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Editorial

GUTS

BY TIMOTHY PARIS

The implementation of a principle-based approach to reserves and capital for life and annuities

The completion of two longevity risk transfer deals worth more than \$30 billion

Multiple reinsurers making competitive quotes for an unexpected and financially viable growth opportunity that stretches their expertise

Public speaking and idea proposals to an audience of international experts

Successfully launching a new business, marketing strategy and risk management technique

This is a list of recent and current activities large and small, some worth billions and others with no monetary value at all. Some involving the world's largest companies and others just a handful of people interacting at a personal level. What unites this disparate list? As a participant or interested observer to each one, I can tell you that they share one remarkable

trait—actuaries with a lot of guts played an essential role.

Are you shocked, or at least skeptical? As actuaries, we are often very good at the role of rational skeptic; it is our heritage. Surely we have all committed to heart the SOA's motto "The work of science is to substitute facts for appearances and demonstrations for impressions" by John Ruskin. As a group, I would posit that we are much less accustomed to thinking of ourselves, or having others think of us, as visionaries, provocateurs, linchpins, or "we are going through that wall" leader types.

Perhaps I am in the minority, but this is my aspiration. I am quite sure that I fall short more often than I would care to admit, but as I stand here, with the benefit of 20 years of actuarial, financial, marketing and leadership roles behind me, I feel that all of these experiences, good and bad, have led me to realize how powerful the role of the actuary can be.


It has little to do with the usual criteria in the career surveys. In terms of safety, comfort, compensation and perks, it's tough to beat

an actuary. The whiff of hot asphalt still transports me back to simpler times when I was paving roads on summer break from college, tan with a full head of hair and without a care in the world. Fun in my mind's eye, but I wouldn't want to make a living doing that now. I'll take the creature comforts of the actuary any day. But it goes way deeper than that.

It is a recognition, mainly in the insurance business but gradually expanding more broadly, that as actuaries we are uniquely qualified by both training and mandate to lead initiatives that require an intelligent assessment of financial risk. There was a time when many actuaries did this rather quietly, perhaps by withholding or granting their sign-off on product pricing, reserves or capital under canned algorithms—leadership through quality control.

Nowadays, safe harbors are receding into history, to the extent that they ever really existed. Adherence to canned processes is no longer a badge of honor, but an admission of blind spots. As one example, the transition to a principle-based approach for reserves and capital for life and annuities

CONTINUED ON PAGE 08



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Timothy Paris

is just such an admission, and the fact that it is such a long process only indicates how massive a change it is. But this is a good thing—actuaries are leading the way into the new era, just as we led in the old one. We are raising the bar for ourselves and our industry, and the same goes for the other activities in the list above.

But we must be warned: Actuaries moving beyond their traditional core of insurance and pensions to broader risk management roles means that we face more competition—with sharp minds and talons. So we had better stay very serious about initial and continuing education, not to perpetuate the status quo or a credential, but for the sake of our own survival.

Relating these trends back to a personal level, we must embrace these opportunities for change and growth, to fully utilize and stretch our capabilities as actuaries and business leaders. Times of financial upheaval and change present tremendous

opportunities for actuaries, if we just look for them and have the guts to tackle them. To borrow from Seth Godin, author of *The Icarus Deception* and many other excellent books: “Pick yourself.” If you’re not willing to pick yourself to do something important, then why should anyone else pick you?

As actuaries, often with a reputation for introspection, it is vitally important that we develop the self-confidence and poise to articulate a value proposition for ourselves and our ideas at a personal level, not just generically as “an actuary,” however strong that label may be. The objective isn’t merely shameless self-promotion or financial gain, but to use our unique set of skills for the greater good. We should continue to seek clarity and technical accuracy, but also to create and be bold, and be our best possible selves.

As a relentless critic of myself and others, I am slowly learning that nothing in this world is perfect. Not me, not you, not the

regulations, not our work, and not our latest and greatest idea. So we need to not sit on the sidelines waiting for the perfect circumstance, but to get in there and make things happen. Pick up the phone. Get on the plane. Have the difficult meeting. Take a stand. Don’t dither. We need to do our best guided by the law and our code, learn from our mistakes, collaborate when it makes sense, and get on with it.

We live in interesting times that are volatile and confusing, but that creates great opportunities in the business of managing risks. As actuaries, we are well equipped for success, but we’ve got to have guts. **A**

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Letter From The President

A GOOD NIGHT'S SLEEP

BY TONYA B. MANNING

“Live one day at a time emphasizing ethics rather than rules.”—Wayne Dyer

As my final letter as president, I first thought I would focus on a list of the organization’s major achievements over the past year. I could explain why each of these achievements is of benefit to not only members, but also exam takers, the profession and society. And, that list would be impressive: our research regarding the expected claims costs under ACA, a report on proposed changes to pension funding rules, the launch of a new track in general insurance, and the expansion of professional development offerings in Asia. But, I changed my mind.

Just as good news does not make for a catchy headline, what is going well with the organization and the profession is not always what members want to hear about. Often it’s the challenges that draw the bigger crowd, start the conversations and act as catalysts for the first steps to action.

I recently spoke with some students, faculty and SOA members when visiting the University of Minnesota. During the Q&A

portion of my presentation, Laurie Derechin, executive director, Minnesota Center for Financial and Actuarial Mathematics, asked me, “What is your main concern with the profession? What keeps you up at night?”

I am a natural worrier (some say I excel in this area), so several things came to mind. But one was at the forefront: maintaining our stature as a profession of the highest integrity.

While on a panel with other actuaries at a recent SOA Student Summit, the group was asked what they liked most about being an actuary. One of the panelists responded, “That what we do really matters and often has significant financial implications for our clients.” When asked what his least favorite aspect was, he replied, “That what we do really matters and often has significant financial implications for our clients, but we are usually providing forecasts, not concrete answers. So, we are not going to get it right. Explaining that upfront, and then later explaining why the results deviated can be a challenge.”

And, that is the life of an actuary. We make forecasts, and then we find out how close we were in our calculations. Based

on SOA research, our profession is highly regarded as being ethical and objective and we have gained the trust of the financial community. Our standards of practice, code of conduct, qualification standards and discipline process are key to this. But, as mentioned in my last letter, that trust is being challenged by the recent push for greater disclosure and transparency. While our standards and regulations outline certain requirements for disclosure, we should also stop and ask: Is that enough? Does the person making a decision based on my information understand enough of the process to apply the results? What’s not being highlighted that may be important? What needs more clarity?

It is often not enough that we comply with disclosure requirements or seek only to answer a client’s specific question. We should also provide information that covers variations, additional scenarios or related events that are pertinent to the client’s request. Here is an example, based on an actual event, but simplified a bit to make a clearer point.

An actuary was assigned to his first pension plan as its enrolled actuary and consultant.



Tonya B. Manning

The CFO asked for the amount of cash that would be required for amending their plan. He calculated the amount, had it checked and peer reviewed, and provided it to the CFO on time, with all of the required documentation regarding the assumptions, data used, etc. What the consultant did not provide was the impact on the company's financial statements due to the

invite senior executives and chief actuaries to meet with us and share their insights on the future of the profession and feedback on SOA initiatives and key deliverables. During this meeting, a professor offered that actuaries could have a strong future in financial analytics. He felt that, not only would we bring strong analytical skills to this area, but also a high level of professionalism.

clients and colleagues understand what we did and how they can use our results. This is how we will remain a strong and relevant profession. And this is how we will penetrate new areas of practice.

The complexity of our work and the amount of data we analyze has grown significantly, along with the range of needs and offerings in the insurance and financial markets. We must strive to keep our practice—and our standards—current with these changes.

amendment. The CFO was not aware that there would be special accounting rules, and therefore a significant loss associated with the amendment, in addition to the cash outlay. So, the consultant did a great job of answering the CFO's question, but he did not answer an equally important question—a question that the client did not ask.

In fact, he saw our professionalism as a key differentiator in this area of practice. To have advice provided by someone that is bound by our code of conduct and standards of practice would be unique and highly valued. I think he is right.

Some may say that this is an example of poor consulting. But, I think it is more than that. It is an example of where we, as a profession, need to answer more broadly the narrow questions we are often asked, and provide better, more encompassing information. We should just not strive to answer the question; we should strive to help find solutions. That is how we will remain trusted, respected advisors.

But, as with every profession, ours is not without its challenges. The complexity of our work and the amount of data we analyze has grown significantly, along with the range of needs and offerings in the insurance and financial markets. We must strive to keep our practice—and our standards—current with these changes. And in the absence of specific standards around new areas of practice, products or services, we need to fill the gaps with highly ethical and professional work. We can't wait for the rules; we need to follow what we think is right.

The SOA recently held one of our semi-annual Employers Council meetings, where we

The goal is to provide good information with sufficient disclosure and transparency so our

As our profession continues to evolve, we will see new areas of practice emerge, bringing with them new methods and models. In many instances, our assignments will precede the development of standards of practice and regulations. When we take on these tasks, we need to make sure we are upholding the level of professionalism that has served our profession so well. And in all areas of practice, we should always strive to inform and prepare the decision maker with all the possibilities, not just the quick answers or the minimum level of disclosure. Give them what they need, not just what they ask for. This is how we will remain trusted and relevant as a profession. This is how our clients will respect us and look to us as authorities in our fields of practice. This is how we all might sleep better at night.

Before I end this letter, I would like to thank everyone for the support you have given me during my year as president. I am truly grateful for the opportunity to meet and work with so many wonderful people—members, candidates, volunteers, SOA staff, business associates and educators. I hope that our paths cross often in the future.

Warm regards! **A**

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COMBO LONG-TERM CARE PRODUCTS:

A SOLUTION TO ADDRESS
MARKET NEEDS





LONG-TERM CARE IN THE UNITED STATES IS A MARKET WHOSE DEMOGRAPHICS DEMAND A PRIVATE SOLUTION FROM THE INSURANCE INDUSTRY, BUT THAT DEMAND IS NOT BEING ADEQUATELY MET NOW. THIS ARTICLE REVIEWS THE RECENT HISTORY OF THE PRIVATE MARKET AND SUGGESTS A NEAR-TERM SOLUTION TO ADDRESS THIS NEED. BY RICH TUCKER

It is common knowledge that the wave of baby boomers has begun hitting retirement age. Regular debates occur about the funding of Social Security and Medicare, but neither address long-term care (LTC), which is too often ignored when evaluating what our seniors will need for a comfortable and respectful retirement. While measurements and estimates vary, it is commonly expected that 50 percent to 70 percent of Americans will need LTC at some point in their lives.

The median annual cost of nursing home care is currently \$84,000 per year and has been growing at 4.3 percent per annum over the last five years.¹ Ancillary cost such as medications can easily bring this cost to over \$100,000 per year, which means that a half-million-dollar nest egg would be wiped out within five years.

MEDICAID AND LTC

There is a widespread belief that Medicare will cover LTC. Too many people find out when it's too late that this is simply not the case—nor is it likely to change. Cost containment discussions for Medicare are common and necessary to maintain its solvency. It is not reasonable to expect that Medicare can be expanded to cover LTC. For those people who have employer-provided retiree health care, this also will not provide for the cost of LTC.

Medicaid thus becomes the provider of last resort for LTC. However, in order to qualify for Medicaid LTC services, the individual must be deemed impoverished, defined in most states as having less than \$2,000

in assets. This is obviously not a respectful outcome for our seniors, yet nearly one-third are projected to need Medicaid assistance at some point in their lives.² The impact of Medicaid expenditures is significant, as 28 percent of Medicaid's total costs in 2011 were for LTC.³ Medicaid is a large proportion of total government spending: 23.6 percent of all spending at the state level and 7.6 percent of all spending at the federal level.⁴ As baby boomers age and longevity continues to rise, these expenditures will only grow—along with a devastating impact on state and federal budgets—unless a private means to address this need is found in the near future.

OTHER GOVERNMENTAL PROGRAMS AND LTC

Quasi-public and private programs have attempted to address the costs of LTC, but with little success. Part of the Affordable Care Act created the Community Living Assistance Services and Support (CLASS)

Act, which was intended to create a national, voluntary LTC program. But it was deemed to be financially unsustainable and was repealed in January 2013.

State Partnership LTC plans have developed over the last 20 years to encourage private ownership of LTC insurance. A typical structure would allow an individual to shield \$1 of assets from the Medicare “impoverishment” rules for each \$1 of private insurance that they buy. Although the majority of new policies automatically qualify for Partnership status, these programs have had a limited impact on increasing the market penetration for LTC policies.

THE INSURANCE INDUSTRY AND LTC

The insurance industry remains the primary source of private solutions to address this growing need, by offering LTC insurance policies. Years ago it was relatively easy to find insurance company providers for LTC; 94 companies offered retail LTC policies in 2002.⁵

Even with this level of offered capacity, market penetration of LTC insurance remains low, hovering at around 10 percent of people over age 65 owning LTC policies.⁶

Over the last few years insurance companies, for the most part, have experienced financial difficulties with their LTC business. The economic fundamentals behind this experience have been the following:

1. Reduced investment earnings caused by historically low interest rates—LTC policies typically have level premiums that are invested by the insurance

More Research

READ “Quantification of the Natural Hedge Characteristics of Combination Life or Annuity Products Linked to Long-Term Care Insurance.” This report highlights the characteristics of combination plans that serve to reduce the risks to insurers issuing these products. Visit www.soa.org/Research and click on Completed Research Studies, then Long-Term Care, for the full report.

Exhibit 1: Percentage Change in Present Value of After-Tax Profits

(Two-Year Accelerated Benefit, Four-Year Extension of Benefit, with Inflation)

	115% of LTC Incidence	115% of Active Life Mortality	Decreased Investment Earnings	90% of Claim Termination Rates	50% of Standard Lapse
STANDALONE LTC	-61%	13%	-39%	-58%	-15%
LIFE AND LTC COMBO	-30%	15%	-15%	-24%	-34%
ANNUITY AND LTC COMBO	-7%	-2%	1%	-7%	12%

company, then held in reserve to pay benefits many years down the road. Interest rates are much lower than anticipated, resulting in insufficient funds to pay for future benefits.

- Higher costs of providing LTC—This is consistent with the broader issue of rapidly rising medical costs in the United States.
- Strong persistency—Insurance companies typically estimate what proportion of policies will ultimately stick around long enough to be eligible for benefits. These estimates were generally too low for LTC policies, and more policies than anticipated are eligible for benefits.

These financial difficulties have caused most insurance companies to raise the premium rates on existing policies by double-digit percentages. Premium increases of 20 percent to 50 percent have been common. Even though the terms of these existing policies allow for premium increases, and state regulators need to approve them, they are unexpected by the policyholders and harm the credibility of the insurance companies. A large number of companies have stopped selling new LTC policies or suppressed their sales volume. By 2011 the number of insurance company providers

for retail LTC policies was down to 20.⁷ Over the past five years, 10 of the top 20 LTC providers have exited the market.⁸ This has dramatically reduced the current availability of standalone LTC policies.

It is indisputable that U.S. consumers do not currently have sufficient private insurance solutions available for their LTC needs. The range of solutions is limited, and the volume of supply is constrained.

LTC COMBOS

Increasing the volume and variety of private insurance solutions requires fundamental risk profile changes. If that is accomplished, additional insurance companies will be motivated to offer products, thereby unleashing product creativity as well as consumer access

to these solutions. LTC Combos, products that combine LTC benefits with either life insurance or annuities, are the most promising product solution for this consumer need.

The Pension Protection Act of 2006 (PPA) contains provisions favorable to LTC Combos. Under the PPA, funds in a life insurance or annuity policy can be used to pay for qualified LTC premiums without creating a taxable event to the policyholder. Prior to PPA, use of these funds would generate a Form 1099 for taxable income. An LTC product is “qualified” if it satisfies several benefit and consumer protection provisions created by HIPAA and codified in IRS Section 7702B(b). In essence, this requires that an individual must be receiving care pursuant to a plan of care prescribed by a

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licensed health care practitioner, and that the individual be certified by a licensed health care practitioner as being “chronically ill” by either being unable to perform at least two activities of daily living (ADLs) or requiring substantial supervision due to a severe cognitive impairment. Because of this regulatory requirement, these have become the standard benefit triggers.

The Society of Actuaries published a study in 2012 titled “Quantification of the Natural Hedge Characteristics of Combination Life or Annuity Products Linked to Long-Term Care Insurance.” This study illustrates how the risk profile of LTC Combos is dramatically lower than that of standalone LTC products.

The SOA study conducted stress tests for the financial results of standalone LTC, Life and LTC Combos, and Annuity and LTC Combos in relation to:

- a. LTC incidence
- b. Active life mortality

- c. Investment earnings
- d. LTC claim termination rates
- e. Persistency

Risk profiles, as measured by profitability reduction in these stress tests, were dramatically lower for Combos than for standalone LTC. A sample from this study is shown in Exhibit 1 on page 14.

In this example, the first column shows that an increase in LTC incidence of 15 percent caused a 61 percent reduction in profitability for Standalone LTC. But the same increase in LTC incidence caused only a 30 percent reduction in profitability for Life and LTC Combos (reducing the sensitivity by half). Annuity and LTC Combos had only a 7 percent reduction in profitability (reducing the sensitivity by 86 percent).

The middle column illustrates the sensitivity to investment earnings. Standalone LTC experienced a 39 percent reduction in

profitability, while Life and LTC Combo experienced only a 15 percent reduction in profitability, and Annuity and LTC Combo actually showed a 1 percent gain in profitability.

Finally, the last column illustrates the sensitivity to lapse. Reducing lapse rates to 50 percent of the standard assumption caused Standalone LTC profitability to decline by 15 percent. Life and LTC Combo did worse, with a 34 percent profitability decline. Annuity and LTC Combo showed a 12 percent gain in profitability.

The favorable policyholder taxation changes under the PPA became effective Jan. 1, 2010. This timing coincides with the ongoing financial challenges being experienced on standalone LTC. Yet sales of Combo LTC products have been muted. While \$2.0 billion of Life & LTC Combo premium was sold in 2011,⁹ 85 percent of this was attributable to Lincoln National’s single-premium *MoneyGuard* product. By its nature, a single-premium product is targeted toward the high-net-worth consumer. Combo LTC products have not yet significantly penetrated the middle market.

THE FUTURE OF LTC BENEFITS

Insurers have proceeded cautiously when deciding whether to offer LTC benefits of any type. Accelerated benefits on life insurance policies are beginning to be commonly offered, where the triggering event is similar to that found in PPA—typically the inability to perform two of six ADLs or severe cognitive impairment. The policyholder is allowed to accelerate the death benefit that would otherwise have been payable, often structured as a percentage of the death benefit on a monthly basis.

This type of accelerated benefit allows an insurer to provide policyholders with access to cash when care is needed. The



Webcasts of Interest

- Nov. 7 – Medicare
- Nov. 21 – Designing a Solution for the Nation's LTC Problems Using the Delphi Method

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risk to be managed is the payment of benefits sooner than would have occurred upon death, and potentially additional benefits in the case where a policy would have otherwise lapsed before death benefits would have been paid.

But these accelerated benefits will not normally satisfy an LTC needs-based analysis of the consumer. Using the figures cited above, a \$100,000 life policy would be exhausted in about a year, and average LTC needs are far longer. Thus, the size of the benefit is often inadequate relative to need, and it cannibalizes the death benefit needed for other purposes. In fact, insurance regulators do not allow an accelerated benefit to be marketed as “long-term care.” Most states regulate accelerated benefits under their version of NAIC Model Regulation 620—Accelerated Benefits Model Regulation, so the product does not fall under state regulations dealing with LTC.

EXTENSIONS OF BENEFITS

To provide more substantive benefits, Combo LTC products—whether combined with life insurance or annuities—will typically add an extension of benefits (EOB) to the accelerated benefit. The consumer can select and pay for varying benefit durations of benefits. This can match up the product benefits with the needs-based analysis plus affordability.

Once an EOB is added, the insurance company is venturing further into LTC risks that must be managed. But as illustrated by the referenced SOA study, the risks are muted relative to standalone LTC. Because of this risk mitigation, insurance companies should be more comfortable offering Combo LTC products to the consumer. In addition, insurance companies may be willing to offer premiums that are less subject to future increases. These premium guarantees could be full or partial, where partial could be expressed as either for a period of time after issue, or by stating the maximum amount by which rates could rise. Any actions along these lines will help to rehabilitate the image of the insurance industry in this market, and to encourage reluctant consumers to consider the purchase of LTC products.

CONCLUSION

For the insurance industry to provide a sufficient range and supply of private LTC financing solutions, Combo LTC products appear to be the primary near-term answer. Combining an acceptable risk profile with sufficient consumer benefits will enable the market dynamics of volume and creativity to address this critical and growing public need. **A**

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END NOTES

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THE **INCREASE IN DRUG COSTS** FOR PRIVATE PLANS IS ABOUT 5.2 PERCENT PER YEAR, WHILE THE ANNUAL GROWTH FOR GOVERNMENT-SPONSORED DRUG PLANS IS 2.2 PERCENT.

REFORMS AND INITIATIVES AROUND LOWER-PRICED GENERIC DRUGS HAVE ALSO BEEN A KEY FOCUS.

AMONG OECD COUNTRIES, CANADA'S PER CAPITA **SPENDING ON DRUG COSTS** IS NOW SECOND ONLY TO THE UNITED STATES.



THE TIME TO THE FUTU



MANY EMPLOYERS HAVE INCLUDED **MANAGED FORMULARIES IN THEIR PLANS** AND ARE PLACING LIMITATIONS ON COVERAGE PROVIDED FOR DRUG MARKUPS.

"BIOLOGIC" OR "SPECIALTY" DRUGS ARE A GROWING AREA OF FOCUS FOR INSURANCE COMPANIES.

PROVINCIAL GOVERNMENTS ARE RECOGNIZING THAT A **KEY WAY TO CONTROL THEIR DRUG COSTS** IS THROUGH CLOSER EXAMINATION OF WHICH DRUGS THEY WILL LIST ON THEIR FORMULARIES.

CANADIAN HEALTH CARE

**THINK ABOUT
RE IS NOW**

AS A PERIOD OF LOWER HEALTH CARE INFLATION COMES TO AN END, CANADIAN GOVERNMENTS AND PRIVATE PAYERS MUST FIND WAYS TO KEEP COVERAGE SUSTAINABLE. BY TAMAR PILAVDJIAN

CANADIANS HAVE WATCHED WITH INTEREST as health care reform unfolds in the United States. In a country that has enjoyed publicly funded health care for all, and employer-sponsored health and drug coverage for many, the pitched congressional and legal battles that have taken place around the Affordable Care Act have fascinated us all.

But as the winds of change sweep through the United States, Canada is facing a different health care cost crisis. Rising drug—and, to a lesser extent, health care—costs are creating long-term challenges for not only governments and employers across Canada but for individuals as well, with no easy answers.

THE CANADIAN LANDSCAPE

Before we begin to examine the current situation in Canada, it's important to consider the background.

Canada's federal and provincial/territorial governments as well as social security initiatives (including workers' compensation) currently fund approximately 70 percent of Canadians' health care costs. The remaining 30 percent is funded by employer-sponsored plans or out of pocket by individuals.

Public health coverage by governments is primarily focused around physician care and hospital-originated services such as surgery. Senior citizens and those on social assistance are also eligible for government-sponsored drug coverage. Although just over half of Canada's population is entitled to this coverage, increases in overall claims and the cost of drugs covered continue to escalate. As a result, the annual outlay by Canada's governments for drug coverage was expected to have reached \$12.3 billion by 2012, compared to \$10.8 billion five years

before. The country's total drug spending for 2012—from both public and private sources—was forecast to hit \$32.9 billion. By comparison, in 2008 Canada's total drug spending was \$27.9 billion.

The table below illustrates the total 2010 health expenditures in Canada for both public and private sectors combined.

The private payers—in the form of individual and employer-sponsored coverage—supplement government-sponsored programs in Canada. A majority of Canadians (60 percent) are covered through an employer-sponsored health plan, and these, too, are feeling increasing cost strains. This has been a consistent trend for many years. Private payer drug costs were expected to reach \$20.6 billion (\$17.1 billion five years ago) in 2012 and represent 62 percent of the country's total drug spending.

A recent report from the Canadian Institute of Health Information shows that, among OECD countries, Canada's per capita spending on drug costs is now second only to the United States. From 1985 to 2012, the report indicates, the country's total drug spending grew an average of 8.9 percent per year (it was in the double digits in the late 1990s and lower in more recent years). Currently the rate of increase in drug costs for private plans is about 5.2 percent per year, while the annual growth for government-sponsored drug plans is 2.2 percent.

Due in part to changing generic drug pricing—more on that later—the situation around escalating drug costs has shown

SPENDING BY CATEGORY	COMBINED SPENDING (%)	PUBLIC SECTOR SHARE (%)	PRIVATE SECTOR SHARE (%)
HOSPITAL	29.1	90.9	9.1
DRUGS	15.9	38.3	61.7
PHYSICIANS	14.2	98.9	1.1
OTHER PROFESSIONALS ¹	10.6	8.1	91.9
OTHER INSTITUTIONS ²	10.4	71.8	28.2
ALL OTHER HEALTH SPENDING ³	19.8	78.8	21.2

¹ Dental, vision care, chiropractor, massage, etc.

² Nursing homes and residential care facilities.

³ Includes administration, public health, research, capital investment, etc.

Source: National Health Expenditure Trend 1975–2012, CIHI.



of total public health care dollars. Current demographic trends suggest that by 2041, 25 percent of the population in Canada will be 65 or older. It is clear this shift will continue to place pressure on government- and employer-sponsored coverage if something is not done soon.

So, what are employers doing to curb rising plan costs? Recent data from the Conference Board of Canada suggest that more than half of Canadian employer-sponsored plans (primarily those that cover public-sector employees or are sponsored by large private corporations) include drug coverage and other benefits for retirees. However, only about half of these plans continue to be open to new retirees.

Reforms and initiatives around lower-priced generic drugs has also been a key focus. In the public realm, provincial governments have moved in recent years to reduce what they pay for generic drugs; Alberta currently has the lowest cap, restricting generic prices to no more than 18 percent of brand equivalents, with other provinces shifting gradually into that

signs of improvement recently. Overall drug spending increased by 4 percent in 2011 and by more than 3 percent in 2012, well below the annual cost increases seen previously. But evidence suggests that the drivers behind this slowdown are fading, paving the way for further rapid cost increases.

Although Canadians aged 65 and older account for 14 percent of the country's population today, they consume 45 percent

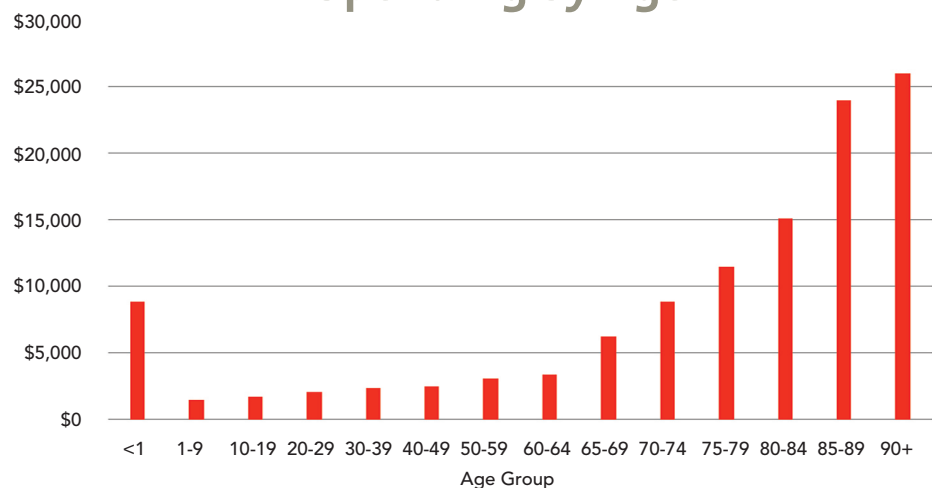
WHAT'S BEING DONE?



As drug costs have increased in recent years, employers offering coverage have struggled to deal with the cost of these benefits, particularly as the population ages and people stay in the workforce longer.

The chart to the right illustrates the cost of health care by age band.

Total per Capita Health Care Spending by Age



Source: National Health Expenditure Trend 1975–2012, CIHI.

PROVINCE	GENERIC PRICES 2013 (CURRENT AT JUNE 2013)
BRITISH COLUMBIA	25% (20% EFFECTIVE APRIL 2014)
ALBERTA	18%
SASKATCHEWAN	35%
ONTARIO	25%
QUEBEC	25%
NOVA SCOTIA	35%
NEW BRUNSWICK	25%
PRINCE EDWARD ISLAND	35%

range, as illustrated in the table above (shown West to East).

In addition, a majority of Canada's provinces joined forces in 2011, leveraging their combined buying power to conduct joint pricing negotiations for seven brand-name drugs. Pricing for an additional 13 products is currently being negotiated. The initiative was expanded in January 2013 to include generic drugs. Since then, participating provinces and territories have successfully negotiated a common reimbursement level for six of the most commonly used generics (atorvastatin, ramipril, venlafaxine, amlodipine, omeprazole and rabeprazole), which together represent approximately 20 percent of the publicly funded spending on generic drugs in Canada; pricing for these treatments has been set at no more than 18 percent of the equivalent branded drug.

Employers are recognizing the value generics can have in controlling plan costs too. A growing number of plan sponsors are implementing mandatory generic substitution clauses into their coverage and/or capping the amount covered for brand-name drugs at the generic cost. Taking these techniques a step further would

be to include provisions for "enhanced generic substitution." This method applies evidence-based adjudication controls: if plan members want to use a brand-name drug, they must submit evidence through a physician's statement that they cannot take the generic drug for medical reasons. Otherwise, the member pays the cost difference between the brand-name drug and the generic out of pocket.

Many employers have also included managed formularies in their plans and are placing limitations on coverage provided for drug markups and pharmacy dispensing fees. Some workplace plans have even introduced tiered reimbursement levels for different drug therapies. These so-called "step therapies" have been introduced in a few plans for certain types of conditions like rheumatoid arthritis.

The large number of popular drugs coming off patent protection in the last few years—and thereafter generic equivalents being produced—has also helped to significantly slow the cost increases seen by both private and public plans. However, this slowdown may be short lived, because more expensive biologics are coming onto the market versus drugs coming off patent.

"Biologic" or "specialty" drugs are a growing area of focus for insurance companies. These medications, used to treat complex and chronic medical conditions, are often administered by injection, infusion, inhalation or orally; they are providing patients with options that weren't available in the past. But these options come at a price, with average costs for these treatments ranging between \$20,000 and \$600,000 or more per patient per year. Although these medications are currently used by fewer than 1 percent of plan members, it is estimated that they account for 10 to 15 percent of total drug claims for private plan sponsors.

With Canadian insurers expecting the costs for these drugs to eventually increase to more than 25 percent of total drug expenditures, management is key. As a result, insurers have put a "special authorization process" in place for biologic drugs. The provider, patient, and his or her medical specialist work together to ensure adherence, which is important given the high cost of these medications.

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But with the cost relief seen from generics leveling off as the end of the provinces' gradual generic price drops nears, and with the number of major drugs coming off patent slowing, private insurers, employers and governments are justifiably worried that health care inflation will creep back up to the high double-digit rates of the late 1990s. With the increasing prevalence of biologic drugs and the impact their high price tags may have on plan costs, employers are looking for more ways to shield themselves. They may have no choice but to shift more costs to individuals.

READY FOR REFORM?



Passing the cost of drug coverage on to individual Canadians seems much easier said than done. It would require a major shift in both plan design and thinking around health coverage in Canada. In the meantime, increasingly, employers are recognizing the link between plan costs and the health of their employees. As a result, there has been a big push in recent years toward ensuring that covered employees remain as healthy as possible.

Employer-led wellness initiatives focused on weight loss, diabetes management and mental health are designed to stem the growth in chronic conditions that often lead to frequent drug claims. Although this is a positive step forward, there is further room for growth around wellness. Currently most employer wellness initiatives are aimed at employees currently in the work force. But those that offer drug coverage to retired members would be wise to consider such initiatives aimed at retirees.

Looking at public coverage, provincial governments are recognizing that a key way to control their drug costs is through closer examination of which drugs they will list on

Research Report on Canadian Health Care System Released

The Society of Actuaries and the Canadian Institute of Actuaries sponsored research on the Canadian health care system. Performed by Stéphane Levert, FSA, FCIA, the study estimated the future costs of the Canadian health care system, assessed the sustainability of the system over a 25-year horizon, and analyzed the implications of the changes to the Canada Health Transfer proposed on Dec. 19, 2011 by the federal government. The report summarizing the findings is now available and indicates that, without significant government intervention, the Canadian health care system in its current form is not sustainable.

Visit www.soa.org/Canadian-Health-Care-Sustainability/ to access the full report titled, "Sustainability of the Canadian Health Care System and Impact of the 2014 Revision to the Canada Health Transfer."

their formularies. A recent report from the Canadian Health Policy Institute indicates that from 2004 to 2011, Health Canada certified 373 new drugs. On average, Canada's provincial plans offered coverage for just 20.5 percent of these drugs by adding them to their formularies, and it took an average of 659 days, or 1.8 years, to add each drug.

In contrast, more than 80 percent of these drugs were covered by at least one private insurer, usually with coverage coming much faster than in the public sphere. Perhaps cost-conscious employers who sponsor drug plans should look to mimic the scrutiny and pace by which provincial plans offer coverage. By covering only those drugs listed under the provincial formularies, employers could realize cost savings on their drug costs upward of 20 percent, depending on the plan design.

There is no magic bullet. While they protect costs around their own public plans, the provinces have begun shifting costs down to the private payers. For example, when arrangements are implemented to administer drugs outside of a hospital

setting, the costs may fall to the employer plan rather than the provincial plan. Although this is a cost-effective strategy to reduce provincial costs, the burden falls on the employer plans as they end up paying for the drugs administered in outpatient clinics. Also, when provinces make their plans income tested, the income-based deductibles are generally covered under the employer plan.

If these offloaded provincial costs are not paid by the employer, either because the employer plan won't cover the costs or because the individual isn't covered by a work plan, the cost burden will fall on the individual.

Historically, Canadians haven't had to pay much out of pocket for health care services. Most Canadians, therefore, are not aware of what these costs are, or how health care expenses may increase as people age. Without a solid understanding of what drugs and health care services cost, most people in this country are not prepared to help their employer keep plan costs down by being better consumers. And most people are



certainly not aware of what they might need to save to cover the growing cost of health care needs throughout their retirement years.

In a broader context, it seems policymakers and politicians aren't ready for rising drug costs, biologics and an aging demographic either. Previous generations of governments set in place legislation that allowed individuals to set aside money on a tax-preferred basis for their retirement, but they did not anticipate the need for significantly more dollars to be available to help fund Canadians' health care needs over their lengthening retirement lifetimes.

A key question being asked now is whether governments will introduce changes that will allow individuals to start saving extra money for their future health care on a tax-preferred basis. Even if this were to happen, do Canadians have the extra money to put aside? Will they have to choose between retirement income and retirement health care?

Canada may be in a period of relative calm as far as drug costs are concerned, but the coming years could be a rude awakening. Governments, employers, insurers and all Canadians need to be willing to have serious

discussions around how to pay for these increasing costs in a sustainable manner.

As seen from our southern neighbors, the move forward will not be easy, nor will it happen overnight. The time to start thinking about the future is now. **A**

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INSURANCE ACCOUNTING

ON ONE FOOT

**READ ABOUT THE DIFFERENCES BETWEEN THE FASB ED
AND THE ED PUBLISHED NEARLY SIMULTANEOUSLY BY THE
INTERNATIONAL ACCOUNTING STANDARDS BOARD.**

BY HENRY SIEGEL AND WILLIAM HINES



In a famous story, the Rabbi Hillel was asked to explain the law while a heathen stood on one foot. Hillel answered, “Do not do unto others as you would not have them do unto you. The rest is commentary. Now go and study.”

We’ve been asked to do almost the same thing: to take 400+ pages of the exposure draft (ED) of the Financial Accounting Standards Board (FASB) and reduce it to four pages or so in this article. At the same time, we want to explain the differences between the FASB ED and the ED published nearly simultaneously by the International Accounting Standards Board (IASB). So here it is, in our best emulation of Hillel:

Basic Principle: Insurance contract liabilities are the present value of future cash flows (PVFC) of the contract. Everything else is implementation guidance. Now go and study.

In truth, that’s the way it started. It remains that way today in concept. The problem has been to deal with the consequences of applying that basic principle to real policies. The rest of this article deals with some of those challenges.

MARGINS

The first problem that arose when actuaries and other financial analysts started to think about the basic principle is that we realized that using current assumptions to calculate the PVFC would result in all expected future profits on the contract being realized immediately on sale. Many people didn’t like that result since it seems to give credit for coverage not yet provided. So it was agreed that a margin was needed to prevent gains on sale. The IASB eventually called theirs *the contractual service margin* (CSM); the FASB called theirs just *the margin*.

At the same time, the European industry was working on Solvency II, and they had a risk margin in their liability calculations. They therefore pushed to have a risk margin in their IFRS reserves so they could use the same structure. The IASB bought this, changing its name to *risk adjustment* and treating it like a cash flow; the FASB did not. Exhibit 1 compares the IASB and FASB approaches.

So far so good; actuaries could certainly calculate how much margin was needed in total, with or without a risk adjustment. Immediately, however, two more problems arose; how to calculate the risk adjustment and how to release the margin into earnings over time. We don’t have nearly enough time in this article to deal with the first issue; the International Actuarial Association is coming out with a monograph of more than 100 pages on the subject. Suffice it to say, there

are several different possible measurements, and which one is best depends on what type of liability you’re calculating.

Releasing the margin is a simpler problem to answer, if not necessarily to do. According to the FASB, you release the margin as you are released from risk. Some define the risk for a life insurance policy as the net amount at risk, while for a nonlife contract it might be the expected claims pattern over the period. There is no specific guidance in the ED for how to do it.

DISCOUNTING

Taking the present value of future cash flows is a basic technique common to all parts of the financial services industry. Everyone thinks they know how to do it, until it becomes time to actually choose a discount rate.

EXHIBIT 1: BASICS OF THE BUILDING BLOCK APPROACH	
FASB	IASB
<p>SINGLE MARGIN</p> <ul style="list-style-type: none"> Removes any profit at inception Released over coverage and claims-handling period Interest accreted on the margin 	<p>CONTRACTUAL SERVICE MARGIN</p> <ul style="list-style-type: none"> Removes any profit at inception Released over coverage period only Interest accreted on the CSM
	<p>RISK ADJUSTMENT</p> <p>To adjust for the effects of uncertainty about the amount and timing of future cash flow</p>
<p>TIME VALUE OF MONEY</p> <p>Discounted using current rates to reflect the time value of money</p>	
<p>EXPECTED FUTURE CASH FLOWS</p> <p>Explicit, unbiased and probability-weighted estimates of future cash outflows less future cash inflows</p>	



Initially people thought that using a market-consistent set of discount rates (risk-free like U.S. government bonds) was the right set of rates. It was quickly noted, however, that life insurance companies don't price on that basis, nor do they manage their money by buying only government bonds. Using risk-free discount rates would result in possible losses at issue for many products.

Actuaries observed that typical risk-free bonds were more liquid than insurance liabilities and that their interest rates were lower than an instrument with less liquidity. Hence, the liquidity adjustment was born. In their first ED, the IASB suggested using the risk-free rate plus a liquidity adjustment as the discount rate. There are only two problems with this: What is the risk-free rate in a country where the government bond is not risk-free, and how do you determine the liquidity adjustment?

Under pressure from the industry and educational efforts from the actuarial profession, the IASB and FASB then agreed that you could use a top-down approach to determining the discount rate. Essentially you take the yield rates on the assets supporting the liability and reduce those yields for expected and unexpected defaults. In theory, as shown in a paper by the Financial Reporting Committee of the American Academy of Actuaries,¹ this should get you close to the risk-free rate plus liquidity adjustment. The advantage of the top-down approach was that the numbers needed for it were more easily and reliably determined.

Now, in all this discussion, there has always been a major communication problem for some people. When discussing "discount rates" some people heard a single rate as

The New GAAP: IASB/FASB Insurance Contracts Exposure Drafts Webcast Recording

CHECK OUT the recording of this recent webcast, sponsored by the SOA Financial Reporting Section, which features a brief overview of where the boards have landed on these long awaited drafts. Experts Tara Hansen, FSA, MAAA; Leonard Reback, FSA, MAAA; and Henry Siegel, FSA, MAAA, discuss the most debated components of the new frameworks. Although convergence of the two standards appears no longer a possibility, the presenters discuss key areas of difference, as well as the overall potential implications of the new standards. Visit SOA.org/presentationarchives to purchase this and other webcast recordings.

is used in current U.S. GAAP or statutory accounting. What was meant, however, is a complete yield curve. This is important because it introduces major complexity into every calculation. Plus, what do you do if you don't have a yield curve that extends as far as the cash flows you're discounting? The IAA is coming out with a monograph on discounting. Like the one on risk adjustments, it's not short.

EXPENSES

Now, so far we haven't talked about how to estimate future cash flows. This has not really been considered a major concern except for one aspect: What do you do about acquisition expenses?

Initially the assumption was you would treat them like in U.S. GAAP except that rather than setting up a separate asset and amortizing it into earnings, you would simply include them in the estimated contract cash flows, thereby immediately reducing the CSM or margin. The IASB agreed with this; the FASB, however, decided that it didn't want to include acquisition expenses in the cash flows but, instead would reduce the margin when acquisition expenses were

paid—essentially the same result, just a different process.

This was not the end of the differences, however. The IASB did not agree with the FASB's principle, just adopted in ASU 2010-26, that only expenses for successful sales could be deferred. This is an example of creating a difference where one was not necessary and, in fact, would have only a minor effect on earnings.

At the same time, the IASB decided that some overhead should be included in the expenses included in the measurement of the insurance contract, whereas the FASB still uses only direct expenses, excluding overhead. The IASB uses language to describe the includable overhead that seems contradictory:

Fixed and variable overheads (such as the costs of accounting, human resources, information technology and support, building depreciation, rent and maintenance and utilities) that are directly attributable to fulfilling the portfolio that contains the insurance contract and that are allocated to each portfolio of insurance contracts using methods that:



(i) are systematic and rational, and are consistently applied to all costs that have similar characteristics; and

(ii) ensure that the costs included in the cash flows that are used to measure insurance contracts do not exceed the costs incurred.

Exactly which expenses qualify is unclear. “Overheads that are directly attributable” seems to be an oxymoron. Some of the examples, such as rent, might make sense; on the other hand, we have difficulty understanding human resources, for

example. The FASB stuck with the definition in current U.S. GAAP, which would not include these overheads.

PREMIUM ALLOCATION APPROACH

While this building blocks approach seemed appropriate for life contracts, for short-term contracts, like most property and casualty (P&C) and group contracts, it seems unnecessarily complicated. Again at the request of the industry and the actuarial profession, the boards agreed to create a second approach, the premium allocation approach (PAA). Essentially, this is identical to the unearned premium approach currently used in U.S. GAAP.

The IASB considers this an approximation to the basic approach and therefore has made it optional. The FASB, on the other hand, considers it a separate measurement model and has made it mandatory for policies of less than one-year duration.

Whether one can use the PAA for policies of longer than one-year duration is not clear but is likely to be allowed if the policy meets certain requirements (e.g., no prefunding of benefits).

PRESENTATION

All of the above are just preliminaries for the two most confusing aspects of the EDs. Both are technically presentation issues. One affects the splitting of total comprehensive income into net income and other comprehensive income (OCI). The other, in fact, affects only the top line and one of the lines in between.

Other Comprehensive Income

As companies considered what would happen to earnings if these proposals had been in place for the past decade or two, it became clear that there would have been substantial volatility in the bottom line. A large reason for this, of course, was that interest rates moved both up and down. Each time that happened, liabilities would move accordingly. Assets would also move, but if a company was not perfectly matched (and who can perfectly match a 50+ year set of cash flows) assets and liabilities would move differently, creating earnings volatility.

Asset movements, particularly for bonds that are typically categorized as available for sale, would be shown in OCI and therefore be “below the line” and not included in net income. Liabilities did not have such an adjustment. This could cause even greater



volatility in earnings. An OCI adjustment was needed for liabilities.

The industry therefore proposed that for net earnings, the discount rates should be locked in at issue of the contract. This would mean that changes in the liability due to changes in interest rates would not flow through net income, which would therefore be less volatile.

Of course, nothing in this project is that simple. Which effects go into OCI? What do you do with cash flows that are sensitive to interest rates such as lapse rates, interest credits or dividends? The IASB and FASB agreed that only the mathematical effect of changing discount rates would go into OCI, and other effects would go directly into earnings.

They also decided that for policies where cash flows directly depend on interest rates, the locked-in interest rates would be unlocked to the current rates, thereby making the OCI adjustment mostly moot. If this confuses you by now, rest assured it's not you. In fact, this is a great simplification of the topic. You'll need to "go study" to get the rest.

Earned Premium

The second major presentation issue concerns top line revenue. For a long time, insurance companies have shown incurred premium on their top line without adjustment except for premiums due and paid in advance. Many indicators (e.g., loss ratios) have been based on that approach, and users have become used to what is in and what is not. They know, for instance, that they need to look in disclosures to see how much of the premium is single premium and how much is new business premium versus renewal premium. These

are simple adjustments and produce usable information. The only exception to this approach was for universal life-type policies under U.S. GAAP where premium is treated as a deposit and only charges to customers are shown as revenue.

The IASB and the FASB decided that this was misleading because the premiums due for most life insurance policies include amounts that prefunded insurance costs that act like deposits. They reasoned that if banks don't show deposits in their top line, why should insurers? In short, the boards wanted to move all types of policies to a FAS 97 UL-type presentation, whether there was an explicit policyholder account or not, so long as there was a surrender benefit. If a policy doesn't have a surrender benefit, no adjustment for a deposit component is necessary.

Once the premium has been adjusted to remove deposit elements, the remaining premium is further adjusted to recognize

it as benefits are provided. For instance, if you have a whole life policy with level due premiums, premiums are adjusted so that they are recognized as claims, and expenses are expected and margins are released. In saying this, of course, we mean claims without any deposit component (i.e., the net amount at risk). Building up the top line from the bottom, we have the following:

$$\text{Revenue} = \text{Margins Released} + \text{Expected Benefits} + \text{Expected Expenses}$$

This is a simple enough statement. Calculating it will require significant systems adjustments for most preparers.

An example of how this might look is shown in the graph below for a whole life contract. The graph compares premium under current U.S. GAAP using FAS 120 with the new proposals. Note the reduction in total premium and the deferral of premium to later durations.

Comparison of Due Premium and Earned Premium for WL Contract

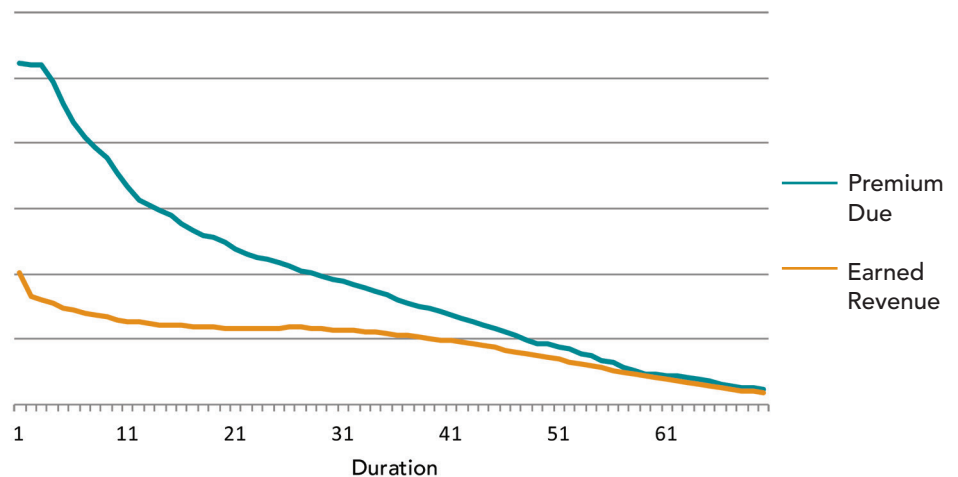




EXHIBIT 2: COMPARISON OF FASB AND IASB POSITIONS

ISSUE	FASB POSITION	IASB POSITION
Assumption changes	Effect of assumption changes goes through income	Effects of assumption changes go through service margin
Margins	One explicit margin	An explicit risk margin and a service margin
Acquisition costs	Only successful costs (same as current GAAP) deferred	All acquisition costs, successful and unsuccessful, deferred
Included expenses	Only direct expenses	Includes certain overheads
Discount rate used for net income	A blended rate can be used for all cash flows	Requires that different discount rates be applied to separate cash flows within a contract depending on their correlation to asset returns

It also is not clear how users will make use of this result. In talking with several, it appears they will ignore it and go to the notes to get the traditional figures.

changing assumptions. The adjusted CSM could be viewed as a measure of the expected remaining profit to be recognized from the contract. The FASB, however, did

There is one more **major concern** with the margins. What happens if a company changes its assumptions for things other than interest rates?

MORE ON MARGINS

There is one more major concern with the margins. What happens if a company changes its assumptions for things other than interest rates? At the urging of the industry, the IASB agreed that the CSM could be used to absorb the effect of such changes and amortize them out over time. This would both eliminate additional sources of volatility in earnings and reduce any temptation to manage earnings by


not agree to unlock the margin so changes in assumption go straight to earnings under their proposal.

As we said in my opening, this is only a brief treatment of the subject. To help understand the differences between the two EDs, both boards included a comparison of their positions in their standards. Of course, they are different! See Exhibit 2 for an abbreviated version.

There are more complications and subtleties in both EDs than there is space for in a short article such as this. To summarize, other than the topics we've dealt with, actuaries most need to be concerned with the cost and complexity of implementing these proposals.

While neither ED is likely to be enacted exactly as proposed, it's nearly certain that both will be implemented eventually with many of the same characteristics. There is a chance FASB will decide not to proceed because of the cost of implementation, but that is unlikely. The IASB almost certainly will proceed because it doesn't have anything in place currently.

As a result of these proposals, actuaries and accountants will have to work even more closely together than previously—which is fine with us because

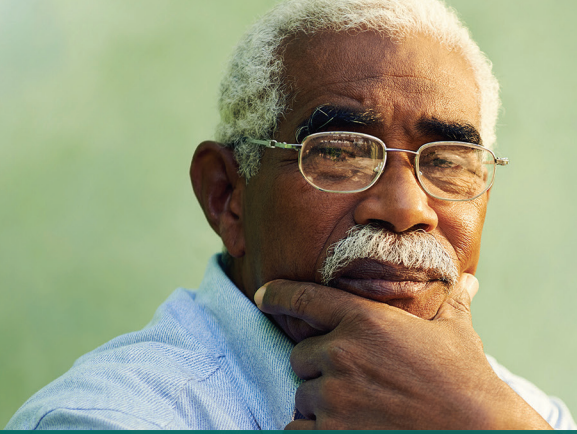
Insurance accounting is too important to be left to the accountants! 

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William Hines, FSA, MAAA, is a consulting actuary at Milliman, Inc. He can be reached at william.hines@milliman.com.

END NOTE

¹ http://www.actuary.org/files/publications/discount_091509.pdf.



LIVING to 100

SOCIETY OF ACTUARIES
INTERNATIONAL SYMPOSIUM

Living to 100 Symposium

Jan. 8-10, 2014

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CPD CONNECTIONS

BY JENNIE MCGINNIS

WITH THE END OF THE YEAR in sight you may now be evaluating your continuing professional development (CPD) achievements for the year and ensuring that you remain in compliance. For many members, meeting attendance is a key way to earn CPD credits—a centralized opportunity to take in a number of sessions about various topics or to develop your skills. Attending meetings has many other benefits, primarily the opportunity to network. While attending a meeting can fulfill some of your CPD

requirements, no single meeting offered by the SOA offers enough credits to completely fulfill them. How can these credits be supplemented? What if you are not able to attend an in-person meeting during the year?

Given that many SOA members face this situation, the solution may be clear. Many members make use of webcasts offered by the SOA and other professional organizations. Others use self-study to keep up to date on the latest regulations and our ever-

changing industries or to review professional matters. There are many other educational opportunities available as well, and there are ways to get even more out of meetings, webcasts and self-study. Here are a few.

Virtual sessions are offered for selected sessions at the Life & Annuity Symposium, Health Meeting, Valuation Actuary Symposium and Annual Meeting (also referred to as the flagship meetings). These virtual sessions are accessed in a similar manner as webcasts and also include live video feed. The selected sessions are typically held around the lunch hour (for those in the Americas region) and are chosen in part based on expected attendance at the live meeting.

Session recordings are available for nearly all flagship meeting sessions (exclusions include those that are more hands-on or interactive) back to 2007. Recordings have also been available for virtual sessions and webcasts since 2010. Audio is recorded and synched to the slide deck or other presentation materials. You may purchase recordings for entire meetings or individual sessions. For those who register for webcasts, subsequent access to the recording is included in the fee. Any meeting session recordings are now free to SOA members one year after the event.

Where do I find it?

GO TO THE SOA'S PROFESSIONAL DEVELOPMENT CALENDAR (www.soa.org/pdcalendar.aspx). It provides access to the variety of offerings outlined in this article.



Registrations for items in the first three categories take place through the website and require an SOA log-in. Podcasts can be listened to online—simply select a series and click play. Alternately, iTunes users can subscribe to the SOA's Podcast Channel, and Android users can listen via the SOA RSS feed via any podcast app.

To get started volunteering with the SOA, complete the volunteer interest form available at <http://www.soa.org/about/volunteer/forms.aspx>.



Jennie McGinnis

CPD TERMINOLOGY REFRESHER	
U.S. Qualification Standard (Section 2: General Qualification Standard)	“Continuing education is ‘ relevant ’ if: (1) it broadens or deepens an actuary’s understanding of one or more aspects of the work an actuary does; (2) the material expands an actuary’s knowledge of practice in related disciplines that bear directly on an actuary’s work; or (3) it facilitates an actuary’s entry into a new area of practice.”
	“‘ Organized activities ’ [are those] that involve interaction with actuaries or other professionals working for different organizations”
Canadian Institute of Actuaries	“Acceptable CPD activities must be relevant at the time they are completed and appropriate to support the member in maintaining his or her level of skill and knowledge as the actuarial profession evolves.”
	“ Structured —Activities planned in advance or where more than one point of view is provided”
Society of Actuaries	“CPD credits are job relevant if they broaden or deepen a member’s knowledge of work and are: (1) required for the member’s current role; (2) in related disciplines that bear directly on the member’s work; or (3) in a new area in which the member contemplates practicing in the future.”
	“ Structured credit is any organized activity or any experience which is derived from an organized activity in which there is an opportunity for interaction among participants.”
<i>Note: the SOA CPD Requirement allows SOA members in the United States to meet the SOA requirement by meeting the provisions of the U.S. Qualification Standard and for SOA members in Canada to meet the SOA requirement by meeting the provisions of the Canadian Institute of Actuaries CPD Requirement.</i>	

credit. Serving on a committee that provides opportunities to stay current (or perhaps ahead of the curve) on industry developments, presenting at a meeting or via webcast, writing an article, and a variety of other roles all offer an opportunity to enhance your actuarial skills.

Perhaps it goes without saying, but regardless of the delivery method used, the learning activity must fulfill the definition of continuing professional development to earn credit. In my experience many actuaries give specific focus in their CPD selections to being able to fulfill the structured credit requirement.

In my opinion, the reason for including the organized credit requirement was the desire to encourage interaction with others to stretch members’ thinking. Therefore, with any of the options listed above there’s an opportunity to go “above and beyond” by interacting with others while learning. Finding others who are interested in a topic allows you to tap into the knowledge of those who are more experienced, or perhaps to be that experienced person for someone else. It is said, after all, that one indication of mastery is the ability to explain a topic well to someone else.

So, how can you connect with others to gain the interactive element?

Naturally, a starting point is your own personal network. In the office, consider reserving time after a webcast or virtual session to delve further into the topic at hand. Start a “paper club” with coworkers or members of your local actuarial club to review recently released research papers, actuarial

A variety of **e-Learning courses** are available to SOA members. While all e-Learning courses used in prequalification education are accessible, additional courses have been created specifically for continuing education purposes. In addition to repurposing prequalification courses (targeting information that’s more useful to a practitioner and significantly decreasing the average amount of time required to complete the course), the SOA has been producing an average of three new professional development courses each year. Beginning this fall members will also have access to a portfolio of e-Learning courses focused on business and communication skills

that has been developed by an external vendor for audiences from the broader industry.

SOA **podcasts** are free to access and can be listened to via the Web and on Apple and Android devices. Episodes are primarily created by sections and have also been developed to highlight changes in the education system. If you’re interested in staying up to date on other activities at the SOA, also be sure to regularly check the SOA’s blog at <http://blog.soa.org>.

Volunteering with the SOA or another related professional organization also offers an opportunity to earn professional development

SOA COMPETENCY FRAMEWORK FOR ACTUARIES

Today's actuary is called upon to bring an increasing number of skills to the profession. The SOA Competency Framework for Actuaries presents a synthesis of the knowledge, skills, behaviors and attributes that contribute to outstanding performance. The forward-looking professional development opportunities provided by the 2013 Valuation Actuary Symposium reflect the full framework. Each session offered is identified by the primary competency it addresses.

The SOA Competency Framework Self-Assessment Tool will help you identify which competencies are important in your present and future work. Complete the assessment and use the results to guide your professional development planning for the coming year.

Get full details on the SOA Competency Framework at SOA.org/competency-framework.



standards, and other relevant articles. When working through an e-Learning course, take advantage of the online discussion group to interact with others currently taking the course. Members also have the opportunity to support candidates through the recently released social learning environment (see Leslie Fausher's "Social Learning with the SOA" article in the February/March 2013 issue of *The Actuary* for more information).

In addition, the SOA and several sections have formed LinkedIn groups to help facilitate networking. These groups can be leveraged to seek out others who have similar interests—you may wish to interact with a group that already exists or post a comment in the SOA's general group and see what develops. Where you find similar interests take advantage of the opportunity

to link up in a more formal fashion, such as becoming a member of sections with posts that strike your interest. More information on LinkedIn and other social media platforms can be found in Kevin Pledge's "Beyond Social Networking" article in the April/May 2013 issue of *The Actuary*.

Whether or not you're able to attend an SOA meeting, plenty of avenues are available for earning CPD credit. And there are ways to take part in live events without even being there. Besides virtual sessions, all flagship meetings can be accessed virtually via the SOA's Event app (currently available for Apple and Android users, with Web versions available for Blackberry and Windows users). The app allows access to schedules, slides, and attendee and presenter information, as well as a live Twitter feed.

No matter how you earn your CPD credits, make the most of your learning by getting connected—whether in person or virtually! **A**

Jennie McGinnis, FSA, CERA, MAAA, is vice president at Swiss Re and chair of the SOA's Professional Development Committee. She can be reached at jennifer_mcginnis@swissre.com.



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Ben Marshall

Section Highlights

THE INTERNATIONAL SECTION

BY BEN MARSHALL

IN 1993 I was the actuarial representative on a small investigative team from my company. We were examining a life insurance operation on-site in Caracas, Venezuela. Our purpose was to review and make recommendations on the merits of an acquisition. Though I didn't recognize it at the time, it was a turning point in my career. As with many North American actuaries of that era, my foundational perspective for analyzing life insurance profitability was the acronym "MILE": mortality, interest, lapses and expenses. Though I was well aware of asset-liability management techniques, until my Venezuelan expedition I still viewed interest as being akin to the other assumptions in an actuarial analysis.

The situation in Caracas opened my eyes to the radically unpredictable role that interest plays in an analysis. Prevailing interest rates in Venezuela at that time were close to 40 percent. I discovered that inflation was rampant, resulting in a negative real return on savings. Inflation has averaged over 26 percent in Venezuela, ranging anywhere from 3 percent to 115 percent each year, for the past 40 years. Interest and currency exchange rates have—not surprisingly—moved in tandem with inflation.

After my Venezuelan assignment, "MILE" no longer worked for me. If that categorization for interest had ever been appropriate, it was as an accident of history rather than as a function of a fundamentally sound economic theory. For the first time, I realized the explicit difference between interest and those other assumptions: that the Law of Large Numbers creates no predictability for a variable for which homogeneity of exposures does not push aggregate outcomes toward the mean. I began to understand how volatility must be recognized and outcomes expressed over ranges and in terms of probabilities.

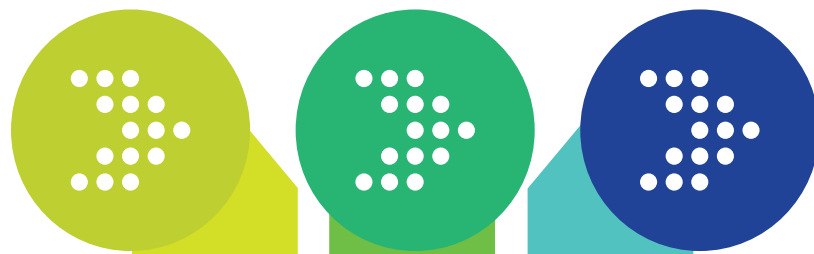
In a similar fashion, my perspective on the role of the International Section of the SOA has changed over my years on the International Section Council. At its inception, the section kept ex-pat actuaries from losing touch with North American developments. In recent years the landscape has changed. International actuarial practice has become cutting edge. International standards such as IFRS, Solvency II and Basel III are regulatory symptoms of a greater reality: the emergence over the past decade—and particularly in the wake of the 2008–2009 U.S.-driven financial crisis—of international thought and practice as a driver of North American actuarial practice.

The International Section has connected international thought leadership to the work of actuaries practicing in North America, while still maintaining its role of providing offshore continuing education and research to ex-pats. The benefits of membership are now driven along a two-way street.

So what's on the horizon for the International Section? Actuarial thought and practice are not the only areas gravitating toward an international focus. Actuarial jobs and membership are expanding beyond North American shores. Key growth areas for candidates are outside the United States and Canada. Concurrently the financial services industry seeks to outsource more jobs and functions. Both the International Section and the SOA must respond to these changes. My challenge to the next generation of SOA leaders is to position themselves—in conjunction with the IAA and other international partners—to help actuaries deal with the vast implications of the global convergence of actuarial roles, education, research, thought and practice. **A**

Ben Marshall, FSA, CERA, MAAA, FCIA, is chief financial officer at Faithlife Financial and is 2013 chairperson of the International Section. He can be contacted at BMarshall@Faithlifefinancial.ca.

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A Look Into ERM

WE MUST LEGITIMATIZE UNCERTAINTY

BY DAVE INGRAM

FOR 20 YEARS the Great Moderation made many of us feel like masters of the universe. Business was not easy, but with a reasonable amount of smart, hard work, it was fairly certain that a well-trained business executive could lead his or her company to success.

But after the twin Internet and housing boom and bust periods, we seem to have slipped into a morass of uncertainty. The *New York Times* used the word “uncertain” 345 times in just one day recently. Selecting a strategy for a firm seems just as uncertain as forecasting almost anything. There was no training and little experience with a prolonged

uncertain environment such as we have been experiencing for several years now.

For the most part, our theories of business and economics acknowledge those booms and busts, but the moderate environment that lasted almost a generation was what is really expected by the equilibrium-seeking world that is the basis for most economic theories. When times were uncertain in the recent past, they did not last so long. We were able to ignore the bursts of uncertainty and just wait for things to organize themselves in a pattern that we could react to.

But the lack of patterns that is characteristic of an uncertain environment actually is a recognizable part of the world that we should expect. And there are strategies that we may already be using that are what is called for in an uncertain environment.

This uncertain environment and the requisite strategy are found in the theory of Plural Rationality (see the articles by Ingram, Thompson and Underwood in *The Actuary*). That theory suggests that there must be four environments to align with the four risk attitudes that are found in human groups.

The uncertain environment is expected by the groups we label Pragmatist. These folks do not expect the world to be predictable. Their preferred strategy is to avoid large or long-term commitments. To diversify their businesses in terms of both the things that they do and the way that they do them, some Pragmatists develop a lottery mentality just waiting for the big random win. More often, however, the successful Pragmatists have worked to make sure that no single random hit will break them while they may have some activity already going in whatever emerges as the next big thing—though usually they are not at all aware of what that might be. Pragmatists also are

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fond of sitting on a nice pile of cash. It keeps their options open—a favorite phrase.

The groups who expect the moderate environment, we called Managers. The Manager’s strategy is to favor the sort of analytics performed by MBAs to support their decision making, because in the moderate environment, many of the activities that can make a profit are fairly complex to get right. (Efficient Market Theory would suggest that the easy choices are already taken.) In a moderate environment, it is believed that highly organized operations willing to put in the work on analysis will be able to reliably discern the best course of action. The Managers may also diversify, but in a calculated, controlled manner. The idea that businesses can be run by generalists is also a manager strategy.

Other groups expect a boom environment. We called them the Maximizers. These groups would tend to be totally concentrated

on their absolute best returning business choice. They tend to run businesses with a high performance-related compensation structure. Success is the ultimate indication of talent and competence for Maximizers. When you have lots of Maximizer groups operating in the same environment they all may end up loading up on the very same “best” choices.

The last group, Conservators, expect the bust environment. Their strategy is to pull back from any risky behavior. “Sticking to what you know best” is their favorite phrase. In business, Conservators do not shun all risks, but avoid taking any new risks that they do not have plenty of experience with.

During the Great Moderation, we had convinced ourselves that we could live forever after in an environment that was moderate, with occasional booms—so much so that even study of a bust was considered an arcane, purely academic exercise. Few if any

business executives had any idea how to lead their companies through that firestorm.

In a post to the *Harvard Business Review* blog, “American CEOs Should Stop Complaining about Uncertainty,” Jonathan Berman points out that while African companies are able to cope with their uncertain environment, American CEOs mostly complain.

But the uncertain environment did not exist in the literature when the American CEOs went to school. Perhaps as the bust environment works its way back into the literature of business and economics, the uncertain environment that we have been experiencing will be discovered as well—and the winning strategy, as practiced by the Africans, of adaptability. **A**

David Ingram, FSA, CERA, MAAA, is executive vice president with Willis Re Inc. He can be contacted at dave.ingram@willis.com.



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ACTUARIES ON THEIR OWN TIME

Chef de Cuisine

For **SHIRLEY SONG**, being an actuary shaped her into a hard-working, responsible and reliable individual who can well execute her goals and dreams. And one of her dreams is to become a chef de cuisine.

She is training professionally in Paris at her “dream culinary school.” “Time management, communication, interpersonal and organization skills that I have developed from my actuarial background are definitely a plus in the kitchen,” Song says.

She didn’t start cooking until her early 20s. “Having lived in Asia, North America and Europe, I have had many opportunities to experience a variety of cuisines and restaurants. ... I always wondered how each ingredient was prepared and how each element on the plate was executed,” she says. “Then a thought came to my mind: Tasting the dish is not enough; I really want to know how to make this myself.”

Her first masterpiece since going to study in Paris was the classic French dish boeuf à la Bourguignonne. “I have always wanted to try it because of Julia Child, and I finally made it at school in the beginning of this year,” Song says. “It was pretty tasty.”

Now in a higher level at the school, she recently took place in an “atelier,” a five-hour workshop where the students design and serve appetizers and main plates for two from a list of mandatory ingredients and techniques. Her menu for appetizers included sea bream carpaccio with

red bell pepper, tomato confit, celery brunoise, and prawn cake with green herb and avocado sauce. For the main course, she presented stuffed chicken breast roll, carrot flan, and mille-feuille and chicken jus. It was a hit with the head chef.

She has stored a lot of memories of France and her temporary departure from being an actuary: “The moment I put on my chef uniform for the first time; the moment I saw my puff pastry rise perfectly; the moment my homemade macaroons came fresh out of the oven; the moment I had to kill a lobster live; the moment I tasted my dish and absolutely loved it; the moment I got a ‘perfect’ from the chef; the moment I watched the Eiffel Tower sparkle on my way home after a whole day in the kitchen; the moment I felt my sweat dropping from my face continuously while working in the kitchen in the summer; the moment I had to hide in the fridge to plate my appetizer dish with jelly (to stop it from melting) ... Paris has become a part of me already.

“There are certainly surprises along the way: having cuts and burns, witnessing how strict and stressful working in a kitchen can be, getting my cell phone stolen in Paris, having to cook a rabbit, a squab, and a quail dish from its original form (yes, use your imagination) ... small surprises here and there, but it’s all good.”

Being a chef is quite different from being an actuary, even though she will always consider herself an actuary first. “Working in a kitchen is no joke. Usually all the stoves and ovens are on, big pots of stocks are boiling on the side, and imagine that you will be working and running around nonstop in a 40 C [about 105 Fahrenheit] kitchen like this for 12 hours a day,



sweating and sometimes being yelled at, in French,” she says. “I will soon be staffed to a two-Michelin-stars restaurant here in Paris, and I already see myself in that picture.”

Even if Song doesn’t plan to stay in Paris—North America is always home, she says—whether it is to return to the actuarial world after her culinary training or not, her experience will always be a part of her. Ernest Hemingway summed it up for her: “If you are lucky enough to have lived in Paris as a young man, then wherever you go for the rest of your life it stays with you, for Paris is a moveable feast.” **A**

Shirley Song, FSA, MAAA, was a consulting actuary with Milliman Inc. She can be reached at Shirleyzj.song@gmail.com.

Bat Enthusiast

RICK BURD believes most people get a chance to make a contribution to something. He was given the opportunity to help preserve wildlife—the bats found in the cave he owns and manages in central Pennsylvania.

Woodward Cave (www.woodwardcave.com) is one of eight remaining limestone caverns open to the public in the state. The cave has also been a major hibernating site for Pennsylvania bats, but white nose syndrome (WNS) has devastated the population.

“I am very active in working with biologists and scientists to do research on bats and WNS,” Burd says. “They love to use my cave for research due to the history of the bat habitat and availability of electricity for equipment.”

The cave was one of the largest hibernating sites in the state for about six species of bats. It was so well known that, in 1929, four rare bats (the endangered Indiana bat) were taken for permanent display in the Smithsonian Institute, he says. The bats used the cave for hibernating during the winter. During the summer, they left and spent the warm season in the wild.

“After some years, I realized many bats return to the exact same crack in the wall,” he says. “I felt like I got to know some of them and would watch for their return every year.”

In 1971 Burd’s parents visited the cave. “My mother, too afraid to enter the dark cavern, sat and waited for my father to complete the tour and got chatting with an old guy sitting there who said it was for sale. They ... eventually bought the business. I was in college at the time,” he says.

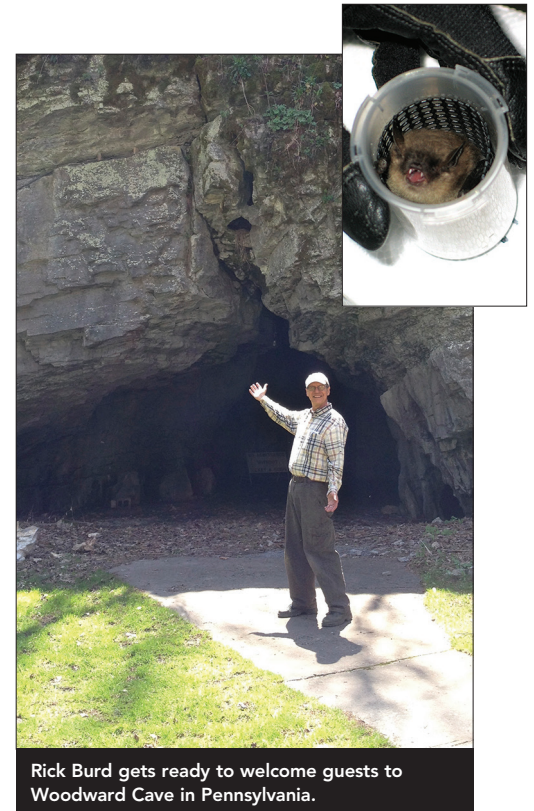
In 1987 Burd and his brothers bought the cave from their parents and began efforts to preserve the large but dwindling bat population. The bats had caused distress and disruption to the [tour] business. “People were afraid [of the bats]. Parents of school kids complained. Business was lost,” he says.

Solid steel doors had been build into the natural entrance to the cave to prevent the bats from entering. In 1988 Burd and his brothers removed the steel door and installed a bat-friendly door with steel bars that allow the bats to fly through but keep people out. The bat population gradually grew from about 1,200 to 4,000.

Over the decades, visitors to the cave became more appreciative of the chance to see wildlife in their native habitat, and gradually the bats became as much of an attraction as a distraction. “Some are still scared, but most people move in for a closer look and are fascinated at the gentle little bats quietly sleeping on the limestone walls,” he says. “We even put the bats on our logo and focused the school education programs on the bats.”

After their hard work to build the population, almost all the bats died in the winter of 2010 with the onset of WNS. Thousands of dead bats were scattered around the landscape within a mile of the cave entrance. “The fungus (the cause of white nose) agitated the bats during hibernation and caused them to burn up reserve fat, so they left the cave [early] looking for food,” he says.

Bat biologists who monitored the wildlife population recommended Woodward Cave for a research site. Scientists came from around the country and placed equipment in the cave, including motion-sensitive



Rick Burd gets ready to welcome guests to Woodward Cave in Pennsylvania.

infrared cameras to film sleeping bats. Burd went in with the scientists whenever possible. “I figured it’s a rare chance to participate in wildlife research fighting a huge threat to an important mammal in our ecosystem,” he says.

“What a switch from the actuarial routine! It’s interesting—they just rig up their equipment with stuff bought at Walmart or the hardware store or somewhere. They bought a bunch of Styrofoam coolers, little plastic bottles, clear tubing, and so on and jury-rigged research equipment they needed. I guess you don’t just order white nose research equipment out of the bat research catalog.” **A**

Rick Burd, FSA, MAAA, is president at Contribution Health, Inc. He can be reached at rburd@contributionhealth.com.

The SOA At Work

GET INSPIRED AT THE SOA'S ANNUAL MEETING

THIS YEAR'S SOA ANNUAL MEETING promises to be an event with many valuable takeaways. Sessions will challenge you to develop new ways of thinking, provide networking opportunities with peers, and give you a platform to share ideas that will impact your career, broaden your knowledge and expand your reach as professionals. This is your opportunity to join other actuarial professionals at a meeting developed with your influence, inspired by the work you do—an event that leaves a significant impact on all who attend because of the input we receive from you throughout the year.

The San Diego Convention Center is the place to be. This is the one meeting where you get to experience sessions influenced by your ideas, topics covered at your request, and inspirational speakers, like Dan Roam, author of the international bestseller, *The Back of the Napkin: Solving Problems and Selling Ideas with Pictures*. Roam, the general session keynote speaker, has helped leading companies such as Microsoft, Google, Wal-Mart and Boeing, solve complex problems through visual thinking.

Zanny Minton-Beddoes, economic editor for *The Economist*, is the presidential luncheon keynote speaker. Minton-Beddoes oversees all of the prestigious publication's American and global economics coverage and manages a team of writers from around the world. As one of the world's most renowned, brilliant and engaging speakers on economic and financial matters, Minton-Beddoes is highly decorated. She is the winner of two of the highest honors a journalist can receive—a 2012 Gerald Loeb Award for economic journalism and "Journalist of the Year" awarded by the Wincott Foundation for financial journalism.

Once again, there will be a meeting application for use on your mobile device so you can access session, speaker and presentation

information. There are more than 100 sessions covering topics such as health care trends, risk, complexity science, life product trends, regulatory and tax updates, managing retirement, and more. And up to 17.40 CPD continuing professional development credits are available.

Many thanks to outgoing President Tonya B. Manning, FSA, MAAA, EA, FCA. She has influenced and challenged us to be even broader thinkers through her hard work and dedication. Welcome to incoming President Mark J. Freedman, FSA, MAAA. His connections with actuaries in a broad number of practices and his vast global experience are sure to make a strong impact on the actuarial profession. We look forward to a year of accomplishments under his leadership.

The SOA thanks all the volunteers whose time, effort and talent serves as inspiration to all of us. You help make the SOA the great organization it is today. We sincerely appreciate all your hard work.

Special thanks to all our professional interest section members as well. These members work a countless number of hours brainstorming ideas, developing content, fine tuning materials, and pulling an important assortment of details together to make this event a thought-provoking, educational experience.

If you're with us in San Diego, welcome. If you didn't get the chance to attend the meeting this year, stay up-to-date by visiting SOA.org. We'll feature meeting news, event highlights and a gallery of photos. You can also follow us on Twitter using [#SOAAAnnual](https://twitter.com/SOAAAnnual).

Enjoy your meeting! Get inspired! 

— SOA Executive Director Greg Heidrich



Good Research Reads

COMPLETED EXPERIENCE STUDIES

- 2013 Group Term Life Experience Study & Tables
- 2008-09 Individual Life Experience Report
- 1990-2007 Individual Disability Experience Committee Report

To view a complete listing, visit www.soa.org/Research and click on Completed Experience Studies.

COMPLETED RESEARCH STUDIES

- Nontraditional Variables in Healthcare Risk Adjustment
- Life Insurance Regulatory Structures and Strategy: EU Compared to US
- Interest Rate Swaps—An Exposure Analysis
- Group Long Term Disability Benefit Offset Study—2012

To view a complete listing, visit www.soa.org/Research and click on Completed Research Studies.

THE ACTUARIAL PROFESSION IN THE NEWS

The SOA is focused on raising awareness of actuaries in the media. Recent efforts have been successful. Here are just a few examples:

Five Ways to Navigate Low Interest

Dan Cassidy interview with BankRate retirement blog discusses low interest rate market. For the entire article, visit www.bankrate.com, search term Cassidy, or use the QR Code.



Will Health Reform Make You Change Doctors?

MarketWatch highlights four key considerations for consumers; David Axene interviewed. Visit www.marketwatch.com, search term David Axene, to read the entire article. Or use the QR Code.



View all of these articles by going to www.soa.org/newsroom and clicking on the Profession In The News link.

PROFESSIONAL DEVELOPMENT OPPORTUNITIES

MEDICAL SCHOOL FOR ACTUARIES BOOT CAMP

Nov. 13
Tempe

PREDICTIVE MODELING BOOT CAMP

Nov. 14 – 15
Tempe

VALUATION BOOT CAMP

Nov. 14 – 15
Tempe

BRIDGING THE GAP SERIES: BASIS, VOLATILITY AND MANAGED FUNDS—VA RISK MANAGEMENT AT THE RISK SOURCE

Nov. 17
Atlanta

EQUITY-BASED INSURANCE GUARANTEES CONFERENCE

Nov. 18 – 19
Atlanta

View all Professional Development opportunities by visiting www.soa.org and clicking on Event Calendar.

ATTENTION READERS!

If you have an idea for an article you think should appear in *The Actuary*, or a response to something you have read in these pages, tell us about it by sending an email to theactuary@soa.org.



E-COURSES: GROWING YOUR KNOWLEDGE

THE SOA IS PROUD to offer 20 e-courses worth more than a combined 80.00 CPD. E-course topics range from professionalism and communication to social insurance and enterprise risk management and can be completed in as little as two hours. Whether you're changing fields, in need of some refreshers or looking to improve your communication skills, get the knowledge you desire by registering for an e-course today. See our full listing at www.soa.org/ecourses.

Decision Making and Communication

Decision Making and Communication (DMAC) provides a foundation for making decisions related to complex business problems that require the involvement of many stakeholders and decision makers. DMAC presents a decision-making process that is specific enough to provide solid guidance when making decisions yet general enough to be applicable in a wide variety of situations.

Financial and Health Economics

This e-course is designed to provide you with an overview of the financial and health economics disciplines and their relevance to the actuarial profession. Financial economics is the study of the production, distribution and consumption of goods and services. These disciplines underlie all financial and health services.

Fundamentals of Actuarial Practice (FAP)

This e-course is set in the context of the control cycle. It encompasses real-world applications and uses examples to demonstrate actuarial principles and practices. You will also have opportunities to apply these principles and techniques in traditional and nontraditional actuarial practice areas. With the fundamentals in your toolkit, you will be better prepared to apply your learning to new areas of practice that may emerge during the course of your actuarial career.



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