

# actuarial REVIEW

VOL 41 / NO 6 / NOVEMBER-DECEMBER 2014

PUBLISHED BY THE CASUALTY ACTUARIAL SOCIETY

## Can Insurance Curtail Gun Violence?



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**Actuary (Multiple Locations, USA):** Well-known national firm seeks Actuary for predictive modeling role. Strong analytics & statistical software skills required. (#42410)

**Vice President (Northeast, USA):** Insurance company seeks a qualified Actuary to serve in senior-level predictive modeling and leadership position within a start-up environment. Strong communication and prior leadership experience required. (#42580)

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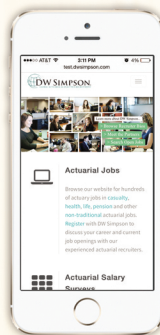
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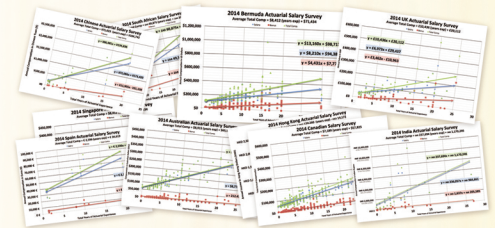


**Articles In This Issue Include:** Navigating A Counteroffer Situation, Hiring Companies: Securing Strong Candidates, DW Simpson: New Hires & Promotions, From the President's Desk: Consider This.



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FSC  
LOGO

on the cover

## Can Insurance Curtail Gun Violence?

BY STEVEN SULLIVAN

No matter how often or where it happens, gun violence in America still makes the news.

It arouses emotional debates from all sides, all equipped with their own statistics supporting their viewpoints. What role can insurance play in this grave problem?



## In Celebration of Volunteers: The CAS 2014 Volunteer Honor Roll

**14** It is said that volunteers are the life-blood of the CAS. In this issue, we honor the many dedicated volunteers who help make the CAS a truly great organization.

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## editor'sNOTE By GROVER EDIE

### An Eclectic Issue

Our year-end issue contains a diverse grouping of articles—from big data to automated vehicles to gun violence.

When I first read the cover article about insuring gun owners, I wondered if it was even feasible. But a similar argument could have been made about reckless driving 100 years ago when the motor vehicle was just getting started. The CAS and the motor vehicle industry have certainly shared a lot over these past 100 years. Could this be the start of new relationship between the gun industry and the CAS?

We also feature two opinion pieces in this issue, and I am happy to see more activity in this area.

The Volunteer Honor Roll takes up the bulk of this issue, as it should. It's our humble way of showing appreciation for those volunteers who have spent their own personal time, energy, and sometimes emotions to further the cause of the CAS. Our thanks go out to all of those who have helped the CAS to be the great organization it is today. We also thank those who have supported these volunteers and the organizations that have provided the time and funding

for our members to participate.

Of course, we are all assisted by the CAS staff. In the coming issues we will feature more CAS Staff Spotlight columns. Please take time to read and get to know the CAS staff.

Indeed, we are an organization of professionals and an organization of volunteers!

P.S. The year is coming to a close and if you didn't get enough continuing education credits in this year, it's not too late. Check out the article about the UCAS on page 12. ●



### Correction

The September/October 2014 *Actuarial Review* contains an error. In the article "From Theory to Action: The China Speed—Are You Ready for the Challenges and Opportunities Brought by C-ROSS?", the total 2013 gross written premium for China's property-casualty industry was approximately USD 105 billion, not USD 10.5 billion. ●

*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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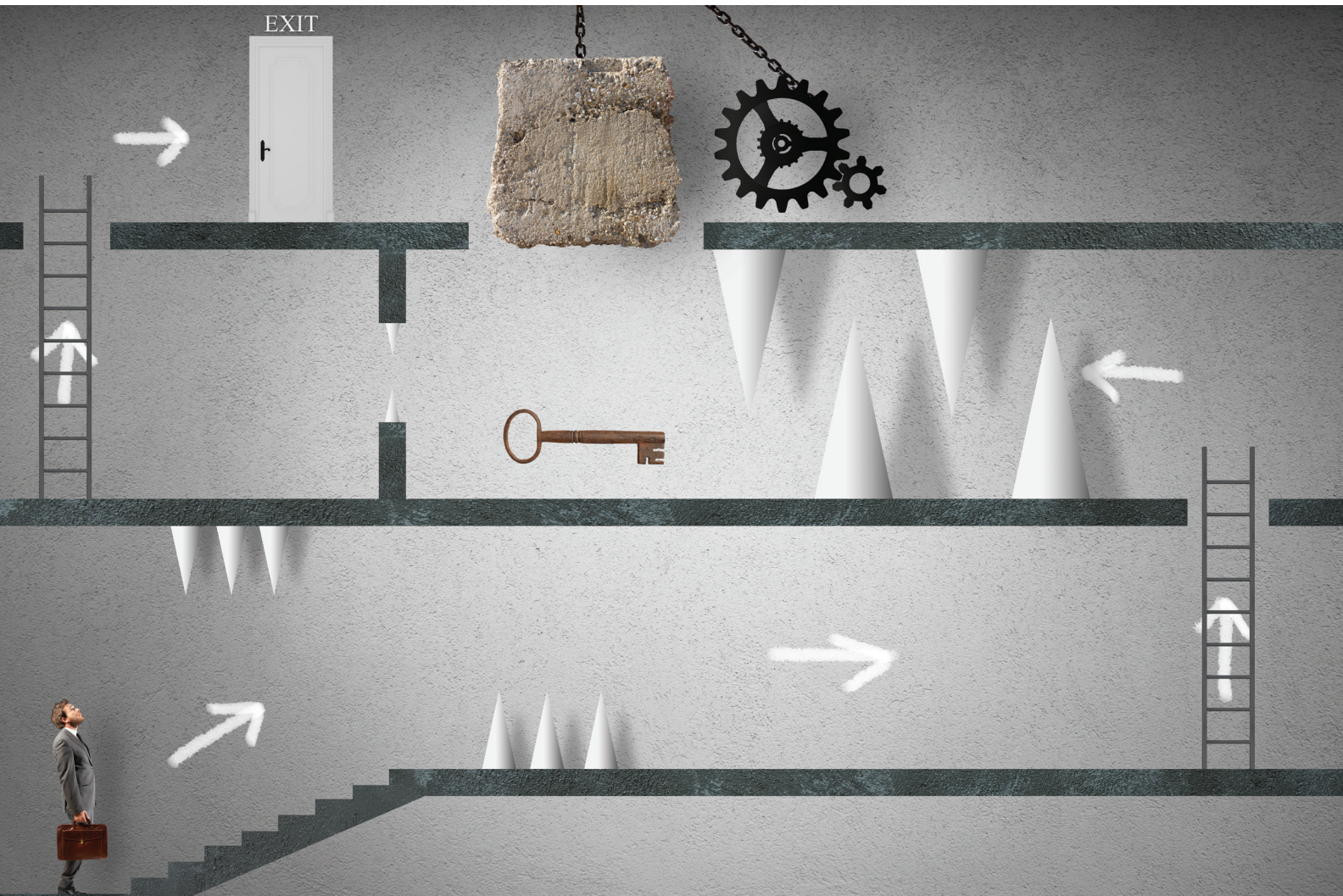
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## A Continuing Commitment to Excellence

This year as president has been a truly remarkable experience. CAS members I have known through the years have been true professionals, practicing with honesty, integrity and skill, while supporting the CAS with many hours of volunteer time. So, what was remarkable about this year? Experiencing first-hand the depth of our collective professionalism in actuarial practice and our passion for ensuring the CAS remains the unquestioned world-wide leader in all aspects

a passion for the CAS to be the best it can be both in organizational excellence and as a membership of professionals.

The last few weeks have been both uplifting and unsettling. As most everyone is aware, the SOA sent a blast marketing email to our members containing inaccurate and misleading information pertaining to the career flexibility afforded by the SOA credential. They did this by accessing our membership directory 8,248 times (yes, that's right) in order to

ing message and the accessing of our members' information, a common question was "how could they do this?" Our members know from experience and expect that our leaders will act ethically and honestly. The surprise was that SOA members must feel the same way, but their views didn't seem to matter. And that was when the reality of the character of the CAS hit home. Our leaders listen to our members. We know your expectations and you members drive our decisions and actions.

### **Our leaders listen to our members. We know your expectations and you members drive our decisions and actions.**

of property-casualty actuarial science. And not just in basic education, continuing education, research, and so forth, but in the standards we set for ourselves as individual professionals and what we expect and demand from the CAS as our organization. As president I was able to observe this depth in both professionalism and passion, and see service to the CAS from a perspective few others have the opportunity to enjoy.

Not a single person said "no" this year when I asked them to help the CAS on a task force, committee, liaison role or to write an article. Not one. These individuals weren't just volunteering to get a job done. There were constant, constructive suggestions—"why don't we do this?" or "wouldn't this be a better approach?" or "I can recruit this person with skills we need in this area"—all with

circumvent the database infrastructure designed to prevent mass downloads of our members' personal data.

This act was certainly unsettling; a peer actuarial organization acting in a way that I believe is clearly unethical and unprofessional. And it was also unsettling in that I believe the vast majority of SOA members would not expect their leaders to be acting this way, but these leaders did so anyway.

At the same time, the experience was uplifting as it brought home the character of both our members and the CAS. As president I know our members demand ethical and honest leadership from our board, executive council and staff. Ethics and honesty are overarching core characteristics for the CAS. As a number of us went through how best to respond to both the SOA's mislead-

The author and journalist Thomas Friedman pointed out in a recent talk that we as a society are moving away from representative democracy to popular democracy, with constant feedback and interaction from our publics, enabled by social media. Our interaction with our members at our Spring and Annual Meetings, seminars, workshops, Regional Affiliates, webinars, and so forth, provide us with a broad, current perspective on what our members expect from us and the CAS. We listen; that's our culture. We all want the best for the CAS and our collective professionalism; and that drives our decision making. That's uplifting when I think of the CAS and our future.

Our members expect excellence from their leaders, from the CAS as an organization and from each of us as individual members. And excellence is only ever achieved through a combination of dedication, passion and professionalism that endures month after month, year after year and decade after decade. We've done that for 100 years, and we will do it for the next 100! ●



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**Central Mutual Insurance Company** increases Personal Auto rates, effective 7/1/2014, in Colorado. Rate effect: +4%

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**Armed Forces Insurance Exchange** increases Homeowners rates, effective 7/7/2014, in Arizona. Rate effect: +5.01%

**Columbia Mutual Insurance Company** increases Businessowners rates, effective 10/1/2014, in Nebraska. Rate effect: +4.7%

**Westfield Insurance Company** increases Commercial Farm rates, effective 8/11/2014, in Georgia. Rate effect: +10%

**Hanover Insurance Company** increases Personal Auto rates, effective 8/15/2014, in New Jersey. Rate effect: +3%

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## Continuing Education Compliance Is Due by December 31, 2014

Fellows and Associates will need to certify their compliance with the CAS Continuing Education policy by December 31, 2014. Compliance with the CAS CE Policy allows the member to provide actuarial services in the year immediately following certification of compliance unless subject to the policy's Transition Rules. Please follow the procedures specified in the Continuing Education section of the CAS website or in recent notifications to certify compliance. ●

### ACTUARIAL REVIEW *LETTERS POLICIES*

*Letters to the editor may be sent to [ar@casact.org](mailto:ar@casact.org) or the CAS Office address. 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 150 words. Under special circumstances, writers may request anonymity, but no letter will be printed if the author's identity is unknown to the editors. Announcement of events will not be printed.*

## COMINGS AND GOINGS

**Michael K. Chen, FCAS, MAAA**, has joined Pinnacle Actuarial Resources, Inc., as a consulting actuary in the Des Moines, Iowa, office. Since 2003, Chen worked as a commercial pricing actuary with FBL Financial Group, focusing on workers' compensation and commercial auto. His experience also includes product management, loss reserving, loss cost projections, development and monitoring of key metrics and trend analysis. Prior to his work at FBL Financial Group, Chen was an actuarial analyst for the American Republic Insurance Company. He currently serves on the CAS Committee on Professionalism and the CAS Exam Committee. He was also a speaker at the 2013 CAS Annual Meeting and the Iowa Actuaries Club 2013 Actuarial Education Event.

The New Hampshire Insurance Department has appointed **Deb Stone, FCAS, MAAA**, as the director of financial regulation. Stone formerly served as an actuary and director of market regulation at the insurance department. Stone oversees a staff of eight, who support the financial regulation division's three primary roles: financial examinations, financial analysis and company licensing.

**Beth Fitzgerald, FCAS, MAAA, FCIA, CPCU**, has been named president of ISO Insurance Programs and Analytic Services, the founding business unit of Verisk Analytics responsible for the company's core insurance products and services. Fitzgerald joined ISO in 1980 as an actuarial assistant and most recently held the position of senior vice president

of commercial lines. Over the course of her career at ISO, she has helped drive innovation in data management and pricing for both personal and commercial lines, including pioneering pricing models for catastrophe modeling and cyber insurance.

**James P. McNichols, ACAS, MAAA**, has been appointed chief actuarial officer at Greenlight Capital Re, Ltd., a specialist property and casualty reinsurer based in the Cayman Islands and Ireland. McNichols joins Greenlight Re from Southport Re, where he was chief actuarial officer since May 2012. Prior to joining Southport Re, McNichols was a consulting actuary at Aon Global Risk Consulting and spent 11 years at XL Group in a variety of roles. He has also held actuarial positions at Milliman & Robertson, Ernst & Young, Tillinghast/Towers Perrin and the St. Paul Companies.

**Eduard J. Pulkstenis, FCAS, MAAA, CPCU**, will join Hamilton Insurance Group's U.S. operations, Hamilton USA, in the position of president, small business. Pulkstenis brings over 25 years' experience in commercial lines business to his new position, most recently at Harbor Point Consulting Partners, a firm he co-founded. He has also held executive positions in a number of insurance companies, including Tower Group Companies and The Hartford Financial Services Group. Pulkstenis is also a Certified Insurance Counselor. ●

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



## 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/)

**March 9-11, 2015**

Ratemaking and Product  
Management (RPM) Seminar  
Intercontinental Dallas  
Addison, TX

**May 17-20, 2015**

CAS Spring Meeting  
The Broadmoor  
Colorado Springs, CO

**June 1-2, 2015**

Seminar on Reinsurance  
Hyatt Regency Philadelphia at  
Penn's Landing  
Philadelphia, PA

## D.W. Simpson Makes CAS Trust Donation

The Trustees for the CAS Trust are pleased to announce that D.W. Simpson Global Actuarial Recruitment donated \$10,000 to the Trust in 2014. This brings the total contribution by D.W. Simpson

to the Trust to \$180,000 over the past several years. The CAS sincerely thanks D.W. Simpson and its employees for its continued support of the CAS mission to advance actuarial science. ●

## 2014 Annual Report of CAS Discipline Committee to the Board of Directors

The CAS Rules of Procedure for Disciplinary Actions (as amended May 3, 2009, by the Board of Directors) requires an annual report by the Discipline Committee to the Board of Directors and to the membership. This report shall include a description of its activities, including commentary on the types of cases pending, resolved and dismissed. The annual report is subject to the confidentiality requirements.

**2014 Activity.** One case was resolved.

There are no cases pending before the committee.

This notice will be published in the November/December 2014 issue of the *Actuarial Review*.

Tom Myers, Chairperson of the 2014 Discipline Committee  
October 6, 2014

## IN MEMORIAM

Jeanne D. Chiang  
(FCAS 1986) 1953-2014

Judy A. Gillam  
(FCAS 1989) 1949-2014

Charles C. Hewitt  
(FCAS 1951) 1920-2014

Philip O. Presley  
(FCAS 1967) 1941-2012

## Kickstarting the Kickstarter BY RASA VARANKA MCKEAN, KICKSTARTER TASK FORCE CHAIR

The CAS Kickstarter Task Force has been busy implementing a new model for research and development ideas. The brainchild of CAS Vice President-Research & Development Alice Underwood, the new model features “crowdsourcing” and “crowdvoting” as its central concepts.

The modern terminology of crowdsourcing dates back to 2006 when the editors of *Wired* first coined the term to mean “outsourcing to the crowd.” In 2008, the *International Journal of Research into New Media Technologies*, defined “crowdsourcing” as an “online, distributed problem-solving and production model.”

But the concept of crowdsourcing dates all the way back to the mid-19th century when the *Oxford English Dictionary* made an open call for volunteers to contribute to a dictionary of the English language with example quotations.

Web-based open innovation platforms have been very successful in

recent years for modern research efforts. In 2006, IBM hosted an “Innovation Jam” at which 140,000 international participants yielded roughly 46,000 ideas. As another example, the company InnoCentive is a crowdsourcing platform for corporate research and development. They boast a success rate of 50% in providing successful solutions to previously unsolved scientific and technical problems.

Crowdsourcing is now available to any CAS Online Community members. CAS members can now choose to contribute to research ideas and crowdvoting for funding research projects is also available.

Our own modest task force has worked with the CAS Online Community to implement the new website for gathering research ideas. The website includes the capability of voting on research projects, and submitting ideas and requests for research. Located in the IdeaShare section of the CAS Online

Community, voting includes a selection of priorities for each of the different ideas that are added, and also accepts comments from people to facilitate discussion about the suggested ideas.

Respondents can “Subscribe” to an idea if they are interested in participating in the idea or if the idea becomes a project. The CAS will be able to track the progress of the idea and to contact respondents to sign them up for a working group. Additionally, the website now includes a Twitter feed to display anything that includes #CASideashare.

The CAS community is ready to kickstart! What we ask of you, dear reader, is to click on the link <http://community.casact.org/p/is/in/> ●

---

*Rasa Varanka McKean, ACAS, MAAA, is manager of actuarial services for the New York Compensation Insurance Rating Board.*

## Professional Education Department launches a New Online Community BY NORA POTTER, CAS PROFESSIONAL EDUCATION COORDINATOR

The CAS Professional Education Department has created a new avenue of engagement among experts called the Professional Education Projects Online Community.

Many of our members and other interested parties were not receiving our various announcements and information on exciting projects throughout the year. By forming this community, we hope to engage and reach even more people.

This community will serve as an

information center for CAS Professional Education initiatives. Individuals who are a part of this group will receive updates including calls for speakers and subject matter experts, meeting and seminar presentations, and online course proposals.

We encourage any individuals interested in CAS professional education projects, or those who want to share their expertise, to join this community. We also encourage all of our community members to share new and cutting-edge ideas for future CAS projects.

We hope that this new community will foster a lot of discussion and a way for the CAS community to interact.

To join the Professional Education Projects community, please log into the CAS Online Community at <http://community.casact.org/p/co/ly/gid=176> and subscribe to the group under “Announcement Lists.” Please note that by being a member of this group, you will receive email notifications whenever the CAS Staff updates the group with new information. ●



## THANK YOU TO 2013-2014 PARTNERS

The CAS appreciates the support of the 2013-2014 Partners.

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### SILVER PARTNERS



# Get Year-End CE Credit With Newly Relaunched UCAS BY NORA POTTER

**N**eed a flexible, easy way to get continuing education by the end of the year? The CAS has relaunched the University of CAS (UCAS) website to help. UCAS offers 28 webinar recordings, hundreds of hours of meeting and seminar session recordings, and interactive online courses on a user-friendly platform.

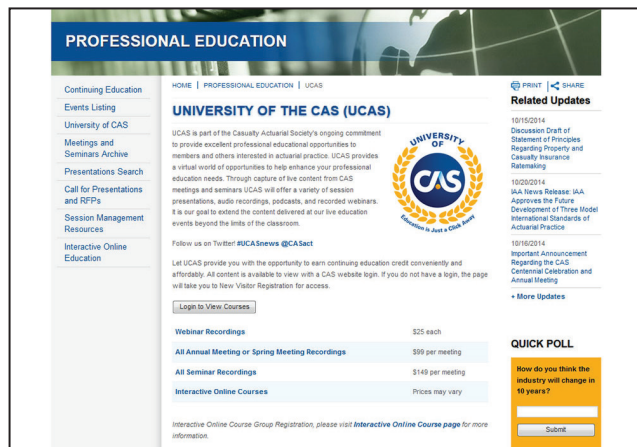
The new UCAS site has markedly improved from the old UCAS platform. Members and non-members alike are able to access the site with their usernames and passwords. They can customize their personal home page to show recommended education based on their personal preferences, view all of their purchases and progress, and search the catalog for new content. These new features make it easy to find and participate in the CE most relevant to each person.

UCAS offers an extensive collection of educational materials, including recordings from three years of seminars and meetings, totaling hundreds of hours of CE. For example, the 2014 RPM Seminar has 46 recordings ranging from around 60-75 minutes in length—all for \$149. Webinar recordings are also available, such as “Critical Issues in Predictive Modeling” and “What’s Driving the P/C Industry?” In addition, the interactive online courses are designed to engage with expert examples and knowledge tests along the way. A free interactive module is available in the catalog for actuaries to see if this format is right for them.

Let’s take a look at how to use the new UCAS site.

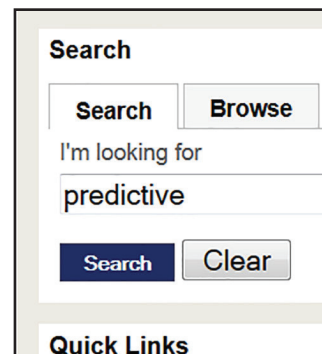
## 1. LOGIN

Head to [www.casact.org/ucas](http://www.casact.org/ucas) and login to access the UCAS learning portal.

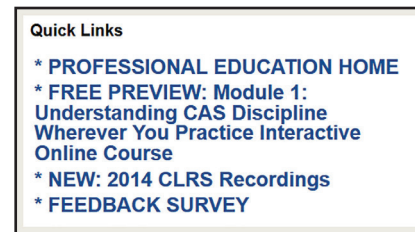


## 2. NAVIGATION

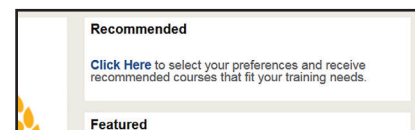
There are three main tabs to the UCAS home page. The **Dash-board** is where people can:



A. Do a quick search/browse for courses.



B. Find quick links to useful pages.



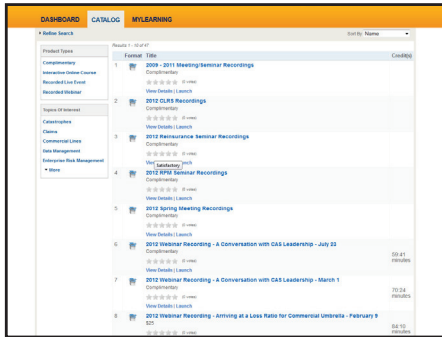
C. Update recommended preferences.





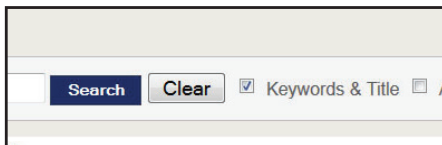
D. And see courses.

This section looks empty, so let's fill it up with some CE offerings.

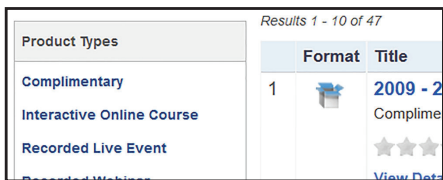


The second tab on the top navigation is the **Catalog**.

This is where people will be able to search more precisely through the collection of recordings and online courses. One can search by product type, topic of interest or by specific keywords in the title and description. Or search using all of them. Below are shown the results of a search for anything with the word "reserve" in the title and description.

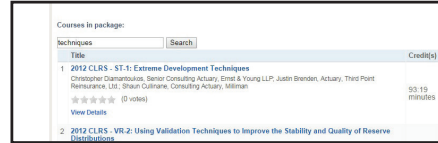


If a search needs to be redone, make sure to "Clear" any filters in the original search.



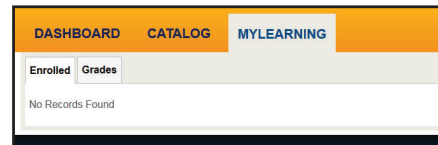
Some searches may also bring up full meetings and seminars may be tagged under topics of interest as well.

Clicking "View Details" underneath each product will give a closer look at the available content. This will show all the recordings available from that meeting/seminar and allow an additional search within the meeting as well.



Once people are ready to make a purchase, they click "Add to Cart" to go the purchasing page or "Launch" if the course is one of the many provided complimentary by the CAS. **Please note** that some recordings, such as the webinar "A Conversation with CAS Leadership," may not necessarily be used for CE credit. Check the 'Continuing Education Information' link on the **Dashboard** to see what would apply.

The third tab is **MyLearning**. This is where people will find the courses they have enrolled in and the progress they have made in completing them. This is an easy way to keep track of all purchases and see how much time has been spent on viewing the education for CE.



### Time to Get CE

We hope that everyone finds this new site useful in finding continuing education tailored to their needs. With the annual deadline to state compliance to the CAS continuing education policy quickly approaching on December 31, UCAS will provide convenient and affordable education options to fulfill the remaining hours. If assistance is required to navigate the new UCAS, please contact the CAS Professional Education department at [npotter@casact.org](mailto:npotter@casact.org). ●

*For CAS members based in the U.S. and serving predominantly U.S. clients, the UCAS recordings may qualify as "other activity" according to the U.S. Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States.*

In Celebration of Volunteers:

# THE CAS 2014 VOLUNTEER HONOR ROLL

*We are an association  
of people, professionals,  
and friends.*





Since the founding of the CAS in 1914, volunteers have been the main life force sustaining the Society through its various dimensions of growth—in the examination process and in the variety of continuing education activities, as well as in supporting the sheer growth in membership. As a result, members of the CAS through their numerous volunteer activities essentially direct all phases of CAS operations.

In one particular year, 902 CAS members volunteered to fill 1,359 positions. An effort of this scale, which is quite typical, generates a continuous need for volunteers. Each year about a third of these positions become available through normal rotation. These positions include the entire range of CAS activities: the examination committees, research and development activities, liaison representatives, and various program committees and speakers, who serve as faculty for these programs. We'd also like to thank AAA volunteers, meeting and seminar speakers, and Regional Affiliate program participants not listed here. We recognize that none of these activities can take place without the active participation of the many CAS volunteers and for this we thank you.

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Ping Wang	William Robert Wilkins	Jeffrey H. Xia	Li Zhang
Qingxian Wang	Bruce P. Williams	Yanchong Xia	Li Zhang
Rina Meng-Jie Wang	Kendall P. Williams	Jie Xiao	Lingang Zhang
Shaun S. Wang	Michael J. Williams	Jianwei Xie	Qinnan Zhang
Xiaomin Wang	Rebecca R. Williams	Wei Xie	Rui Zhang
Yao Wang	Shauna S. Williams	Gang Xu	Wei Zhang
Zheng Yu Wang	Stephen C. Williams	Jianlu Xu	Yan Zhang
Greg Wanner	Matthew Randall Willms	Tong Xu	Yeming Zhang
Kimberley A. Ward	Catherine M. Wilson	Xinxin Xu	Yi Zhang
Bryan C. Ware	Chad P. Wilson	Yun Xu	Yin Zhang
Gabriel Matthew Ware	Ernest I. Wilson	Run Yan	Yingjie Zhang
David Edward Warneke	Steven M. Wilson	Yan (Peter) Yan	Zhenyong Zhang
David W. Warren	John J. Winkelman	Fang (Alice) Yang	Haixia Zhao
Monty James Washburn	Steve Winstead	Linda Yang	Wei Zhao
David J. Watson	Brant Wiperman	Liqing Yang	Pavel Alexander Zhardetskiy
Cody Webb	Chad C. Wischmeyer	Ping Yang	Chao Zheng
Zachary Samuel Webber	Kirby W. Wisian	Yi-Chuang (Sylvia) Yang	Dong Zheng
Dominic A. Weber	Susan E. Witcraft	Zhuo Yang	Jeffrey W. Zheng
Lynne K. Wehmueller	Trevar K. Withers	Min Yao	Jun Zheng
Thomas A. Weidman	Benjamin T. Witkowski	Yuanhe (Edward) Yao	Albert Zhou
Kimberly Weidner	Todd F. Witte	Dominique Howard Yarnell	Christina Tieyan Zhou
Jennifer Lynn Weiner	Brandon L. Wolf	Chung-Ye Scott Yen	Guo Zhong
Robert S. Weishaar	David R. Wolf	Gerald T. Yeung	Jun Zhou
James R. Weiss	Robert F. Wolf	Ka Chun Yeung	Yu Zhou
Alfred O. Weller	David S. Wolfe	Shuk Han Lisa Yeung	Huina Zhu
Elizabeth A. Wellington	Annie On Yee Wong	Vincent F. Yezzi	Xi Zhu
Mark S. Wenger	Derek M. Wong	Jeanne Lee Ying	John D. Zicarelli
Radost Roumenova Wenman	Pan Corlos Wong	Richard P. Yocius	Zachery Michael Ziegler
Scott Werfel	Simon Kai-Yip Wong	Edward J. Yorty	Adolph Emery Zielinski
Geoffrey Todd Werner	Windrie Wong	Guanrong You	Steven Bradley Zielke
Katherine Therese Werner	Chunpong Woo	Joshua A. Youdovin	Rita M. Zona
Jean Patti West	Richard Wood	Michael Scot Young	Theodore J. Zubulake
Jo Dee Westbrook	Jeffery Woodcock	Hank Youngerman	Barry C. Zurbuchen
Matthew Westenberg	Arlene F. Woodruff	Jianhui Yu	David E. Zurndorfer
Christopher John	Dorothy A. Woodrum	Jonathan Kam Yu	
Westermeyer	Mark L. Woods	Patrick Chan-Chin Yu	





# CAS 2014 Employer Honor Roll

The CAS is grateful for the support of employers who encourage their actuaries to volunteer their time and effort to the CAS. Here are two “snapshots” of these employers.

## Top Ten Employers with the Largest Number of Fellows Volunteering

Liberty Mutual Insurance  
Milliman, Inc.  
The Travelers Companies, Inc.  
Towers Watson  
The Hartford  
AIG  
CNA Insurance Companies  
PricewaterhouseCoopers  
Allstate Insurance Company  
Deloitte Consulting, LLP

## Large Employers with at Least 50% of Fellows Volunteering

AIG  
Milliman, Inc.  
Towers Watson  
The Hartford  
CNA Insurance Group  
Allstate Insurance Company  
PricewaterhouseCoopers  
Munich ReAmerica, Inc.  
Insurance Services Office, Inc.

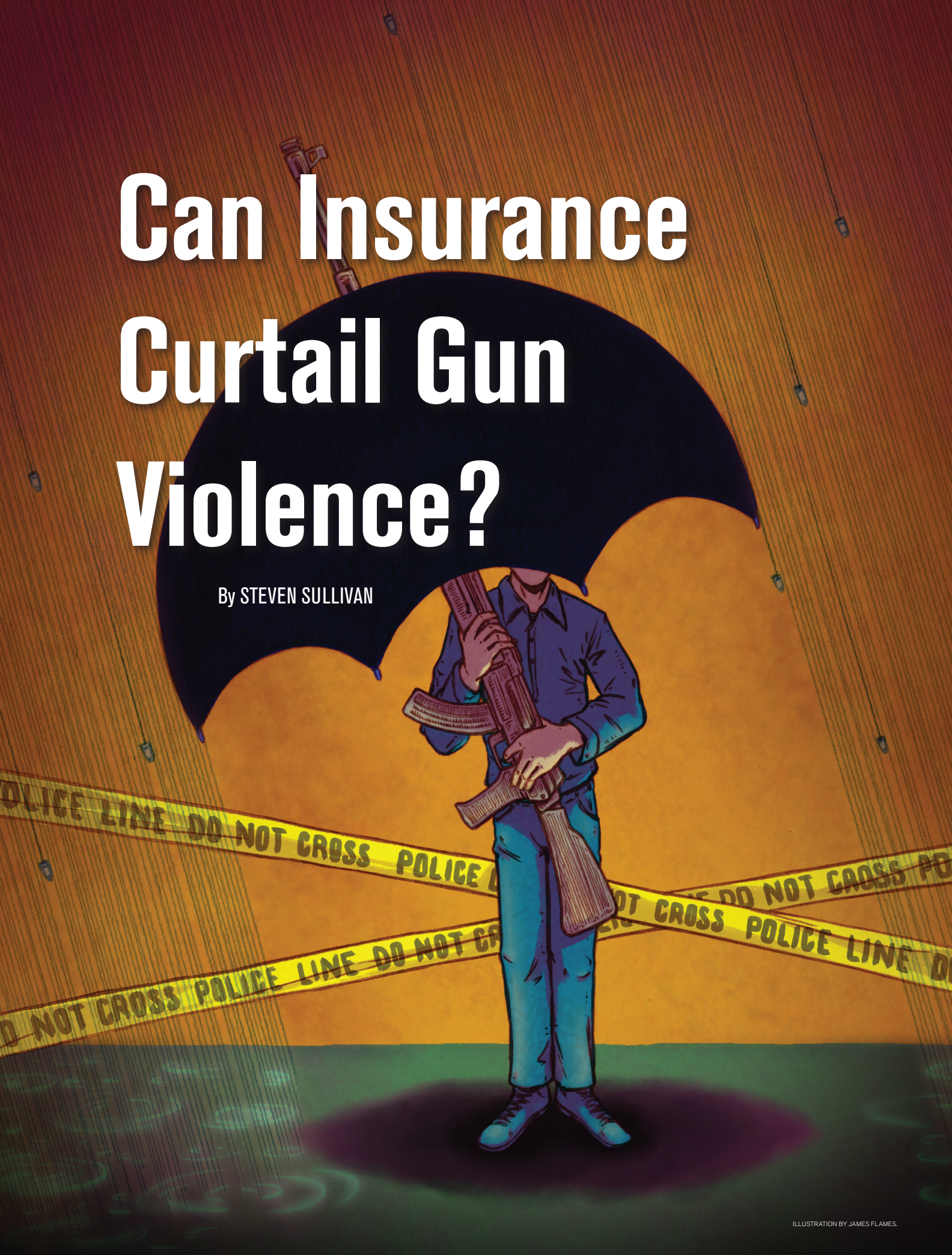
Swiss Re  
Ernst & Young LLP  
Deloitte Consulting, LLP  
Willis Re, Inc.  
Aon Benfield  
KPMG, LLP  
Pinnacle Actuarial Resources, Inc.  
ACE Group





# Can Insurance Curtail Gun Violence?

By STEVEN SULLIVAN





*No matter how often or where it happens, gun violence in America still makes the news. It arouses emotional debates from all sides, all equipped with their own statistics supporting their viewpoints. What role can insurance play in this grave problem?*

Guns don't kill people," says the bumper sticker, "people kill people." That may be true, but in 10 states in 2009, more people used guns than cars or other implements to kill other people. And unlike car accidents, most firearm deaths occur on purpose. Sometimes it's criminals shooting innocent people or criminals shooting each other. Other times, both perpetrators and victims are ordinary folks. Both forms of gun violence are perceived as being on the rise, but the latter seems to produce the most outrage and generates the greatest number of headlines.

There appears to be nowhere in the United States safe from shootings. They happen in small towns, in big cities and in suburbs; on college campuses, in high schools, in elementary schools, in government buildings, in restaurants, in shopping malls, in big-box stores, in business offices, in TV stations and even on military bases. Shooters may be mentally ill or just angry about something, may be political or religious extremists, or may exhibit a combination of these attributes. Victims are students, teachers, children, police, employees—just about anybody.

No one pretends to like the situation and discussing prevention options often sparks emotional debate. Advocates on both sides marshal statistics to support their positions. But so far no one has come up with a way to fix the problem that doesn't infringe on the constitutional right to bear arms.

According to data from the Centers for Disease Control and Prevention (CDC), there are approximately 81,300 nonfatal injuries and more than 30,000 deaths every year involving guns. That works out to over 300 shootings and over 80 deaths every day. Mass shootings tend to get the most media attention and media coverage makes it seem as if gun violence is on the rise. That is not the case, however, according to an article in the *Washington Post* by University of Virginia professor Dewey Cornell. FBI statistics show that gun violence is lower than it was 20 years ago and that school shootings—no matter how horrific they are—are statistically rare. "Children are almost 100 times more likely to be murdered outside of school than at school," he says, "which makes massive expenditures for school building security seem like a misallocation of tax dollars."

In addition to the emotional toll of gun violence, there are also economic consequences beyond the allocation of tax dollars for security. The people of Newtown, Connecticut, could not bear to enter Sandy Hook Elementary School where 20 children and six adults had been murdered. They voted to spend between \$50 million and \$60 million to tear down the school and build another at a different site. Columbine High School, the site of a 1999 massacre in Colorado, was renovated at a cost of \$1.2 million.

Further, the CDC estimated that \$37 billion in health care costs resulted from firearm violence in 2005. The cost of caring for the survivors of gun violence was around \$3.7 billion. The overall cost of gun violence, including lost work time, medical care, insurance, criminal-justice expenses, pain and suffering and lost quality of life, amounted to about \$174 billion in 2010. Assaults and homicides accounted for 65 percent of the costs, followed by suicides, accounting for 31 percent of the costs





of all injuries caused by firearms. Unintentional acts, legal intervention and acts of undetermined intent account for the remainder. Fatal injuries accounted for \$153.3 billion, or nearly 90 percent of the costs.

Whether gun violence is on the rise or is merely overreported, it is clearly a problem, and there are various approaches to what we as a country and a society ought to do about it. Some see gun control—which encompasses tighter monitoring and outright prohibition of firearms—as the answer. Others advocate improved mental health treatment and better threat assessment measures. Some assert that the only deterrent is more people carrying weapons.

Other countries—United Kingdom, Japan, Australia, and others—have much stricter anti-gun laws and the incidence of gun violence is much lower. What they don't have, however, is the United States Constitution. And if Social Security reform is the proverbial third rail of American politics, messing around anywhere near the Second Amendment has to be just as lethal.

### The Market Forces Solution

Last year, not long after the tragedy in Newtown, a new approach appeared among the usual ones. Legislators in seven states and the District of Columbia introduced bills that, among other things, would require gun owners to purchase “gun liability insurance.” Though each of the bills was different in detail, most of them required gun owners to buy policies that would cover damages resulting from negligent or willful acts.

Democratic Sen. Jamie Raskin of Maryland introduced one such bill in his constituent state. The *Washington Post* quoted him saying that “the insurance mandate would be similar to that required to drive a car. It would be designed in part to bring market forces to bear on gun ownership. Actuaries and insurance adjusters would eventually build a model of who is a safe gun owner, and the price of insurance would follow.”

“This year, one state, Illinois, has introduced legislation on the topic,” says Jon Griffin, policy specialist with the National Conference of State Legislatures (NCSL). “In 2013, Connecticut, Illinois, Maryland, Massachusetts, North Carolina, New York, Oregon, Pennsylvania and the District of Columbia introduced legislation, but those bills have either failed or are still pending in the legislature.”

“Massachusetts and New York have introduced the most legislation regarding state-required liability insurance for firearms, with Massachusetts introducing at least five bills since 2003. New York has introduced at least 15 bills in that same time frame. In addition, Illinois introduced legislation in 2009 that required liability insurance for firearms, and Pennsylvania did the same in 2012.”

The idea for this came from an unlikely source: a 1987 *Alabama Law Review* article written by a George Mason University School of Law professor named Nelson Lund. His article, “The Second Amendment, Political Liberty, and the Right to Self-Preservation,” proposed the idea that mandatory liability insurance might be a way to curb gun violence that would not interfere with the constitutional right to bear arms.

“If this were done,” Lund wrote, “the private insurance market would quickly and efficiently make it prohibitively expensive for people with a record of irresponsible ownership of guns to possess them legally, but would not impose unreasonable burdens on those who have the self-discipline to exercise their liberty in a responsible fashion.”

Writing in 2012 in *Forbes*, financial columnist John Wasik also advocated the use of social economics to reduce the number of deaths caused by firearms. “Market-based risk pricing is the partial answer,” said Wasik. “Let’s agree that guns as weapons are inherently dangerous to society and owners should bear the risk and true social costs. Translation: Require both owners and sellers to purchase liability insurance that is universally underwritten by actuaries according to relative risk.”

Wasik’s point was that it might be possible to ameliorate the problem of gun violence by using the same actuarial/risk management processes used by insurers to ameliorate other risks, such as automobile accidents, hurricanes and floods.

“Those most at risk to commit a gun crime would be known to the actuaries doing the research for insurers,” he said. “They would be underwritten according to age, mental health, place of residence, credit/bankruptcy record and marital status. Keep in mind that insurance companies have mountains of data and know how to use it to price policies, or in industry parlance, to reduce the risk/loss ratio.”

Mandatory liability insurance sounds logical on the surface, but as of 19 months after the Sandy Hook massacre that inspired this flurry of legislation, Robert Hartwig, president of the Insurance Information Institute (III) in New York, observes that there has not been a single instance of legislation passed that would require gun owners to purchase such insurance. Why is that?

What the authors of mandatory gun insurance laws, and even Lund himself, seem to have overlooked is that liability insurance is not designed to cover deliberate acts. “Intentional acts, especially suicides, would not be covered by liability insurance,” says Joseph Harrington, director of corporate communications for the American Association of Insurance Services (AAIS). “Accidental firearms injury is far less frequent than other kinds of injury. Dog bites and drowning are far

## **If Social Security reform is the proverbial third rail of American politics, messing around anywhere near the Second Amendment has to be just as lethal.**

more common. Almost all the injury arising from gun violence is deliberately inflicted. So it wouldn’t have much impact on recovery for victims or have a deterrent quality. It would impose on insurers something different from the way the private voluntary insurance market operates.”

“When this issue came up in 2013, we received many calls about it,” says Hartwig. “We had discussions with various legislative aides in various states and explained to them what insurance

does and does not cover. For most of them it was eye-opening; they had never had this discussion before. Some of them then did back away from the idea that insurance would cover intentional or illegal acts. But that was exactly the situation Sandy Hook was.

“People who proposed this legislation believed fervently that they would reduce gun violence in their states,” he adds. “But the idea of doing it through insurance wasn’t particularly well thought through. The bills required a product that doesn’t exist and that you can’t compel anyone to sell. They never bothered to check whether any such products were on the market or whether insurers would ever be willing to offer them.”

“A mandatory insurance regulation might at least have some effect in deterring negligence, though it would probably not be very great,” Lund admitted twenty-five years later in *Engage*, the journal of the Federalist Society. “Such regulations therefore hardly deserve to be among the highest of legislative priorities. Nevertheless, they would increase the chances that those who suffer accidental injuries at the hands of negligent gun-owners would receive some compensation.”

Insurance experts point out that accidental deaths and injuries are already covered by most homeowners’ policies and even some automobile policies. Since the number of willful, deliberate acts far outweighs the number of accidents, the deterrent effect is minimal.

Mandating insurance to cover intentional acts of violence by firearms also raises the issue of moral hazard, the idea that people are more likely to take risks if they know that somebody else is going to be covering the cost of those risks. This is the same argument many use against other forms of liability insurance—flood insurance, for instance. People continue to





build homes in floodplains because they know they will be covered, and they may be more likely, not less likely, to use firearms if they know the damage they cause will be paid for by an insurance company.

Creating a fund to compensate victims, as some have proposed, is different from an insurance product that mathematically looks at occurrences, estimates the losses likely to arise from them, and prices coverage accordingly, says Harrington. That might be a public policy matter, but it is not insurance.

Wasik, however, remains hopeful. “The legal community needs to huddle with some progressive insurance experts,” he says. But as Robert Hartwig points out, no matter how progressive the experts may be, they can’t change the fundamental way insurance works.

“Insurance is not going to be the principal means by which we reduce gun violence in the United States,” asserts Hartwig. But that does not mean insurance will not play a role in the future.

### **Self-Defense Insurance**

In the wake of the Newtown massacre, America was told that the only way to stop a bad guy with a gun is a good guy with a gun. Forty-four states currently allow people to openly carry firearms, either with or without a permit. The rules regarding the ability to carry concealed guns are somewhat more complicated, but only American Samoa, the District of Columbia and the Mariana Islands prohibit the practice altogether.

Something called the “Castle Doctrine” has traditionally allowed people to use deadly force to protect their homes. “Stand-your-ground” laws effectively allow people to use

deadly force to defend themselves if they feel their lives are threatened, or even if they feel they might be hurt, wherever they happen to be. Florida was the first state to pass a stand-your-ground law in 2005, but now more than 30 states have them. Critics say the number of justifiable homicides in Florida has tripled since the law was passed; defenders point to a 23 percent drop in the violent crime rate.

In any case, there are now just as many opportunities for good guys to carry guns as there are for bad guys, which raises its own set of problems. Even though it may be legal for good guys to kill or injure someone in self-defense, they can still get into big trouble, both legally and financially. George Zimmerman, who was acquitted of shooting the unarmed Trayvon Martin in self-defense, was on the hook for an estimated \$2.5 million in legal fees, according to the *New York Daily News*. Only part of that was covered by donations; reports are unclear about how he plans to pay off the rest.

And there’s no mention of Zimmerman having any insurance. Even if he had a traditional liability policy, it would cover only accidental harm caused by firearms and exclude deliberate acts, no matter how lawful. And even if the policy includes acts of self-defense, proving it, as Zimmerman found out, can be time-consuming and costly.

It’s not clear whether Zimmerman was a member of the National Rifle Association (NRA). If so, he could have had access to a range of policies the NRA offers through an affiliate, Lockton Affinity, LLC, which is underwritten by Lloyds of London and purportedly the largest independently owned insurance brokerage in the world. The policies cover criminal legal costs of up to \$100,000 and up to \$1 million in civil and other legal costs, depending on the premium. One drawback is that the criminal legal costs are covered only after acquittal.

The United States Concealed Carry Association (USCCA) also offers optional insurance coverage to its members through a prepaid policy called the Self-Defense SHIELD. The USCCA itself is the insured, but, for an additional fee, it will designate members as policy “beneficiaries” who receive the benefits if they get in trouble. There are no individual underwriting requirements. The maximum limits for civil liability range from \$250,000 for the Silver plan to \$1 million for the Platinum Plus plan. USCCA members who legally own a gun (convicted felons are out of luck) can also receive reimbursement for criminal defense, an immediate criminal defense retainer of up to \$10,000, bail funding for the same amount, and compensation of up to \$500 a day for however long they



**Workplace violence insurance isn't intended to prevent or even curtail gun violence; it applies in cases where no guns are used. But with limits of between \$1 million and \$5 million, it can be a considerable expense for a business.**

have to spend in court.

Hiring an armed security firm to protect you or your business can also carry unintended consequences. The Brownyard Group is a firm that specializes in insurance for firms that employ security guards.

"There is little evidence any organization can prevent mass shootings by hiring security officers who carry firearms," writes company president Torrence Brownyard in an article in *Security Magazine*. "A single armed officer in a school is unlikely to prevent an armed person with malicious intent from causing harm. For insurers, this means the risks of armed officers are difficult to justify in most settings, and they charge higher rates for security officer firms that employ armed officers."

While insurers recognize that armed guards may be needed in banks and federal buildings, he says, putting them in retail stores, schools and restaurants increases, rather than decreases, the risk of deadly violence.

### **Workplace Violence Insurance**

On Sept. 16, 2013, a Navy contractor named Aaron Alexis walked into a building at the Washington Navy Yard in the District of Columbia, shot 12 people dead, and injured three others before shooting himself. On May 14, 2014, Vladimir Baptiste, a mentally disturbed man who claimed he was God, drove a stolen pickup truck into the lobby of the ABC network affiliate in Baltimore. Though he was armed with nothing more lethal than a golf club (and, of course, a pickup truck), he wandered the building for five hours before police arrested him.

Although one incident was lethal and one was not, both happened at the workplace and each left a wake of destruction, both physical and psychical, with related attendant costs. The Federal Bureau of Investigation (FBI) estimates that workplace violence, much of it involving firearms, costs the American workforce \$36 billion per year.

Workplace violence insurance coverage protects against the expenses a company can face resulting from those incidents of workplace violence. It is designed to get an organization back on its feet, up and running as soon as possible.

Coverage includes health care expenses, counseling, the cost of hiring independent security consultants and public relations experts, as well as the payment of death benefits and business interruption expenses. It does not cover the legal expenses of being sued by victims' loved ones.

"Workplace violence insurers assess the exposure from two aspects," says Greg Bangs, product manager for workplace violence expense insurance with the Chubb Group. "One, what's the

specific nature of the business or organization? Does it attract more threats than other businesses? Does it operate 24 hours? Does it serve alcohol? Is it a high-stress environment? Is it in the process of conducting layoffs or restructuring? Insurers also look at controls that are already in place. Does the company have an employee assistance program, for example? How does it handle layoffs? Does it have a progressive discipline policy that might lessen the shock of a firing?"

Workplace violence insurance isn't intended to prevent or even curtail gun violence; it applies in cases where no guns are used. But with limits of between \$1 million and \$5 million, it can be a considerable expense for a business. Though Bangs won't say how many policies Chubb has sold, he does say the number of these policies in the market is increasing, particularly with the prevalence of 24/7 media coverage. A possible consequence of this, speculates one surplus lines actuary, is that as the risk keeps increasing, and coverage becomes more and more expensive, economic arguments may become more vocal. Whether those arguments would ever carry more weight than the moral or emotional ones (which haven't carried much impact so far) is anybody's guess.

"It's very difficult to deliver an insurance solution to the problem of gun violence," says James Lynch, chief actuary at the Insurance Information Institute in New York. "Most of the considerable costs of handgun violence reside outside of the insurance world, and it would be difficult, if not impossible, to bring them into it." ●

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*Steven Sullivan is a freelance writer and editor in Baltimore, Maryland.*

## CAS Research Report Questions Frequently Cited Automated Vehicle Statistic BY KATE NISWANDER

Automated vehicles face a myriad of risks, according to a new report by the Casualty Actuarial Society's Automated Vehicles Task Force (CAS AVTF) that interprets data from the National Highway Transportation Safety Administration (NHTSA) 2008 National Motor Vehicle Crash Causation Survey (NMVCCS).

The NMVCCS is the most recent source of the statistic that approximately 90% of accidents are caused by human error, which many publications have cited to quantify the potential for automated vehicles to eliminate such accidents.

According to the CAS report, almost half of all accidents (49%) in the NMVCCS had a technological, infrastructural or behavioral factor that could have limited or eliminated an automated

to society.

The CAS AVTF is working to engage the insurance industry and to provide a deeper understanding of the risks associated with automated vehicle technology. The task force is composed of CAS members who offer their expertise in auto, liability and cyber risk insurance, in predictive modeling, and in risk management.

"Automated vehicles have the potential to make transportation safer, cheaper, faster and greener; however, this result is not guaranteed. As the technology reduces and eliminates some risks, other risks will be introduced," says Michael Stienstra, FCAS, chair of the CAS Automated Vehicles Task Force. "A clear benchmark improves policymakers' ability to support the technology's development. For example, the costs of

requiring a driver training program or designating automated vehicle lanes can be weighed directly against the accidents these actions are expected to eliminate."



vehicle's potential to prevent the accident. This new benchmark illustrates the broad array of risks that need to be addressed before the technology can reach its potential. It also demonstrates how a robust, granular dataset can be used to quantify risk, to determine appropriate risk management strategies, and, ultimately, to compare the cost of those strategies to their potential value

The full report, "Restating the National Highway Transportation Safety Administration's National Motor Vehicle Crash Causation Survey for Automated Vehicles," is published in the *CAS E-Forum* Fall 2014, Volume 1. ●

*Kate Niswander is marketing and communications manager for the CAS.*



# SAVE THE DATE

MARCH 9–11, 2015  
INTERCONTINENTAL  
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EXPLORATIONS BY JAMES GUSZCZA

## Big Data—Hubris or the Potential to Transform Everything?

*“The term itself is vague, but it is getting at something that is real...Big Data is a tagline for a process that has the potential to transform everything.”—Jon Kleinberg, Cornell University*

Big data looms large. For years, we have been told that “data is the new oil”; it’s a management revolution; it’s the next frontier for innovation, competition and productivity. An influential *Wired* magazine article even declared that big data marks the end of the scientific method as we know it! The claims range from the usefully provocative to the manifestly absurd, leaving business leaders, actuaries and data scientists the task of separating the conceptual signal from the marketing noise.

It is easy to see why the messages have gained traction: Google Translate (the innovation that inspired the *Wired* article mentioned above) employs brute-force analysis of word associations detected in massive stores of data to, if you wish, translate Polish into Portuguese. The Obama reelection campaign made inspired use of both predictive modeling and behavioral nudge tactics to win what has been called “the first big data election.” Netflix built its *House of Cards* on a foundation of big data: they observed that a significant subset of hard-core fans of the actor Kevin Spacey and the director David Fincher were also avid viewers of a certain BBC miniseries called *House of Cards*. So, there really is some signal amidst the rhetorical noise: big data has played a role in putting a dent in the problem of machine translation, helped win a major election and

was used to good effect in choosing the creative team for a celebrated television series. There have been many other examples of data-fueled innovation, and there will surely be many more to come.

But while the term does get at something real, it is suffused with two sorts of ambiguity. Big data is typically defined either as data whose very size causes problems for standard data management and analysis tools; or data marked by “the 3 Vs”: volume, velocity and variety (i.e., encompassing such unstructured data sources as free-form text, photographs or recordings of speech). In addition to being inherently fuzzy, such definitions are pegged to the rapidly moving target of computer storage and processing power. This is not to say that “big data” is meaningless or doesn’t exist, only that the border between what qualifies as “big” is inherently fuzzy and likely to change over time.

The second type of ambiguity is semantic. Particularly in the popular and business press, “big data” is increasingly used as a tagline for such applications of business analytics as human resource analytics, predictive modeling for insurance underwriting or claims triage or medical decision support. This leads some of us to (half seriously) propose a more expansive definition of big data as “whatever doesn’t fit into a spreadsheet.” Though somewhat flip, this actually might be the most useful definition; in

this conception, “big” is less a matter of size than of analytical complexity. Big data calls for more than the sort of manipulations performed by analysts using spreadsheets. It calls for data science. When used in this colloquial sense, “big data” is analogous to “rocket science”: a harmless bit of metaphorical mental shorthand.

Unfortunately, this semantic ambiguity has engendered confusion that can in turn lead to strategic errors. There is little doubt that both data volumes, as well as instances of data-fueled innovation, are set to grow over time. But it is not clear that framing business analytics discussions in terms of data size or big data technology is particularly helpful. Doing so abets the misconception that big data and the requisite hardware are necessary for analytics projects to result in commensurately big value. This is false for epistemological, methodological and strategic reasons. First, data is simply not the same thing as information. For example, recording each outcome of millions of exchangeable coin tosses conveys no more information for predicting the outcome of the next toss than does recording a mere two numbers: the number of tosses and the number of tosses that landed heads. Analogously, transactional credit data and second-by-second snapshots of telematics driving behavior data would presumably be considered big



data sources. But for the purpose of predicting risk-level loss propensities, judiciously crafted predictive variables that summarize large numbers of atomic transactions will typically suffice. The degree to which such data sources are “big” is less interesting than the relevance of the information contained in the derived data features.

A related point is that information is not the same thing as relevant information. For example, millions of tweets from a biased sample might be less useful for a particular inferential task than a small, but judiciously selected, sample of survey responses. Big data and machine-learning discussions tend to focus on mining for patterns in large datasets. But often it is necessary to consider not just the data itself, but the *process that generated the data*. Loss reserving and pricing actuaries who regularly work with data that reflect historical changes in claims handling practices, pricing plans or mixes of business are keenly

aware of this point.

Though fundamental, the point is often neglected even in highly prominent applications. For example, Google Flu Trends made a splash in 2008 with an innovative use of Internet search data to forecast flu outbreaks. But in recent years, the Google algorithm overestimated the number of flu cases by a wide margin. In an article published in *Science* in March 2014, a group of computational social scientists led by David Lazer diagnosed a key problem: Google periodically tweaks its search engine, resulting in changing distributions in search terms. However, the Flu Trends algorithm was apparently not recalibrated to reflect the changes to the data generation process. The Lazer article diagnoses this episode as an instance of “big data hubris...the often implicit assumption that big data are a substitute for, rather than supplement to, traditional data collection and analysis.” The idea of using Google search

data to predict flu outbreaks is certainly ingenious and valuable, but framing the innovation in “big data” terms, with the implicit suggestion that something about the sheer size of the data obviates the need for traditional methodology, is badly misleading.

So, yes, the societal and business trends that the term “big data” points to are both real and important. But as an organizing principle for methodological and strategic discussions, “big data” is of dubious value. Indeed, it abets misconceptions that can lead to serious methodological and strategic errors. I propose that, particularly in the actuarial domain, “behavioral data” would be a more productive organizing principle for that of which we speak. But—saved by the bell—I am out of space. This will be the subject of a future column.

*Editor’s note: For more on big data, see “Too Big To Ignore: When Does Big Data Provide Big Value?” in Deloitte Review 12, 2013.* ●

## CAS Calls for Monographs on Predictive Modeling

The Casualty Actuarial Society, in conjunction with the CAS Monograph Committee and the CAS Syllabus Committee, is pleased to extend a Call for Monographs on the topic of “Predictive Modeling in P&C Insurance Ratemaking and Pricing.” The purpose of this call is to develop a source of literature with emphasis on the educational and professional needs of actuaries to foster better understanding of predictive modeling in P&C ratemaking and pricing and to generate publicly available models and methods.

This topic covers modern pricing methods, including simulation and various kinds of predictive modeling. Monographs in this series can range from compendia of nontraditional pricing techniques in P&C insurance to detailed notes on one or more of the modern pricing methodologies. A list of sample topics can be found on the complete Call for Monographs (<http://www.casact.org/pubs/Monographs-Call.pdf>).

Proposals should be submitted by **December 1, 2014**. Authors of

monographs that are accepted within the proposed timeline may be invited to present their work at the 2016 CAS Ratemaking and Product Management Seminar, currently scheduled for March 14-16, 2016. Authors must submit their work in accordance with the Guidelines for Submission of Monographs published on the CAS Web Site.

Please view the Call for Monographs for complete information on submission policies and deadlines. Questions may be addressed to Donna Royston at [droyston@cas.org](mailto:droyston@cas.org). ●

## A Q&A with Glenn Meyers

**K**ate Niswander recently talked with Glenn Meyers, co-editor of the newly released book, *Predictive Modeling Applications in Actuarial Science*, a two-part series published by Cambridge University Press and co-sponsored by the CAS. Volume One is now available for sale, with Volume Two to arrive in the fall of 2015.

### How did this series come about?

Edward (Jed) Frees initiated the project and he invited Richard Derrig and me to join him as co-editors. Jed is the Hickman-Larson Professor of Actuarial Science at University of Wisconsin-Madison, and Richard Derrig is the president of Opal Consulting and visiting professor of risk, insurance and healthcare management at Temple University. I had been working with Jed on a predictive modeling project at ISO and we had written three joint papers (along with Dave Cummings, newly appointed CAS Vice President-Research and Development) on this project.

### Who is the intended audience for Volume One?

This volume is for actuaries who wish to develop their expertise in statistics and to become familiar with concrete examples of predictive modeling. We hope the book will also address the needs of more seasoned practicing actuaries who would like an overview of advanced statistical topics that are relevant to actuarial practice.

### How did you organize the book?

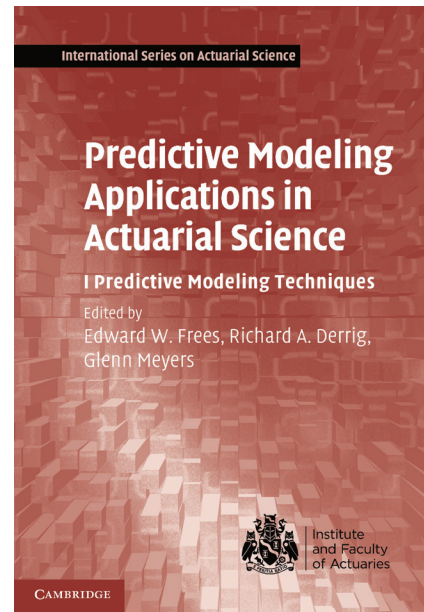
This series is unique because it covers a wide range of advanced statistical topics that are of interest to actuaries. With the distinctive chapter format, actuaries can use the book as a reference to zoom in on the topic of interest. Beginning with reviews of regression and time series methods, this book provides step-by-step introductions to advanced predictive modeling techniques that are particularly useful in actuarial practice. Readers will gain expertise in several statistical topics, including generalized linear modeling, and the analysis of longitudinal, two-part (frequency/severity) and fat-tailed data.

### Which chapters do you find particularly relevant?

As readers of my *Actuarial Review* "Explorations" and "Brainstorms" columns will know, I have been using Markov chain Monte Carlo (MCMC) for a few years now to address a number of actuarial problems. The chapter "Bayesian Computational Methods," by Brian Hartman, is a good introduction to the topic.

### Was there anything about the book that surprised you?

In spite of my long career working on predictive modeling projects, this book covers a lot of predictive modeling topics I did not know—and some I wish I had known when working on these projects.



### What tools and resources are available for those who purchase the book?

The book's website is hosted by the University of Wisconsin and features many free resources for immediate use, including content preview, data (.txt or .csv format) and R code (R format) for each chapter. Members can access the website via the CAS press release for the book at [www.casact.org](http://www.casact.org).

### Who worked with you on the book?

Several CAS members wrote chapters, including Gary Dean, Louise Francis and Jim Guszcza. Many CAS members also served as reviewers, including John Baldan, Lee Bowron, Dave Clark, Marc-André Desrosiers, Mario DiCaro, Rob Erhardt, Luyang Fu, Mark Goldburd, Anand Khare, Dan Tevet and Ben Walker.

**What can CAS members take away from this book?**

My advice to CAS members is to look closely at the table of contents and read through at least the introduction to each chapter to get a sense of the kind of problems that are being addressed. Then as you do your daily work in predictive modeling, dig deeper into the relevant chapters as needed.

**What topics will we see in Volume Two?**

In Volume One, my co-editors and I

selected the chapter topics and recruited the authors with expertise in these topics. We also enlisted at least two experienced actuarial reviewers, including many CAS members, for each chapter. In Volume Two we approached various actuaries who are actively working in predictive modeling and asked them to write a chapter on one of their projects. Volume Two should be an interesting and expansive view of current practices in predictive modeling.

\* \* \*

For more information and to order

the book, please visit <http://www.casact.org/PredictiveModelingBook>. Proceeds from sales of this series will go to the Actuarial Foundation, a widely respected charitable organization that promotes actuarial scholarship, as well as its Canadian counterpart, the Actuarial Foundation of Canada. ●

*Glenn Meyers, FCAS, MAAA, CERA, and Ph.D., retired from ISO after a 37 year career as an actuary.*

*Ms. Niswander joined the CAS office in 2014.*

**Dornheim and Brazauskas Win 2013 *Variance* Prize** BY DONNA ROYSTON

The *Variance* Prize for papers published in *Variance* volume 7 has been awarded to Harald Dornheim and Vytautas Brazauskas for their paper “Case Studies Using Credibility and Corrected Adaptively Truncated Likelihood Methods.” The winning paper presents a new likelihood-based approach for robust-efficient fitting of mixed linear models.

The *Variance* Prize honors original thinking and research in property-casualty actuarial science and is awarded to the author or authors of the best paper published in each volume year. To be eligible, a paper must show original research and the solution of advanced insurance problems.

The judges said: “The new approach possesses favorable large- and small-sample properties, yielding potentially more accurate premiums when extreme outcomes are present in the data. The authors explore and demonstrate the application of these methods to pricing in several areas, including property-

casualty insurance, health care, and real estate risks.”

Harald Dornheim, ASA, CERA, completed his Ph.D. in mathematical statistics at the University of Wisconsin-Milwaukee on the topic of robust-efficient fitting of mixed linear models for risk pricing in insurance. He is currently employed as actuarial consultant at KPMG in Zurich. Prior to that, he worked as actuary for PwC and Deloitte. He has expertise in valuation and economic capital modeling, MCEV, internal models (Solvency II, Swiss Solvency Test), due diligence, and audit in (non-) life and health. Dr. Dornheim is a Fellow of the German (DAV) and Swiss (SAV) Actuarial Association and recently qualified for the FRM certification.

Vytautas Brazauskas, Ph.D., ASA, is a professor in the department of mathematical sciences at the University of Wisconsin-Milwaukee.



Vytautas Brazauskas



Harald Dornheim

kee. He is an Associate of the Society of Actuaries, an Academic Correspondent of the Casualty Actuarial Society, a member of the American Statistical Association and the American Risk and Insurance Association, and has served as president of the Milwaukee Chapter of the American Statistical Association. His areas of expertise are actuarial science, quantitative risk management and robust statistics.

The winning paper is published in *Variance* volume 7, number 2. ●

*Donna Royston is publications production coordinator for the CAS.*



## IN MY OPINION BY C. K. "STAN" KHURY

## Can We Talk?

Once in a while it becomes necessary to speak plainly and unambiguously. Can we talk? The SOA has decided to be hostile to the CAS and damaging to the actuarial profession.

For at least 40 years, the CAS endured numerous hostile takeover attempts by the SOA. Some attempts were overt, some covert. Most were camouflaged in benign language—such as the euphemistic “strengthening the actuarial profession” project. These attempts were uniformly unsuccessful for the single reason that none of the efforts could demonstrate any net positive value for members of the CAS or, more importantly, their clients and the public at large. The true purpose seemed to be one of benefitting the SOA in its attempt to survive and remain relevant in a deteriorating market for life and pension actuaries. At one point these efforts became so clearly desperate that they were parodied on these pages in the May 1997 issue of the *Actuarial Review*, under the title “How to Catch a Wild Hog.”<sup>1</sup>

The latest iteration of this quest kicked off in early 2012, when the SOA announced its intention to expand its portfolio to include general insurance (GI) with the aim of becoming the global leader in all actuarial practice areas. Concurrently, the SOA (1) conducted a fire sale, for a limited time only, by offering its FSA and ASA designations to CAS members at deeply discounted dues and

soon after (2) unilaterally terminated the long-standing partnership with the CAS for the joint administration of the preliminary exams. It is difficult to mistake these heavy-handed actions for anything other than outright coercion, in an attempt at a hostile takeover of the CAS.

Nearly three years later, very few members of the CAS have accepted the SOA offer to add the SOA designation to their business cards. And those who did so retained their CAS affiliation. A curious and unintended consequence of the SOA actions is that during this same period, more than 20 CAS members who had dual memberships resigned their SOA affiliations, presumably in

**These attempts were uniformly unsuccessful for the single reason that none of the efforts could demonstrate any net positive value for members of the CAS or, more importantly, their clients and the public at large.**

protest over the tactics of the SOA. These outcomes surely represent a huge disappointment for the SOA architects of this adventure. Moreover, these SOA actions, coupled with some other contemporaneous hostile actions aimed at the American Academy of Actuaries, contributed mightily to straining the deep, historical, and collegial relationships among the North American actuarial organizations.

Not yet convinced by the dem-

onstrated failure of this adventure, in September 2014 the SOA renewed its offer to grant the SOA designation to CAS members. In a nutshell, the invitation contained the same old hash of arguments, still not offering any net positive value to CAS members or their clients. The SOA arguments make for truly thin gruel, easily debunked. In order of appearance in the SOA invitation:

1. *The SOA is well positioned to build the actuarial profession globally (especially in “developing nations”).* This is an organizational goal and does precisely nothing for the individual actuary or his client. On the other hand, the CAS has been

cooperating with all international actuarial organizations who seek to build their GI capabilities, as a partner, and not as a hegemon seeking global dominance.

2. *At SOA, an actuary can gain career flexibility by being able to move from one practice area to another without replacing [sic] credentials.* This is misleading and diminishes the importance of qualification standards. The SOA fails to mention

<sup>1</sup> <http://www.casact.org/newsletter/index.cfm?fa=viewart&id=4841>

the requirement to meet actuarial qualification standards in order to be able to practice in another area. Instead, the SOA statement implies that this flexibility accrues to a casualty actuary simply by choosing to affiliate with the SOA if he or she wanted to practice in life insurance. It doesn't. This value is illusory. Plus, the growth career opportunities are in the GI field, not the life and pension fields. While the authors of the SOA email see opportunities for their members to represent themselves as casualty actuaries with a minimum of additional qualification, they might have overlooked the Code of Conduct and the Qualification Standards.

3. *A CAS member can be part of the largest professional actuarial society in the world.* Interesting, but useless, unsupported advertising hype. This argument is reminiscent of the Mongolian sailor bragging that he lives on the largest continent in the world—a boast of little consequence since Mongolia is landlocked and sailing is by no means a valued occupation there. No value whatsoever accrues to the casualty actuary or his client by virtue of size. Instead, in essence, the SOA is inviting casualty actuaries to give up all the demonstrated benefits of belonging to the largest organization that is solely focused on their specialty.
4. *A casualty actuary can participate to help grow the GI practice across the world.* The CAS is already doing that, in partnership with other actuarial groups around the world. Moreover, it is unclear how a society of life and pension actuaries has

any ability to grow the GI practice across the world. A cynic might read this point as inviting the casualty actuary to “come, join us; help us bury the CAS.”

5. *The SOA offers a set of examinations in GI.* The most interesting, and unstated, aspect of this argument is that the significant subject matter being touted by the SOA was written, for pay, by a couple of cross-over members of the CAS. The SOA has neither relevance nor qualification to credential GI actuaries with any assurance to the public. This is precisely why the Code of Conduct and the Qualification Standards exist: to prevent abuses such as those that would result from an SOA takeover.
6. *The SOA is **beginning** to develop professional development opportunities in GI* [emphasis added]. This argument underscores just how bereft the SOA cupboard is of GI subject matter. Aside from the texts the SOA paid for, mentioned above, and a handful of articles in the *North American Actuarial Journal*, the GI literature cupboard of the SOA is essentially empty. Why would any member of the CAS go to the SOA professional development programs when he or she already has access to the best and broadest spectrum of professional education opportunities in this field? This condition casts even more doubt on the legitimacy of the SOA's claim to offer GI actuarial credentials. It is hard to believe, but this is it. Results to date indicate that members of the CAS are not buying the value proposition offered by the SOA; they see through the gauzy and vacuous argu-

ments. And the value proposition gets even worse when one considers that one who accepts the SOA offer has to pay two sets of dues for no good reason. Also, actuarial bulletin boards indicate that even members of the SOA see these moves not only as antithetical to the overall health of the actuarial profession, but also a waste of critical financial resources the SOA derives from member dues and their contributions.

The unfortunate thing is that this conflict is not necessary. Members of the SOA who want to practice in GI can simply take the necessary exams of the CAS. In the alternative, the SOA could seek out a mutual cooperation agreement with the CAS to facilitate all the things the SOA is trying to do without any of this acrimony and aggression. But then again, the most obvious solutions are not always obvious when hegemony is the goal.

The CAS is healthy, strong, and vibrant as it celebrates its Centennial. It is forging ahead into its second century with a great deal of energy and enthusiasm, supported by an enormously active and committed membership. The CAS community is incomparable. The CAS members not only know that, but they work hard to be the active life force that supports all aspects of its operations. The CAS has mapped out an ambitious future on many fronts. All of this will assure that the CAS will continue to prosper and improve all the businesses and lives it touches. Upward and forward. ●

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*C. K. “Stan” Khury, FCAS, is a past president of the CAS and editor emeritus of the Actuarial Review. The opinion presented here is his own and not necessarily that of the CAS, its staff or leadership.*

## Another View on Health Care Reform and Medical Malpractice

In Jim Lynch's article, "How Will Health Reform Challenge Medical Malpractice?" (*Actuarial Review* July/August 2014), we are told that an increase in the number of people with insurance is expected to result in an increase in medical malpractice claims. In other words, more doctor visits and a higher hospital census mean more exposures, which in turn mean more claims. You have probably heard this prediction before, and it sounds reasonable. However, this prediction of increased claims due to the Affordable Care Act (ACA) may be incorrect. Medical malpractice claims are not caused by higher census and outpatient visits—they are caused by bad medical outcomes.

When we talk about medical malpractice claims, we are talking about (a) obstetrics claims and (b) all the other claims. The jumbo claims are usually the obstetrics claims—the "bad baby claims" involving a neurologically impaired infant. Let's therefore talk about babies and pregnancies.

Some years ago, when my wife and her friends were sharing pregnancy stories, I remember one in particular. A friend of my wife had gone to the obstetrician for an initial visit, and everything went just fine. She really liked the doctor. At the end of the visit, the doctor said, "You do need to make a decision. You can decide to stop smoking for the duration of your pregnancy. In that case, you should make your next appointment at the front desk. Or you can decide to continue smoking. In that case, you

will need to find another doctor." She stopped smoking.

Now consider a population of two pregnant women in the old days, before the ACA. One has insurance and the other doesn't. The woman with insurance sees the doctor 12 times during her pregnancy. She is given the stop-smoking ultimatum, she takes pre-natal vitamins, her blood pressure and glucose levels are monitored, and so on. At the end of her pregnancy, she spends two days in the hospital. The other woman who has no insurance shows up at the emergency room when her contractions are three minutes apart and spends two days in the hospital. The total exposure is 12 outpatient visits and four hospital days. (Note that the hospital is required by law to treat the woman without insurance who shows up in the emergency room.)

Now consider a population of two pregnant women after the ACA. Both now have insurance, both go to an obstetrician and are given the stop-smoking ultimatum, and so on. The total exposure is now 24 outpatient visits and four hospital days. These considerations would make for a good exam question:

You are the pricing actuary for a medical malpractice insurer and are asked to provide a single price for malpractice insurance for two hospitals and their affiliated obstetricians. This insurance will cover obstetrics-related malpractice claims for newborn babies and their mothers. The first

hospital has a patient population similar to the pre-ACA scenario described above (six outpatient visits and two hospital days per mother). The second hospital has a patient population similar to the post-ACA scenario described above (12 outpatient visits and two hospital days per mother)....

I'm not going to finish this hypothetical question because I think the readers will agree that the first hospital—with the lower "exposure" level—is going to have a higher level of bad medical outcomes than the second hospital—with the higher "exposure" level.

There's a second article in the July/August 2014 *AR*, "More on the Actuarial Implications of the Affordable Care Act" by Rob Lieberthal, which is also pertinent to this discussion. Lieberthal reminds us that with a new program such as the ACA, there may be multiple scenarios that could be reasonable.

The scenario that is often mentioned—the ACA will lead to more patient visits which in turn will lead to more medical malpractice claims—has some merit. However, I think my alternate scenario—the ACA will lead to better medical care which in turn will lead to a reduction in bad medical outcomes which in turn will lead to fewer medical malpractice claims—needs to be considered as well. ●

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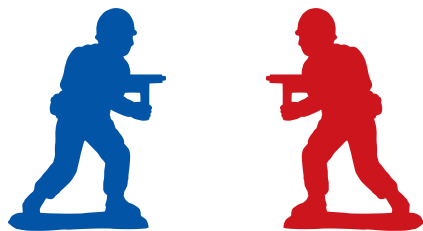
*John Pierce, FCAS, is president of John Pierce Consulting Actuary in Park Ridge, Illinois.*



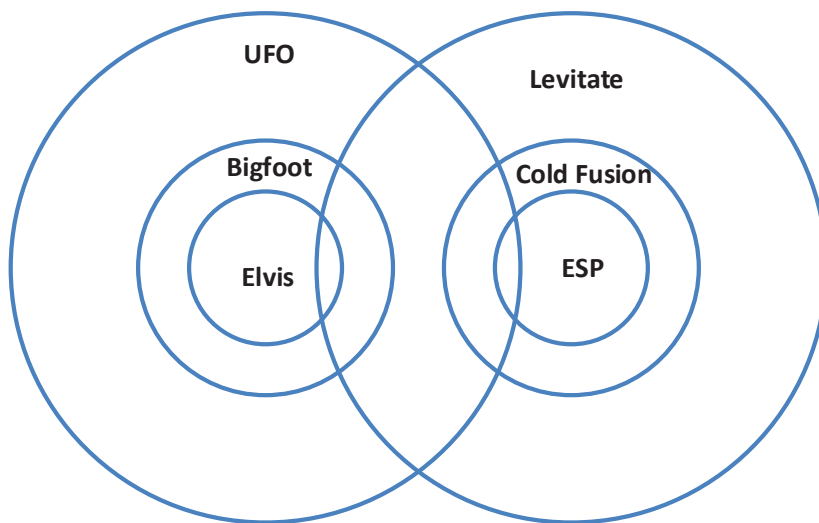
IT'S A PUZZLEMENT BY JON EVANS

# War of Attrition

The Blue Army and the Red Army commence fighting and continue, without reinforcements or replacements, until one side is completely annihilated. At any given instant after fighting begins the deterministic and continuous rate at which members of one army are "eliminated" is equal to the other army's "firepower constant," a positive number, times the surviving size of the other army at that time. For example, if the Red Army's firepower constant is 0.0001 per second and the size of the Red Army three hours after fighting began is 800 members, then 0.08 members of the Blue Army are eliminated per second at that time. As it happens, the Blue Army wins while losing only 15% of its initial size. That is to say, 85% of the Blue Army survives and 0% of the Red Army survives. What would the outcome have been if the firepower constant of the Red Army had been tripled? What would the outcome have been if the initial size of the Red Army had been tripled?



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



### Paranormal Logic

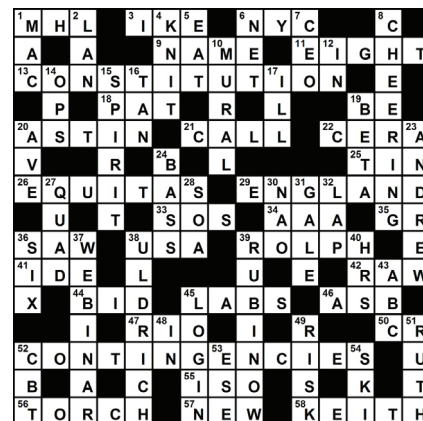
This puzzle, which appeared in the July/August issue, listed six logical constraints on the existence of people who might have been abducted by a UFO, seen Bigfoot, seen Elvis last year, and might be able to levitate, produce cold fusion, and/or have ESP. The best way to see all possible types of people who might exist under these constraints is through the following Venn diagram representation of the constraints, constructed with some assistance from John Robertson.

The first question was whether it is possible that there are people who have been abducted by a UFO and can levitate but have not seen Bigfoot and cannot produce cold fusion. Yes, clearly there is an area for such people in the diagram. The second question was could anyone who has seen Bigfoot produce cold fusion. No, as there is no

such area in the diagram.

Solutions were submitted by Bob Conger, Peter DeVries, Mario DiCaro, Stephanie Magnuson Jackson, John Jansen, Hana Jin, Jim Muza, Brad Rosin, and Dan Schobel. ●

### Solution to "Celebrate Good Times! A Centennial Puzzle," AR September/October 2014.



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