010} = 617$ . By similar reasoning, we get  $U_{2011} = 305$ ,  $U_{2012} = 323$ ,  $U_{2013} = 537$ , and  $U_{2014} = 800$ .

But our minimal solution must also minimize the following sum:

$$(U_{2011} * p_{12} - 200)^2 + (U_{2012} * p_{12} - 200)^2 + (U_{2013} * p_{12} - 350)^2 + (U_{2014} * p_{12} - 400)^2.$$

We again use calculus, this time differentiating with respect to  $p_{12}$  and obtain the equation  $U_{2011}^2 * p_{12} - 200 * U_{2011} + U_{2012}^2 * p_{12} - 200 * U_{2012} + U_{2013}^2 * p_{12} - 350 * U_{2013} + U_{2014}^2 * p_{12} - 400 * U_{2014} = 0$ , which implies  $p_{12} = (200 * U_{2011} + 200 * U_{2012} + 350 * U_{2013} + 400 * U_{2014}) / (U_{2011}^2 + U_{2012}^2 + U_{2013}^2 + U_{2014}^2)$ . Substituting in the  $U$ s that we derived above, we get  $p_{12} = 0.56$ . By a similar calculation, we get  $p_{24} = 0.04$ ,  $p_{36} = 0.14$ ,  $p_{48} = 0.06$ , and  $p_{60} = 0.02$ . These don't sum to 1.00, so we "normalize" them by dividing by their sum, and get  $p_{12} = 0.68$ ,  $p_{24} = 0.05$ ,  $p_{36} = 0.17$ ,  $p_{48} = 0.08$ , and  $p_{60} =$

0.02. With this new set of  $ps$ , we start the process over again and repeat until we achieve "convergence," i.e., until the output  $ps$  match the input  $ps$  (up to some rounding convention).

The iterative approach can also be easily implemented in Excel by setting up a straightforward VBA macro. In every case we have tried, the Solver and iterative approaches have yielded identical solutions.

We close by providing the iterative equations in a more general notation, as displayed in the original de Vylder paper. In the equations that follow,  $U_i$  is the ultimate loss for accident year  $i$ ,  $c_{ij}$  is the incremental amount paid in accident year  $i$  and development period  $j$ , and  $p_j$  is the incremental payment percentage as described above. Then  $U_i = \sum c_{ij} * p_j / \sum p_j^2$  and  $p_j = \sum c_{ij} * U_j / \sum U_j^2$ .

**Reference:**

De Vylder, F., "Estimation of IBNR Claims by Least Squares," *Mitteilungen der Vereinigung Schweizerischer Versicherungsmathematiker*, 249-254. ●

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## Inside *Variance* BY DONNA ROYSTON

From LDFs to DFT, the latest issue of *Variance* (volume 8, number 1) offers some tools actuaries can use to enhance their work products.

Actuaries quite often have to interpolate data to obtain quantities such as loss development factors (LDFs) for maturities in between the maturities included in a loss development triangle, or increased limits factors for limits between the data points used in the increased limits analysis. “Interpolation Along a Curve” by Joseph Boor presents an approach that includes the advantages of using fitted curves for nonlinear data, avoiding the errors arising from mismatches between patterns in the data and patterns inherent to the curve family used for interpolation.

Sebastian Happ, Ramona Maier and Michael Merz, in “Multivariate Bühlmann-Straub Credibility Model Applied to Claims Reserving for Correlated Run-off Triangles,” consider the claims reserving problem in a multivariate context and apply the multivariate generalization of Bühlmann and Straub’s 1970 credibility model to claims reserving. This multivariate model allows for a simultaneous study of  $N$  correlated run-off portfolios and enables the derivation of an estimator of the conditional mean square error of prediction for the credibility predictor of the ultimate claim of the total portfolio. The authors apply multivariate credibility predictors that reflect the correlation structure between the  $N$  portfolios and are optimal in terms of a classical optimality criterion. The results are illustrated by means of an example and comparison to the results derived by the multivariate chain-ladder

method and the multivariate additive loss reserving method proposed by Merz and Wüthrich in 2008.

Liang Peng and Ruodu Wang, in “Interval Estimation for Bivariate t-Copulas via Kendall’s Tau,” present a copula model for risk management. Due to the properties of asymptotic dependence and easy simulation, the t-copula has often been employed in practice. A computationally simple estimation procedure for the t-copula is to first estimate the linear correlation via Kendall’s tau estimator and then to estimate the parameter of the number of degrees of freedom by maximizing the pseudo-likelihood function. This paper derives the asymptotic limit of this two-step estimator, which results in a complicated asymptotic covariance matrix. Further, the authors propose jackknife empirical likelihood methods to construct confidence intervals/regions for the parameters and the tail dependence coefficient without estimating any additional quantities. A simulation study shows that the proposed methods perform well in finite sample.

“Estimating Insurance Attrition Using Survival Analysis,” by Luyang Fu and Hongyuan Wang, uses survival analysis to estimate attrition and retention. Compared with conventional methods, this approach has three advantages: (1) it addresses not only whether the policy will leave but also when it will leave; (2) it analyzes mid-term cancellation and end-term nonrenewal sequentially, and therefore provides a dynamic insight of retention, which improves the static view derived from snapshot data; (3) it can take into account time-varying



macroeconomic variables and help researchers to understand how the broader economic environment affects insurance retention. A case study illustrates the technique, from creating the panel data required by survival analysis to interpreting the model results.

“The Discrete Fourier Transform and Cyclical Overflow” by Leigh J. Halliwell is an introduction to the discrete Fourier transform (DFT). Halliwell notes that more casualty actuaries would employ the DFT if they understood it better. In addition to being an introduction to the DFT, this paper explains how the DFT treats the probability of amounts that overflow its upper bound, a topic that others either have not noticed or have deemed of little importance. The cyclical overflow originates in the modular arithmetic whereby the DFT evaluates characteristic functions. To understand this is to attain a deeper understanding of the DFT, which may lead to its wider use. ●

*Donna Royston is the CAS publications production coordinator.*

## IN MY OPINION BY ROBERT J. WALLING III

## The Battle for Smart Creatives

I recently read the best-selling book *How Google Works* by Eric Schmidt and Jonathan Rosenberg. It is one of the best books I have read, in any genre, in quite some time. Although the book focuses on technology companies, it also provides useful insights to other industries, like ours. One key insight from the book is the importance of “smart creatives” to the actuarial profession.

One of the first subjects the book tackles is differentiating between traditional “knowledge workers,” a term coined by management consultant Peter Drucker in 1959, and “smart creatives.” Simply put, knowledge workers work in information-based jobs and think for a living. Schmidt and Rosenberg reflect much of Drucker’s research, writing:

The most valuable knowledge workers are the ones who thrive in the straitjacketed world of corporate process, by building deep expertise in a narrow set of skills. They don’t seek mobility ... As a result, most knowledge workers in traditional environments develop deep technical expertise but little breadth, or broad management expertise but no technical depth.

Sound like anyone you know?

In contrast, smart creatives are “multidimensional, usually combining technical depth with business savvy and creative flair.” Smart creatives are first and foremost smart; but this means

far more than book smart. They are analytically smart (data driven), business smart, competitively smart (market aware) and end-user smart, but they are also creative. That is, they are curious, risk takers, self-directed, open and collaborative, and communicative.

At Google, smart creatives:

- Are open to all tasks, not confined to specific ones.
- Have unlimited access to company information and computing power.
- Take risks — they are not punished or held back in any way when risky initiatives fail.
- Exercise their ideas and are encouraged to do so.
- Speak up when they disagree with something.

Google uses innovative interviewing techniques and interviewee evaluations to ensure they attract as many smart creatives as possible. Many elements of Google’s culture encourage smart creatives to succeed. These include:

- Their mission and values, e.g., “The need for information crosses all borders.”
- A work environment that encourages collaboration and in which employees enjoy working long hours.
- A decision-making approach that not only encourages disagreement, but requires it when there’s disagreement over a decision or approach.
- Internal communication strate-

gies, e.g., voting buttons for the firm-wide Friday call to signal the effectiveness of an explanation.

- Ways to encourage innovation.

Google views smart creatives as nothing less than “the key to achieving success in the Internet century.” I couldn’t agree more. Both our profession and our employers are in pitched battles to attract and retain as many of the best smart creatives as possible.

For the last 25 years, I’ve had a front row seat in the battle for smart creatives. Numerous companies have been extremely successful largely from the efforts of their smart creatives, not only in data-driven leadership, but in specific developments such as predictive analytics and enterprise risk management (ERM).

In the 1980s, Progressive decided that actuarial training was not necessary for their product managers. Instead, they actively recruited smart creatives (albeit not called this at the time) who were often recent MBA graduates with strong data analytics skills.

The best product managers have shown many of the characteristics of smart creative, including:

- Data smart — shaping some of the most important early successes in predictive analytics and data driven in their decision making.
- Market and user savvy — very aware of all significant developments in their markets and how insureds were responding to them.
- Interdisciplinary — equally com-



fortable doing pricing, underwriting, marketing, agency management and other tasks with technical proficiency.

- Creative — a number of the rating characteristics and coverage innovations developed at the time were truly paradigm shifting.

Progressive's ongoing success using this model is indisputable. Maybe the strongest measure of the success of Progressive's product management model is the number of insurers who have emulated it. Many of these companies also realize that smart creatives with actuarial training thrived not only in product management roles, but also in executive roles, contrary to Progressive's view of actuaries. Conversely, the insurance industry is littered with companies that did not embrace technology and data-driven decision making soon enough to keep up with their data-driven competitors.

In more recent years, a similar battle has been fought in the dynamic financial analysis and ERM arenas. Chartered financial analysts, actuaries through the chartered enterprise risk analyst designation and other financial professionals are all seeking preeminence in the ERM arena on the strength of their abilities to attract and educate smart creatives with the training they need to thrive in this data-driven and interdisciplinary practice area.

Can an insurance company survive without an emphasis on smart creatives? Yes. Can the company thrive? No. Sooner or later a competitor with a data-driven, risk-taking group of smart creatives and leadership that encourages them will realize an opportunity presented by the non-innovating competitor, and the innovative competitor will



target that book of business, with good data supporting it.

In that same vein, the actuarial profession can survive without attracting and training smart creatives, but it cannot thrive.

However, there is a solution: By having more smart creatives become actuaries, we can greatly enhance the perceptions of our employers and customers regarding the value of our profession. When I look at the actuaries who have moved into C-level executive positions, they are often, if not always, smart creatives. They have the analytical smarts all actuaries possess, but their business skills, communication abilities and creativity allow them to distinguish themselves in executive roles. Many of the CAS's most important development efforts are focused on attracting smart creatives to the profession at the

college level, providing them with the educational materials and opportunities they need to succeed professionally and keeping them engaged with the CAS throughout their careers.

Traditional knowledge workers, what I think of as the "stereotypical actuary," are a foundational element of our profession. The actuary who has done workers compensation pricing at the same company for 20 years, for example, plays an important role to his or her employer and in our profession. But everything the CAS can do in the coming years to attract and develop smart creatives is the key to the CAS achieving success in the Internet century. ●

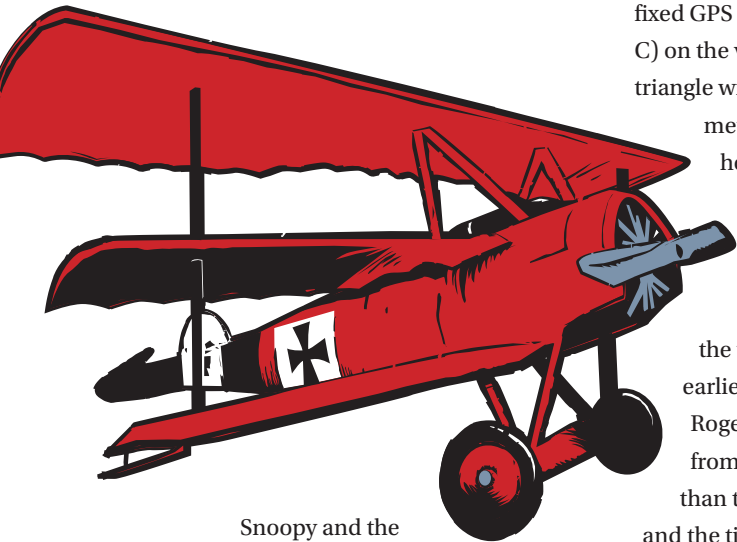
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IT'S A PUZZLEMENT BY JON EVANS

## Aerial Dogfight Rematch

This puzzle is a variation of the aerial dogfight puzzle (AR November/December 2013) that was suggested by David Uhland. This variation was mentioned in the solution of the original puzzle (AR March-April 2014), but subsequently no one sent in a solution to the variation.



Snoopy and the Red Baron fly past each other only inches apart, barely missing a head-on midair collision. Both are armed with laser pointers mounted on their planes that point only in the direction of motion, at zero angle of attack. Both fly at constant speeds but the Red Baron flies twice as fast as Snoopy. The Red Baron can also turn with triple the acceleration, “pulling three times as many Gs” as Snoopy. As they pass, the Red Baron turns hard to his right and Snoopy turns hard to his right. (In the original puzzle Snoopy turned hard to his left.) Both continue in their turns until one wins by first shining

his laser pointer on the other. Who wins? Alternatively, if the Red Baron’s speed is only nine tenths of Snoopy’s speed and his turning acceleration only three-fourths of it, who wins?

### GPS in Flatland

In this puzzle, Flatland has set up three fixed GPS broadcast stations (A, B and C) on the vertices of an equilateral triangle with edges of length 100 kilometers. When Richard leaves his house in Flatland to visit Roger his GPS receiver gets a time signal of exactly 7 a.m. from C, but the time from B is 0.00001 seconds earlier and the time from A is 0.00004 seconds earlier. When Richard arrives at Roger’s house the time he receives from B is 0.00001 seconds later than the time he receives from C, and the time from A is 0.00004 seconds later than the time from C. How far is Richard’s house from Roger’s house?

A, B and C can be given two-dimensional kilometer coordinate values (0,0), (50, 50√3), and (100, 0), respectively. The speed of light is  $c \approx 299,792$  km/sec. Let  $(x, y)$  be the coordinates of Richard’s house and  $(u, v)$  be the coordinates of Roger’s house. So the time signals Richard receives when he leaves home result in the following equations:

$$\sqrt{(x-100)^2+y^2}=\sqrt{((x-50)^2+(y-50\sqrt{3})^2)+(0.00001 \text{ sec.})c}$$

$$\text{and } \sqrt{((x-100)^2+y^2)}=\sqrt{(x^2+y^2)+(0.00004 \text{ sec.})c}.$$

After wrestling with the numerical algebra this leads to  $(x, y) \approx (43.1716, 27.052)$ . Similarly the signals when Roger arrives at Richard’s house result in the equations following:

$$\sqrt{((u-100)^2+v^2)}$$

$$=\sqrt{((u-50)^2+(v-50\sqrt{3})^2)-(0.00001 \text{ sec.})c}$$

$$\text{and } \sqrt{((u-100)^2+v^2)}$$

$$=\sqrt{(u^2+v^2)-(0.00004 \text{ sec.})c}.$$

After more rounds of numerical contortions this leads to  $(u, v) \approx (57.0732, 31.065)$ . So the distance from Richard’s house to Roger’s house is about

$$\sqrt{((43.1716-57.0732)^2+(27.052-31.065)^2)} \approx 14.4692 \text{ km.}$$

Solutions were submitted by Robert Balmer, Bob Conger, Brian Hall and Ken Klinger. ●



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