



Share the Road

By Craig DeAlmeida



Editor’s note: We are pleased to feature another winner of the 2019 Disruptions to the Actuarial Profession Contest. We are proud to showcase Society of Actuaries (SOA) members’ ideas about the future of the profession and how future actuaries can adapt to the disruptor. The winners were selected based on materiality, originality, practical significance and overall quality. Third place was awarded to Craig DeAlmeida and his essay entry titled “Share the Road.” (Statements of fact and opinions expressed herein are those of the individual authors and are not necessarily those of the Society of Actuaries or the respective authors’ employers.)

“Grandpa, you said you were an actuary. ... What happened to them?”

“When they insisted, ‘This is my lane,’ they found they had no lane.”

Last year, after yet another horrific mass shooting in the United States and reaction to it from the health care community, the National Rifle Association admonished “self-important anti-gun” doctors to “stay in your lane.” Doctors

responded strongly, establishing the meme of “this is my lane” to lobby against restrictions on gun-related medical research in my country and document the extreme impact guns have on daily practice in their profession.

When I wear my Society of Actuaries (SOA) shirt and consequently need to explain what I do to curious acquaintances, I often state that we actuaries are like the doctors of a hospital, but we serve insurance and other risk-enabled firms. Doctors are not necessarily the top executives running hospitals, and there are far more other staff with specific roles to fill than there are doctors. But the doctors, after extensive specialized training, possess and deliver on the unique knowledge and skill that is critical for a hospital to exist. By analogy, the unique knowledge and skill we actuaries possess is to put a dollar sign on insurable risk, and risk-enabled firms exist to help individuals, businesses and society as a whole manage insurable risk. But I am now questioning this depiction of our profession.



At the smallest insurance companies, the actuary has a role in almost every business decision being made, but insurance companies rarely remain small—they grow, get bought or (with astonishing rarity) fail. As insurance firms grow, the overextended actuary is given “relief” as other employees take over increasingly granular business functions. Investments gets its own department and dedicated staff, and so does Accounting, Marketing, Product, Underwriting, Corporate Finance and so on. While actuaries may initially have participated in their decisions, as each department grows, it builds its own culture, its own way of working and making decisions, and eventually the actuaries are asked to “stay in your lane.”

Go and determine premiums, rates and benefits. Calculate reserves and capital. Measure actual-to-expected ratios and adjust actuarial assumptions. This is what the actuary’s perceived role can be diminished to. They are all variations on the actuary as “master calculator,” and this view of the actuary has recently opened up the profession to new disruptors, eager to prove that they can perform actuarial calculations faster, cheaper and more accurately than the actuaries can.

Technology and software development companies look at our laborious data gathering and reserve calculations and say to themselves, “This is my lane.” They bring automated, cloud-supported software that can replicate in hours what now takes days, or in minutes what now takes hours. They can relieve the actuary of tedious manual processes to inspect and move data. They can develop worker robots to make the same checks; they can deliver results for approval with additional time to review. And the digitization of the process can produce considerable cost savings—the actuaries can focus on higher-order problems and leave programming and database management to the tech companies. Why should the actuary say no to this?

Data scientists look at our experience studies and how actuaries labor over millions of seriatim records to produce too simple models of incidence, severity and overall behavior, and they say to themselves, “This is my lane.” They bring data wrangling techniques to automatically clean up messy insurance data, removing missing data and adjusting for outliers. They can use every tool in the Swiss army knife of predictive analytics—GLMs, mixed effect models, random forests, gradient boosted machines, etc.—and then they reveal that they have a bigger set of tools in their other pocket—neural networks, natural language processing and so on. Upon backtesting, their appropriately validated models flatten out historical actual-to-expected ratios and convince management of their superior predictive power, and they too can produce cost savings—the actuaries can focus on higher-order problems and leave such prediction making to the data scientists. Why should the actuary say no to this?

The actuary should not say no to these, but the actuary should not say yes and simply yield to these disruptors. While these disruptors have legitimate prowess in what they seek to do, what

As a profession, actuaries will remain most relevant if we become the chief mapmakers and head navigators for the full geography of risk taking.

they and those who hire them may not appreciate until it is too late is the vital knowledge and skill the actuary uniquely brings. And here, my analogy with doctors and other deeply studied professions breaks down. For doctors are distinguished by the depth of their study, knowing more about the human body, the diseases that affect it and how to treat those maladies than anyone else in that hospital, and individual doctors in a hospital setting further distinguish themselves by the depth of that knowledge in various specialties and subspecialties.

Generally speaking, actuaries do not distinguish themselves by the depth of their knowledge, and few parts of our knowledge go beyond what someone else in the insurance company knows. The Investment department knows financial markets better; the Product department knows what distributors can sell; the software developers know information architecture better; the data scientists know the techniques of predictive models better. Indeed, even when we consider our core actuarial knowledge, valuation methodologies and cash flow projection models, others can make a claim to understand these just as well with modest study. These are important concepts, but they are not terribly deep ones.

Instead, actuaries, perhaps more so than any other profession, distinguish ourselves by the breadth of our knowledge. Through our formal education and experiential learning, actuaries can gain sufficient and practical knowledge in how virtually every department of an insurance firm operates and interconnects. It is this networked knowledge that allows us to recognize opportunities and threats no one else can see. Individual actuaries further distinguish themselves not by the depth of their knowledge but by the breadth of that networked knowledge and by how many others trust and respect that actuary’s opinion and advice.

We actuaries should not claim a lane for ourselves—that lane is disappearing, even while we are driving on it. The actuary that tries to defend our calculations as being our rightful, inherited path will soon find it narrowing and have little left to defend. But while disruptors may have a stronger claim on a particular road and can rightfully take it, it is the actuaries who can see the whole map and suggest which roads should be taken, which should be merged and which should be avoided altogether.

No one knows the map—the geography of risk-enabled institutions—like the actuaries. Our technical training and continuing education are deep enough to navigate most of the local neighborhoods and converse easily with residents there. But the breadth of our experience and enterprise-minded approach to problem solving also gives us a bird’s-eye view, seeing the broad patterns and complex interactions that are not easily visible at ground level.

When the actuary sees disruptors like software companies and data scientists coming up the road from previously unseen places, the actuary should welcome them and learn more about where they have come from and where they want to go. We can make room for the newly arrived, helping to connect their specific technical abilities to those of their new neighbors. But these new residents should understand the unique role we actuaries perform. They should seek our advice and guidance when making their own recommendations, as much as they would want us to do likewise, so that we can always see and predict where the risk-enabled firm is going as a whole.

As a profession, actuaries will remain most relevant if we become the chief mapmakers and head navigators for the full geography of risk taking. We can update our knowledge and understanding by traveling with others down their particular roads, but we are valued because our companions trust us to broaden their knowledge and understanding, helping them safely reach their

goal. When accidents occur, we are entrusted to handle them; recognize their true origins, not just their effects; and guide others to solutions that can mitigate future such accidents.

And when the geography of risk taking is permanently altered by environmental changes, actuaries can leverage the trust and respect we have earned and the maps we have built to safely guide our whole business, industry and society to a collectively better place. Our greatest asset as a profession is not our skill as master calculators; it is the trust others have in our holistic set of skills and, more important, in our judgment when applying these skills to solve problems. Trust is only earned by working with others, treating them not as disruptors but as neighbors and enablers.

If we actuaries say, “This is my lane,” we erode trust and our ability to help others. If we say, “Share the road,” we build professional trust—our greatest asset—and can guide others through the complex geography of risk taking. ■



Craig DeAlmeida, FSA, CERA, MAAA, is vice president in Annuities Risk Analytics at Lincoln Financial Group. He can be reached at craig.dealmeida@lfg.com.



COVID-19: Actuarial Risk Management Approach to the Airline Industry

By Justin Serebro

The recent coronavirus pandemic has caused a surge in stock market volatility. Treasury yields are at some of the lowest levels ever, and in one month we have seen the U.S. government spend trillions of dollars to try to keep the U.S. economy afloat. Further, many states have imposed stay-at-home policies, which discourage travel. This has resulted in massive revenue losses to the airline industry. As a result, airlines have been considering massive layoffs. This article suggests that applying economic capital techniques used by actuaries could help mitigate the risk of insolvency that some airlines may now face due to COVID-19. To illustrate this point, I refer to how actuaries use economic capital to manage risk exposures created by insurance products and suggest how this technique could also be used in the airline industry to manage risk.

MODELING CAPITAL

The idea behind capital is to have enough assets to pay for your liabilities. When determining required capital, a company should take into account applicable regulation as well as apply a principles-based approach to assess future scenarios that could be detrimental to the business. Sensitivity testing, in combination with expert judgment, can be used to determine the risk drivers that should be focused on in the scenarios. Once risk drivers are determined, the approaches and techniques used to model the risk drivers should be made with consideration to industry practices and generally accepted statistical, economic, and mathematical theory.

The particular branch of capital that would be most relevant in the current pandemic scenario is economic capital. Economic capital focuses on extreme events. Essentially, a company projects its assets and liabilities over a defined time horizon to

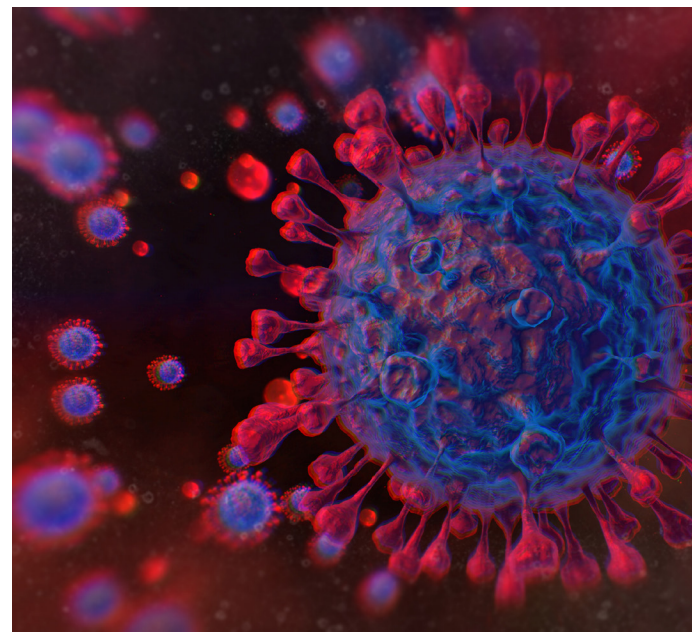
determine the amount of assets needed to meet its projected liability cash flows with a specified level of confidence.

ACTUARIES IN INSURANCE

Actuaries working for insurance companies consider different risks based on the insurance products that their insurer sells. Depending on the insurance product, certain risks will be more or less material than others. For instance, a term life policy is more exposed to mortality risk than equity market risk, since the product pays off when a policyholder dies and the amount of death benefit paid does not depend on equity market movements. Actuaries quantifying economic capital for term life products would certainly want to include scenarios involving a catastrophic mortality scenario wherein excess mortality reaches or exceeds historical data.

OVERVIEW OF THE AIRLINE INDUSTRY

Airlines face the risk that there will not be enough ticket sales revenue to make adequate profit. They have fixed and variable expenses as well as other liabilities that they need to meet by receiving premiums from customers booking flights. Airlines are able to control the supply of flights and services. They can also adjust prices of flights. However, in the case of the COVID-19 pandemic, airlines cannot fill planes because of cancellations and a lack of demand for travel resulting from fear as well as travel



One day, perhaps common risk management techniques such as economic capital could be used in other industries to manage risk exposures.

restrictions. COVID-19 has been decreasing airlines' revenue to the point that some airlines may be considering massive layoffs to avoid insolvency.

APPLYING ECONOMIC CAPITAL TO AIRLINES

Relying on their experience managing risk for an insurance company, an actuary working for an airline might say, "What if there were a shock to demand? How much capital should we hold to be confident that we can meet our liabilities if flights are at X percent capacity for Y number of weeks?" There is no right answer for the values of X and Y . The choice for these variables depends on the company's risk appetite. Airlines can calibrate X and Y based on historical extreme

cases (following 9/11, for example) and/or expert judgment. This kind of analysis is economic capital. Economic capital allows the airline to assess whether it has enough assets to pay for its liabilities. This could potentially save the jobs of hundreds of thousands of employees as well as provide other stakeholders confidence that the airline can survive a crisis like COVID-19.

CONCLUSION

The key goals of insurers and airlines are similar. They both want to maximize profit within their own risk tolerance. Currently, economic capital is a tool being used mainly by insurers and banks. However, it could also be used by airlines to help quantify the risk exposure in extreme scenarios like the current COVID-19 pandemic. One day, perhaps common risk management techniques such as economic capital could be used in other industries to manage risk exposures. ■



Justin Serebro, ASA, is a risk management actuary at Pacific Life. He can be reached at justin.serebro@pacificlife.com.



Become an SOA Section Council Member

Each of the Society of Actuaries (SOA) 20 sections are led by a council of 9–12 elected members. The section council is elected by section members who are typically SOA members. Approximately a third of the section council rolls off each year and new council members are elected.

This is your opportunity to let your voice be heard, make an impact, and help lead your section into the future. To be

considered, all you need to do is fill out the [Expression of Interest form](#) by May 29. If you are elected, you will take office on the last day of the 2020 SOA Annual Meeting & Exhibit, Oct. 28.

Serving on a section council is a unique experience that will give you the opportunity to make an impact in what matters to you. You will be part of a large networking group with other actuaries who, like you, are committed to shaping the future of the actuarial profession. The sections develop a great deal of the continuing education content for the SOA and produce newsletters, podcasts, webcasts, contests and networking events. ■

