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THE MAGAZINE OF THE ACTUARIES INSTITUTE

Actuaries DIGITAL

COLUMN
Actuary breaks new ground in public health research

COMMENT
The Politics of Superannuation

EVENT REPORT
Actuarial Leadership: Past, present and future.

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Actuary breaks new ground in public health research

By Jananie William

Reading time: 4 mins

Actuary Jananie William explains how she traversed traditional actuarial fields and came to work in public policy. Using actuarial techniques and some amazing data, she provided a detailed analysis of birth-related public health system costs and their drivers – the first ever study of its kind.

I often get asked what an actuary does in maternal health and public policy more broadly. Actuaries will quickly get the picture after a short conversation. However, for many outside the profession, this conversation is intriguing as they have less knowledge of the actuarial skill set and its applications outside of financial services.

Considering a career change?

With my husband (and my rock) on an evening after work in Canary Wharf, London.

I started my actuarial career like many others – I worked in investment advisory and general insurance roles in Australia and the UK. My time in traditional roles in industry provided me with a great foundation to move into new areas. When my husband and I moved back home from London (when we were 6 months pregnant with our first baby) I took a career break from industry to spend more time with our growing family but also to think about what I wanted to do next.

'Born Too Soon'

My own personal experiences with pregnancies and babies were far from easy and I noticed there were still lots of unanswered questions in the field. I was determined to find a way to contribute to the area but still use my actuarial skill set. So, I started doing some research and discovered a report called "Born Too Soon" by the World Health Organisation. This opened my eyes to the complexity of the problems associated with premature births and the need for more research in the area. The report planted the seeds for my PhD research, which has a special focus on women who experience adverse birth outcomes, such as premature births and stillbirths, which can be devastating for the women and families involved. I quickly found a great team of people who were very supportive of my interests and understood the strengths an actuarial mind could bring to some pressing questions. The PhD also proved to be a sanity saver for me during those years at home with my little treasures (pictured below)!

Using actuarial techniques in my PhD

In a nutshell, my PhD used traditional general insurance pricing principles to identify and quantify the risk factors of public maternal health system costs. I looked at government funded hospital costs and out-of-hospital costs of women during their perinatal periods which I defined as their pregnancies, delivery periods and the first year following the birth of their baby.

PhD Graduation: Celebrating with my people at the ANU PhD Graduation ceremony.

"I was able to transfer a lot of the knowledge I gained in the general insurance industry when it came to manipulating and modelling large datasets for costing purposes."

I used some amazing datasets too – in particular, I linked longitudinal survey data from the Australian Longitudinal Study for Women's Health and various government administrative datasets such as Medicare Data, the Admitted Patients Data Collection and the Perinatal Data Collection together to provide in-depth information on health system costs and births. The use of these linked datasets gave me a comprehensive picture of women during their perinatal periods. This enabled a much more detailed and nuanced analysis of costs and their drivers than has ever been done before.

I used techniques such as Classification and Regression Trees and Generalised Linear Mixed Modelling to model the costs and tested hundreds of factors to identify the statistically significant cost risk factors. A major strength of this project was the diverse mix of skills in the team that was involved – we had experts from statistics, health economics, public policy, maternal health and psychology – which also helped me upskill in areas which were previously new to me.

Results and policy recommendations – data-driven public policy

There were lots of interesting results that we are now doing further research on. On the hospital side, it was not surprising that 'mode of delivery' was the most significant cost risk factor. Caesarean deliveries cost almost twice as much as vaginal deliveries. Other statistically significant cost risk factors were:

- private health insurance status;
- adverse birth outcomes;
- smoking status;
- pre-existing diabetes; and
- area of residence.

For the out-of-hospital study we found mental health factors (such as postnatal depression) were the most significant cost risk factors. We outlined policy recommendations to target this area including early intervention for mental health, which may reduce the cost burden over the life-course. As women are better equipped with coping strategies earlier in their lives, they can draw on these when they experience major life events - like the birth of a baby. We are planning to conduct a cost benefit analysis for these policy recommendations to provide more evidence for their viability.

Another major finding which we are continuing to investigate is the complex interactions between the public and private maternal health system and the implications this has for maternal health policy. It is the transformation of the evidence base into practical maternal health policy (or "data-driven public policy") that is focused on improving the health outcomes of women (rather than just costs!) that I am most excited about and working on now.

Driving future social change

These days I still spend most of my time on data-driven public policy through my own consulting business and research with my job as a lecturer at the ANU. I still focus on non-traditional areas and have branched out into human services where the skills I gained during my PhD have been valuable. The team I work with now through the Social Outcomes Lab is focussed on analytics both from a "top-down" big data perspective but also through working directly with client groups, from the ground-up, to drive meaningful social change for people who are most vulnerable in society.

One of our recent projects was on breaking the cycle of disadvantage which looked at finding indicators of "success" over the life-course of those who are most disadvantaged in society. Success was defined as something which can significantly change the trajectory of a person's life – for example, finishing Year 12 was found to be an important

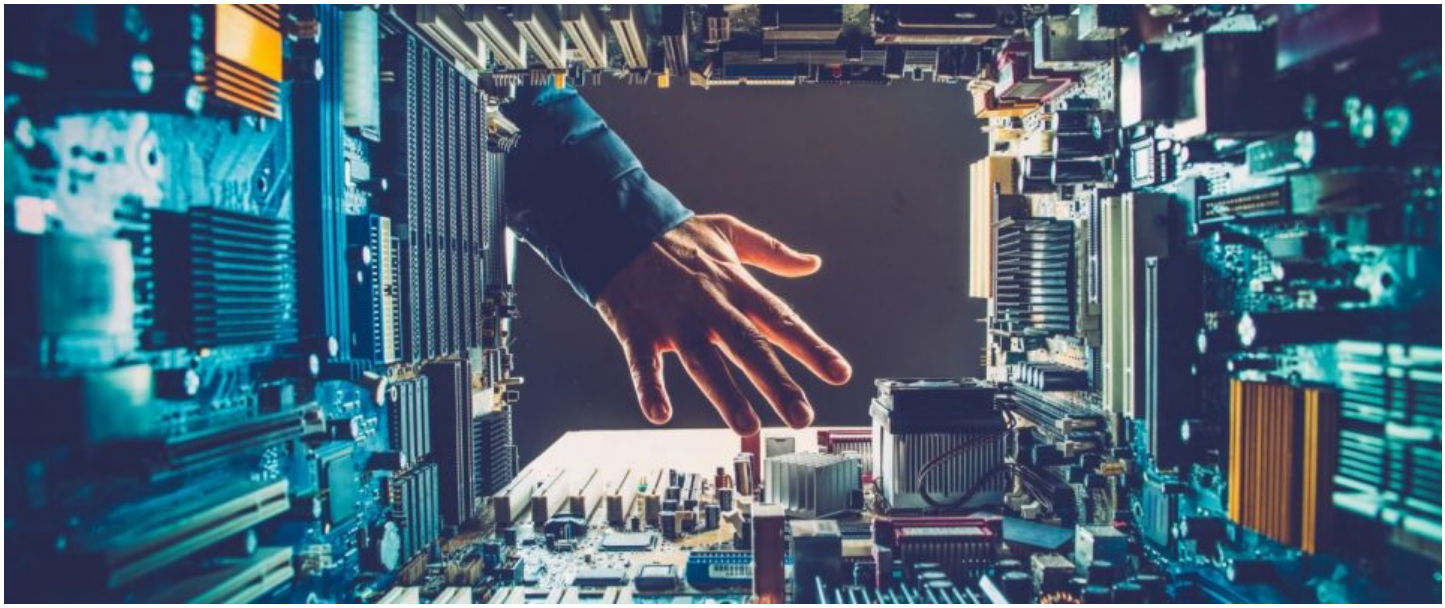
predictor of whether an individual remains disadvantaged in the future. Our current project is a hot topic in the public domain as it explores interventions for family and domestic violence in faith-based communities and we are focussing on Muslim and Christian communities to start with. The project team is comprised of experts from many different fields which include public policy, law, psychology, theology, statistics and economics.

And I still get asked by actuaries and non-actuaries what an actuary can do in these areas!

Related articles and publication:

- *"An actuarial investigation into maternal hospital cost risk factors for public patients", Annals of Actuarial Science*
- ANU study reveals costs of maternal health
- Collaborative research into public health costs

Missed Jananie's concurrent session at the 2017 Actuaries Summit? View the Presentation and Audio from the session on '*Data Driven Public Policy: An Actuarial Journey in Maternal Health*'



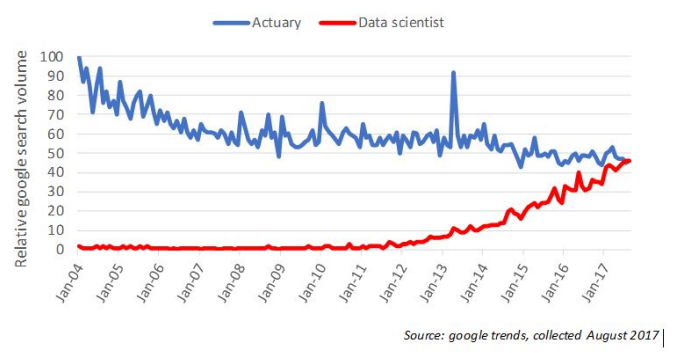
Normal Deviance - Why you should totally include data science in your next job search

By Hugh Miller

Reading time: 2 mins

'Data scientist' clearly overlaps with pre-existing jobs like statisticians, business analysts and even actuaries, but as our resident Data columnist Hugh Miller reports, it also carries its own flavour. The proof is in the data.

I love google trends. It's a great distraction when you're avoiding a looming deadline and it's also an easy way to prove something in a pseudo-scientific way. But here's one trend worth paying attention to, also shown below.



Data scientist, a job that barely existed before 2011, is now a more searched for term than actuary. (Bonus points if you can guess the reason for the spike in 'actuary' without skipping to the end of the article*.) Similar trends are visible in the news and on actual job sites. There are plenty of high-paying roles for data scientists, and many of them are key roles in companies that go beyond responding to the latest hype.

As the name suggests, data science is aiming to bring scientific method to the analysis and use of data. This description clearly overlaps heavily with pre-existing jobs such as statisticians, business analysts and even actuaries; but data science also carries its own flavour. The datasets are generally bigger, the models are more complex and the software and tools borrow more heavily from computer science.

But how do you get a job in data science? While there are a range of courses seeking to help people get started, anecdotally I think many people just fell into roles and learnt on the job (or better yet, had their existing job relabelled!). Further, there's no 'official' data science profession and demand is growing.

"I think all this suggests that data science is a natural career opportunity for actuaries who enjoy complex data analysis."

The skill sets overlap heavily, and actuaries may even have an edge in some roles because of their strong training around understanding business needs to add value.

One interesting question is whether people who make the switch will be 'actuaries working in data science' or 'data scientists who used to be actuaries'. I hope it's the former; the actuarial brand might be a good way of improving professionalism in a fairly fragmented field. Either way, I believe it's a trend that is going to run for a few more years at least.

** In April 2013 CareersCast.com released a list declaring actuaries to be the 'best' job in the world. Thousands of journalists madly scrambled to figure out what an actuary was before they wrote their articles.*

Are women less confident than men?

By Nicolette Rubinsztein

Reading time: 3 mins
Nicolette Rubinsztein reflects on her experience of confidence, especially as a career mum, and what women should know, following two women's networking events at the Actuaries Institute last month.

On Tuesday 22 August in Melbourne and the following day in Sydney, the Institute held networking sessions where I asked the question: are women less confident than men? The broad consensus across both groups was "yes," women are less confident than men.

This is reinforced by a survey by Women's Agenda as part of International Women's Day this year, which you may recall had a theme of *Be Bold for Change*.

The survey asked more than 2,000 women what they want from their careers, and what they think could get in the way. It found that there was no shortage of ambition. It then asked the question: "what obstacle is in the way of your ambitions in the next 24 months?" You might think that the biggest obstacle would be childcare costs or caring responsibilities, or finances or lack of employer support. However, confidence came up as the number one factor.

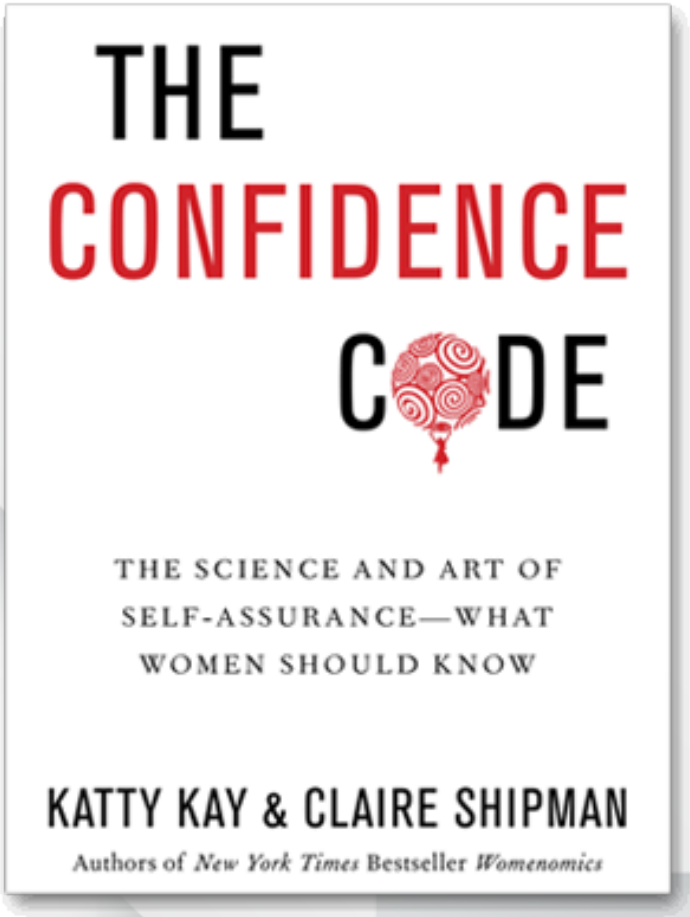
"More than half of respondents (51%) ticked 'confidence in my abilities' as an obstacle"

This is certainly consistent with my own experience. I feel like lack of confidence has been a dominant theme in my life. If I look back on the low points, the first one was when I left school and went to university. Despite having done quite well academically at school, I felt like a fraud. I thought that at university, when you really had to think, that I would get discovered. I fully expected to fail.

The other low points were my maternity leaves. Each time, I would think "do they want me back? Do they need me? Is the person doing my job doing a better job than me?" You would think that having twice returned from maternity leave successfully, that during my third maternity leave I wouldn't be plagued by these thoughts. However, I'm afraid to say I was!

Group discussion at the Sydney Networking Event

Consequently, I was very happy to discover a book on this exact issue - *The Confidence Code* by Katty Kay and Claire Shipman.



A New York Times bestseller,it claims that women's lower confidence is due to our tendency to "over-think," partnered with our desire to be liked and to please. We are also more vulnerable to perfectionism, rumination, depression, inertia and fear of failure.

That sounds like quite a worrying list, but many of them are the flip side of what makes women great in the workplace.

The book delves into the reasons why women are less confident than men. It concludes that it is a combination of conditioning, the difference in how men and women's brains work and hormones. On this last one, it turns out that testosterone is a good contributor to confidence and women have less of it!

Of course, there are also plenty of women that are very confident. There are also men that are less confident. Mike Cannon Brooks, co-founder of Atlassian brought this to life is his TEDx talk on the imposter syndrome.

However, back to women. If you accept the premise that, on average, women are less confident than men, this brings us to another question. What should we do about it?

I'm inclined to think that simple awareness is a big part of the solution. Obviously, awareness by both men and women. I wish I had read *The Confidence Code* book 20 years ago,. I think it would have made for a smoother ride.

Some of the suggestions from the audience in the Women's networking sessions were:

- Faking it – I think there is a time and place for faking confidence. However, most women would like a work environment where they can just be themselves
- Not being afraid to ask "silly questions".
- Focussing on outcomes, rather than hours worked.

These are all good suggestions.

On a more practical note, one of the things I've got into the habit of doing is using my husband as a sounding board when I'm thinking of a new opportunity or a challenge. That might not sound like a particularly liberated feminist thing to do. However it works! I'm consistently surprised by how different his approach is. And each time it challenges my thinking and gets me to move (slightly) out of my comfort zone. So, that's my suggestion – try to use a confident male significant other, friend or family member as a sounding board when you next apply for a job, ask for a salary rise or want to negotiate something.

I'd love to hear your thoughts on the topic of Women's Confidence - please feel free to comment on the article below.

Missed this event? Catch up on the Member Networking – 'Not Guilty' Session Presentation, Audio and Video.

Related articles on *Actuaries Digital*:

- Book Review: Not Guilty by Nicolette Rubinsztein
- Actuary's book launches flexible work discussion

AASB 17 Insurance Taskforce Update – August 2017

By Grant Robinson

Reading time: 4 mins

With the finalisation of the long awaited IFRS17 global accounting standards in May 2017, the Actuaries Institute's IFRS17 Implementation Taskforce will be updating its members monthly on its activities.

Our update in July provided some background on IFRS 17 as well as information about the Taskforce and its aims and plans. We noted that we had set up six technical drafting groups, each led by a member of the taskforce, supporting the aspiration of the taskforce to produce information notes on AASB 17. We intend to provide an update from one of the work-streams each month, and the first of these is provided below – in this case, from the General Model/Building Block Approach (BBA) work-stream, headed by myself, Grant Robinson.

Each of the work-streams is in the process of identifying issues and working through a process to address each of them as best we can at this stage. This work in turn will feed into the draft information notes.

Since our last update, the Australian Accounting Standards Board has issued AASB 17, effectively unchanged from IFRS 17, though there are some differences for not-for-profit entities.

Finally, we want to remind you that there is an Insight session on the new standard on 5 September in Sydney. If you have an interest in AASB 17 and its implications for the profession, please come along.

Update from the BBA Drafting Group

The BBA drafting group is one of the technical drafting groups focused on producing an information note covering the General Measurement Model under AASB 17. During the development of the *Insurance Contracts* Standard, the IASB described the General Measurement Model as the Building Block Approach (BBA).

How we are tackling this topic

We have divided ourselves into six sub-groups focussed on key aspects of BBA. Two of these relate to the building blocks for BBA:

- **Current estimates of future cash flows** - covering which are included or excluded, expected values and when a distribution is needed, and incurred claims;
- **Contractual service margin (CSM)** - covering determination at inception, roll forward at inception discount rates, adjustment for changes in cash flow estimates for future service, adjustment for experience relating to premium received and investment components paid, coverage units and release of the updated CSM at the end of period.

(The other two building blocks for BBA, discount rates and risk adjustment for non-financial risk are being addressed by the drafting group for Risk Adjustment and Discount Rates).

Apart from the two building blocks mentioned above, the other key aspects related to BBA that we are covering are:

- **Onerous Contracts** covering when a group is onerous, loss recognition and reversal, tracking and release of the loss component;
- **Reinsurance** covering how BBA applies to reinsurance assumed or held, contract boundary, counterparty risk, Gross versus net approaches, and consistency with underlying;
- **Contract modifications and de-recognition** covering identification and treatment of significant modifications, including derivation of the equivalent premium, and de-recognition; and
- **Transition for Contracts under BBA** covering the three approaches - full retrospective, modified retrospective and fair value, the criteria for being able to use each of these, impracticability, simplifications and approximations permitted, determination of the groups and elements of insurance contract liabilities.

Starting points for our drafts are the material being developed by the International Actuarial Association (IAA) drafting groups.

We meet fortnightly to review a draft on a key aspect of BBA, and to date we have reviewed first drafts for four of the six key aspects.

Example of an area we've looked at

A number of significant issues have been identified, one of which is the **meaning of coverage units**, which are the basis for release of the CSM.

Coverage unit is defined by AASB 17.B119(a) as: *The number of coverage units in a group is the quantity of coverage provided by the contracts in the group, determined by considering for each contract the quantity of the benefits provided under a contract and its expected coverage duration.*

The Basis for Conclusions for IFRS gives some guidance as to how this might be interpreted, in that the following were rejected as a basis for release of the CSM:

- pattern of expected cash flows (IFRS 17.BC279(a));
- on the change in the risk adjustment caused by release from risk (IFRS 17.BC279(a)); and
- when returns on investment components occur even where this drives total expected fee (IFRS 17.BC280(a));

Further from the Basis for Conclusions, it is apparent that IASB's intent is that the release should be based only on the provision of insurance coverage (IFRS 17.BC280(a)), with the only exception being for investment contracts with discretionary participation features as they do not provide insurance coverage.

This suggests that given coverage units are defined as the quantity of insurance coverage provided, coverage units can be interpreted as the maximum amount payable if a claim were to occur for all covers under each contract in the group, e.g.

- maximum lump sum payable upon claim net of any investment component;
- sum of the maximum annual payments payable upon claim event in coverage period (again net of any investment component)

For example, coverage would be, for:

- term life insurance, the sum insured payable upon death;
- whole of life and endowment insurance, the sum at risk; and
- Income protection, the sum of the annual income payments if the insured became disabled and remained disabled for the remaining life of the contract.

There is likely to be other valid interpretations of the meaning of coverage and given that this is key to the release of profit, this issue will very likely go to the IASB's Transition Resource Group and a definitive view on how this should be interpreted may not be available until sometime in 2018.

The updated CSM at the end of the period is released based on the ratio of coverage provided in the period to the sum of coverage provided in period and expected to be provided in future periods.

The reporting entity has the choice of using the sum or present value of future coverage in the denominator for the release of CSM, as AASB 17 makes no mention of whether time value of money needs to be allowed for in determining the release pattern. However, the Basis for Conclusions for IFRS 17 makes it clear that this has been deliberately left to the discretion of the reporting entity (IFRS17.BC280(a)).

Not discounting the quantum of coverage expected to be provided in future, will tend to defer the release of profit for an insurance contract, which may be appropriate to balance where the definition of coverage unit of itself brings profit forward. For example, for conventional business, where the sum at risk declines over the life of the contract while the main source of profit, the investment return on supporting assets, grows over time.

We hope this gives you some flavour into the work of this taskforce, and in particular the BBA technical workstream.

Actuarial Leadership: Past, present and future.

By Richard Dunn

Reading time: 3 mins

Senior Actuarial Analyst at Rice Warner, Richard Dunn, walks us through lessons shared at the 2017 'Actuaries as Leaders' Forum in Sydney last month.

A google search is all that is required to demonstrate the perceived difference between leaders and actuaries. Fortunately, the process to change this image is well underway, reflecting an understanding that a well-rounded profession is a greater asset to everyone.

On 9 August 2017, the Actuaries Institute Australia, in partnership with both Blair Nicholls (former CEO of Berkshire Hathaway Australia-New Zealand) and Anthony Lowe (current CEO of the Prostate Cancer Foundation of Australia) lead a guided dive through the non-quantitative realm of leadership.

Both topical and wide-ranging, the hour-long session focused on applicable lessons from the past, strategies for development in the present and providing a road map for the actuarial leaders of the future.

WATCH a video of the 'Actuaries as Leaders Insight Session' or LISTEN to the Audio recording of the session .

Past

As anyone who has watched Game of Thrones will testify to, becoming a leader (and particularly a good leader) is not an easy path. In particular, it is crucial that would-be leaders are resilient and adaptable in the face of change.

Organisational restructuring is one example of change, plucked from the myriad of shifting frontiers which make business such a captivating forum. In line with this, both speakers referenced times in their careers when winding down business units had been deemed necessary. The survival of the business, and the interdependence between the business, its' employees and their families, was on the line. Importantly, while the often-uncomfortable conversations had been the hardest of Blair's career, he also noted that out of hardship grew success – for in laying off 500 employees, many others were able to remain employed.

In addition to resilience, both Blair and Antony noted that for those who aspire to lead, there exists a handful of recurrent pitfalls of which it pays to be aware, including:

- Aiming to overachieve without conviction - as being the best requires extraordinary dedication and;
- Over-planning - as a mediocre but well communicated plan will often outperform a strong but poorly communicated one.

Present

Despite these warning words, Actuaries are in actuality, very capable and well positioned to assume leadership roles within the profession and the business world as a whole. Whilst to pinpoint one reason for this would be antithetical to the idea of breaking down stereotypes, this stems from a rare ability to combine a holistic view of business with specialised technical skills to develop clear insight and strategy.

In developing soft-skills, breadth of knowledge is key. Blair recommended that exposing oneself to content which on first glance appears to be nonsensical, can be instrumental. He spoke, for example, of a number of polarising blogs to which he subscribed, despite strongly disagreeing with their views.

"In exposing yourself to diversity – even when this diversity is uncomfortable - you engage in a process of reflection and improvement which may provide the impetus for positive change."

Encouraging leadership in the present is also enabled through interconnectedness, stemming from partnerships and communication at both the inter and intra generational levels. Both Antony and Blair, citing their own experiences in mentoring programs, suggested that enterprising actuaries should seek out those willing to nurture and assist in professional development.

Future

The session ended with a forward-looking perspective, and the need to ensure the relevance and leadership of the profession in a dynamic market. Despite the technical foundations upon which actuaries' reputation and role are built, both Antony and Blair highlighted that it would be qualitative, not quantitative skills which would drive successful transformation.

Big data, the buzz-word of the 2010s, has already altered the landscape of our profession. Many low or no-cost software packages allow non-technical practitioners the capacity to provide insight that equals, or betters, the traditional actuarial favourite – the Generalised Linear Model (GLM)[1]. In light of this shift, it will be the actuarial ability to take confusing and often misleading statistics, and distil them into clear insights which will be key to remaining the market leader, now and into the future.

Like a good bottle of red wine, our profession is one which can mature and improve with age. As the Penfolds Grange's of the world know, resting on one's laurels and reputation is never enough. Rather, finding the right balance and enhancing the flavour of traditional actuarial techniques with clear communication and leadership, is crucial.

Related reads:

- Actuaries Leadership Forum 2016
- In praise of the GLM
- Burying the GLM

[1] As shown in 'Stay or Go? The Science of Departures from Superannuation Funds', presented at the Actuaries Summit 2017.

The views expressed here are that of the author and do not necessarily represent the views of his company, Rice Warner.

Longevity Risk: Old Age is Getting Even Older

By Barry Sun

Reading time: 4 mins

This student column, by Barry Sun from Macquarie University, delves into the issues surrounding longevity risk. Barry tells us what longevity risk is and summarises the work that is currently being carried out by academics and insurance professionals.

What happens when people are living longer than expected? It is certainly fantastic news for everyone, as we look forward to live longer alongside continual medical and quality of life improvements. That is, unless you are a pensions fund or life insurer. In 1980, females at age 65 were expected to live for another 17 years. By 2009, this figure rose to 22 years. For males, life expectancy of 65-year-olds has increased from 14 years to 18 years over the same time period. With global life expectancies continuing to increase year on year, the providers of annuities and pension plans are faced with the risk of paying out greater amounts of money than they accounted for. This can be referred to as *longevity risk*, a buzzword amongst the insurance and financial industry for more than two decades. Longevity risk can be interpreted as uncertainty in the long-term trend in survival rates of individuals, although we typically are interested in survival rates being higher than expected.

What approaches have been taken for pensions funds and life insurers to manage their longevity risk? Reinsurance is a practical approach; however, most reinsurers are averse to taking on longevity risk. The second is for life insurers to sell more life insurance relative to annuities as a natural hedge. One emerging solution is building a life market, a market where standardised or over the counter longevity-linked securities are traded. This life market will allow the involved entities to spread their risks among each other and other investors who benefit from diversifying their portfolio with assets arguably uncorrelated with traditional financial markets. The contracts for trading these assets are robustly based on a suitable mortality or survivor index.

Although it sounds similar to a stock market index, a mortality index is based on the mortality of lives from an entire population rather than selected shares of biggest sizes. Similarly, the survivor index portrays the survival of a population over time. Shares can fluctuate by a multitude of ways, for example, news, trading, investor sentiments, and it can be very volatile daily. On the other hand, longevity improves over time but at a gradual pace, with the exception of catastrophes like wars and natural disasters. Volatility is typically less pertinent in the short term, rather being more significant in the long term trend. Hence, the fundamental volatility drivers are very different. A measure of longevity risk is to compare the difference between the expected and observed paths of the index.

Based on the mortality or survivor index, mortality- or longevity-linked securities can be created, for example longevity bonds or swaps. In December 2000, the world's oldest life office Equitable Life Assurance Society (ELAS) was forced to close business due to losses arising from exposure to longevity risk, in the form of with-profits annuities. A year later, in 2001, the idea of a longevity bond (or survivor bond) was conceived. These bonds had annual coupon payments that were tied to a survivor index of a reference population, for example US males aged 65 in 2000. As members of this population cohort died off, the coupon payment amounts would decrease. The motivation behind the bond was to provide a useful hedge for the annuity position of a life insurer.

The first issue of these types of securities was a mortality bond in December 2003 by Swiss Re. The offer was a three-year maturity with face value tied to an international mortality index however in the event of catastrophic mortality, such as the Spanish influenza pandemic of 1918, the face value was significantly reduced. In return, investors were provided with generous floating coupon payments. This bond issue was successful, as it was well received by investors and allowed Swiss Re to transfer some of its extreme mortality risk.

A second longevity bond was soon announced by BNP Paribas, in conjunction with the European Investment Bank (EIB), in November 2004. The longevity bond had maturity of 25 years and an initial market value of around £540m. It featured coupon payments that were tied to a survivor index of English and Welsh males aged 65 in 2002. In a similar vein to the concept of bonds proposed in 2001, these longevity bonds were targeted at life insurers and pensions funds looking to hedge their annuity position. However, this second bond was poorly received by investors and subsequently withdrawn the next year.

This has led to a deeper look at the issues surrounding the pricing of these securities and the product design. Most current longevity securities are OTC; custom-made and provided by

insurers themselves. This is attributed to the absence of a mortality or survivor index. Standardised longevity securities, based on indices, can attract more capital outside the insurance world and are more transparent with higher liquidity. However, this is subject to the reliability of the underlying indices.

Currently, the Life & Longevity Mortality Association seek to develop a working life market in the UK. Formed in 2010, LLMA is the longstanding not-for-profit venture whose current members are AVIVA, AXA, Deutsche Bank, J.P. Morgan, Morgan Stanley, Prudential PLC and Swiss Re. The LLMA plans to set standards for the new trading market of longevity securities by launching the first mortality trading index. Since May 2016, this index is being developed by a research team led by Macquarie University's Associate Professor Jackie Li, Professor Leonie Tickle, and Dr Chong It Tan along with the support of Mercer Australia. The government also plays an important role in facing supply and demand issues for the life market. This is largely due to the influence of a country's retirement system, for example, the UK has compulsory annuitisation and hence more developed annuity markets, especially in comparison to Australia which has middling demand for annuities.

The management of longevity risk is still very much in its infancy. Active discussion, research and engagement from industry professionals and academics is needed to develop solid solutions to the looming challenge. Hopefully in the future, the rise of old age and longer lives will be an all around pleasant event, even for the life insurers.

The Critical Line - Volume 15

By Jevon Fulbrook

Reading time: 2 mins

Can you find your way squarely around this month's puzzle? Jevon Fulbrook challenges you to spell out the enigma for a chance to win a $50 Dymocks voucher.

The following puzzle was inspired by a fantastic website shared with me recently by a reader. Despite the puzzle design not being original, the actual puzzle itself is!

Within the grid below, you're asked to draw a path connecting the centres of horizontally and vertically adjacent squares. Your path should form a single loop that neither touches nor crosses itself, but that passes through each shaded cell in the grid.

The loop, if completed correctly will leave 15 letters remaining which will spell out the solved enigma!

I		A	M	Y		I	Y
R			D	S		G	
	I		P	H	A		C
F			E	E	D	J	Q
			J			J	A
	L		I	N	G		B
W	R	E			F		
		A			T	H	
E		F			R		Y
	F		D	I	Z		Z
		P	Y	G		X	
F	T		U				L

Key:

Path must turn 90° (any orientation)	
Path must continue in a line	

Send your solution in to ActuariesMag@actuaires.asn.au to go in the running to win a $50 Dymocks voucher!

Critical Line Volume 14 Solution

by Dan Mayoh (dan@fintega.com):

Part A:

The probability of any given person winning the jackpot in a given hand is 4 / (52 Choose 5).

The probability of any of the 10 players in the hand winning is simply 10 times this (note that the probability of more than 1 person winning in the same hand is 0). So the answer to part A is 1 in 64,974.

Part B: This is simply 64974 * 10 seconds, which is 7 days, 12 hours and 29 minutes

Part C:

The answer is $14,619.15, which happens to be 64974 * $0.15 * (1/(1 - 1/3)). There are a few different ways to derive this as the answer.

What is interesting to note about this question is that:

1. The initial value of $10,000 is irrelevant.
2. The precise stopping time of midnight on Dec 31 is irrelevant – any point in time a sufficient length of time away from the start (say 3 months or more) would have the same expected value
3. The long term expected value of the jackpot size at any moment in time is the same as the long term expected value of the next jackpot won. This makes sense when we consider that the jackpot is equally likely to be won on any hand, regardless of how long it has been since the last win or what the value of the jackpot is.

Congratulations to Andrew Parker who submitted the only correct solution, and wins the book voucher!

Financial Advice Innovation – Considerations for Australian players

By Angat Sandhu

Reading time: 4 mins

Future financial advice models that marry the best of technology and human intervention require considered thought and a disciplined approach to development. Here, Angat Sandhu outlines the experience and varied success of robo-advice and face-to-face propositions, and presents some key considerations for players in the Australian market.

From a customer's perspective, the challenges with existing financial advice models are well known:

1. **Affordability: High costs for provision of financial advice**
2. **Lack of trust: Industry's reputation not helped by recent scandals and adverse media coverage**
3. **Poor customer experience: Cumbersome manual processes requiring significant time and provision of information**
4. **Narrow focus: Limited integration across banking, insurance, wealth and personal financial management needs resulting in focus of advice being narrow and siloed.**

The end result of the above is that fewer customers are seeking financial advice. In addition, regulatory scrutiny of the sector has increased and whilst it is trying to uplift the reputation of the sector, it is resulting in an increase in cost and compliance for advisers, and partly exacerbating the above customer outcomes.

Robo-advice has been spoken about as the 'solution' for many years, but has struggled to take share from the traditional face-to-face advice channel.

Some of the pioneers in this field: Wealthfront and Betterment in the US, and Nutmeg in the UK, have experienced rapid growth but collectively still only account for a very small fraction of the market. One argument that has been put forward is that the robo-players are focusing on a new customer segment i.e. self-directed individuals (often, but not always, the millennials) that are looking for low cost investment options and not in need of face-to-face financial advice. Whilst the jury is still out on the growth potential of this segment but that hasn't prevented investment in this space by incumbents and emergence of a significant number of new players seeking to disrupt the status quo.

Conversely, the traditional face-to-face financial advice models are viewed to be focused on those with more complex needs

and the means to pay for financial advice costs. Estimates vary, but it is believed that ~15-25% of the adult population in Australia use a financial adviser.

Whilst players may disagree on the future growth potential of both the segments (robo and face-to-face), there is consensus amongst wealth managers that there is a reasonably large 'missing middle' segment that would potentially seek financial advice provided the **right proposition** could be developed, at a **materially lower cost** and delivered in a **hassle-free manner**.

Global perspectives: Is anyone winning?

On one hand, almost every large wealth manager is focusing on developing some version of a digital or hybrid advice solution. There are very early signs of success through

some of the large players in the US, who are developing 'bionic models' that marry the best of technology but retain the key human elements to provide financial advice.

The most successful model of the above to date is Vanguard Personal Advisor Services that has accumulated ~$A65BN AUM just two years after launching. They offer a goals

focused, self-guided online tool which provides personal, human-led planning and investments in a consistent, digitally powered and mobile friendly way. The digital portal is supported by ~500 salaried advisers who are either already certified financial planners or in the process of becoming one.

Charles Schwab's recently announced Intelligent adviser services is aiming to take this one step further and offer one face-to-face meeting with the adviser as part of its proposition and more frequent access by video / over the phone.

The most compelling component of both these players' offerings are the relatively low costs for provision of financial advice, with Vanguard charging $US1000 for <$50K AUM and only $US250 for $50-$500K AUM. What is also interesting about both these players is that majority of their customers (existing and target) are 50+ rather than millennials / younger segments that are often associated with robo like offerings.

Many of the incumbents with large adviser bases / relationships such as UBS are focusing on reducing the cost to serve through focus on wide-scale automation of as many activities across the advice process as possible. Relatedly, players are also focusing on using data analytics to enhance adviser productivity.

It is worth bearing in mind that a number of these players benefit from structural advantages of being large, having a sizable customer base and operating in markets that are materially larger than the Australian market. These players and others like them have had some early success and whilst questions will remain about how sustainable they are over the long-term, they do provide some lessons for Australian players to consider.

Considerations for players in the Australian market

Despite the structural advantages in many other markets, there are four key considerations for Australian wealth managers as they go about developing similar offerings:

1. **Clarity in ambition:** Organisations and especially those that manufacture products need to clearly articulate their future ambition around provision of financial advice, especially around:

    1. Which customer segments are they targeting?
    2. How will advice be provided to each segment?
    3. What is their role versus those of external parties (e.g. IFAs)?

    The ambition statements need to carefully consider elements that can directly be controlled by the organisation (e.g. development of propositions) versus those that can't / shouldn't (e.g. IFA behaviour) and go well beyond motherhood statements like 'omni-channel' and 'goals-based'.

2. **Size the opportunity and contestable landscape:** Be ruthless in determining the financial size of the opportunity across

each customer segment and split across products, platforms and financial advice (planners and dealer groups).

3. **Be clear on source of competitive advantage:** Critically challenge yourself to identify own source of competitive advantage versus the rest of the market. The more visible and tangible this is, the easier generally it is to monetise.
4. **Be honest about ability to deliver:** Many an organisation has run an 'Advice transformation' programme that has not yet delivered the benefits that were anticipated. For some, lack of clarity on #1-3 above has contributed to the above. Irrespective of that, the reality is that developing a compelling offering at a materially lower cost for a new customer segment not only requires investment in technology but driving fundamental change within an organisation, in customer engagement and adviser behaviour. The above is extremely challenging for most organisations and they should look to augment existing capabilities with appropriate partners to de-risk execution.

There is no doubt in my mind that financial advice models will continue to evolve and in the future 'bionic models' that marry the best of technology and human intervention will be the norm. Equally, it is also clear that development of these models is challenging and requires considered thought. Players that can take a disciplined approach to development of these models not only stand to benefit financially but also provide peace of mind to millions of Australians.

The Politics of Superannuation

By Stephen Huppert

Reading time: 3 mins

Stephen Huppert, Head of Product Innovation at Trustee Partners, reflects on government reforms and rhetoric surrounding Australia's c.$2.3 trillion retirement savings sector.

There is a lot being written about innovation and disruption in superannuation with the emergence of new superannuation funds focused on millennials and other FinTech startups impacting the industry. However, it has been argued that the biggest disruption to superannuation and its associated industries may not come from innovative technology companies, but instead from government intervention and legislative change.

In late July 2017, Financial Services Minister Kelly O'Dwyer announced a comprehensive package of reforms designed to improve governance, transparency and accountability in Australia's c.$2.3 trillion retirement savings sector.

In announcing the reforms and in subsequent media interviews, Minister O'Dwyer continually referred to everyday Australians not having a lot of control over their superannuation providers and that the Government needs "to give every day Australians more control over their superannuation providers". The first measure listed is "make superannuation providers more accountable to consumers through the introduction of annual member meetings".

Whilst annual general meetings (AGMs) will give members the opportunity to interact in a more direct manner with the management teams of the superannuation provider, it is not expected to directly improve member outcomes in retirement. It is worth noting that the government has finally acted on a recommendation proposed in the 2002 report of the Superannuation Working Group on Options for Improving the Safety of Superannuation and this proposal should satisfy Nick Xenophon as he tried to have AGMs introduced following the Financial Services Inquiry.

The other measures in this latest reform package include:

- Expanding the scale test to an 'outcomes test'
- Accountability and improved expense transparency
- Powers to approve change in ownership
- Processes for opting-out of insurance

The superannuation industry is no stranger to legislative change. It is 25 years since the introduction of compulsory employer contributions by the Keating Labor Government - 25 years of reviews, inquiries, legislative reforms, and taxation changes. That trend has continued and one could be excused from thinking that they had walked into an episode of "Yes, Minister".

Politics has always been a feature of superannuation and the industry is divided down party lines. In a 1985 parliamentary debate, John Howard called industry superannuation a "Chicago-style protection racket". The introduction of choice of fund in 2005 was just as much about trying to counter the growth of industry funds as it was about consumer choice.

The dramatic rhetoric is not just coming from the conservative side. "We have created a massive river of superannuation heading down to the sea of retirement. What we don't want is a lot of rent seekers on the riverbanks trying to divert some of that retirement income unnecessarily for their own gain." Bill Shorten, The Australian, 3 September 2011

The Financial System Inquiry chair David Murray observed in October 2015 that "retail and industry superannuation fund bodies have been more interested in sniping at each other than devising better retirement solutions".

The current focus of this is the Productivity Commission review of the competitiveness and efficiency of the Australian superannuation system that is part of the Government's response to the 2014 Murray Financial System Inquiry. The most recent example being the fox and hen house add that is currently running on TV.

The Government asked the Productivity Commission to develop a framework for assessing the competitiveness and efficiency of the superannuation system, and to examine alternative models for a formal competitive process for allocating default fund members to default superannuation products. The final report is expected to be handed to the Australian Government by June 2018.

The one area that both sides seem to agree on is the need to improve the decumulation phase of the system. The Government has agreed to support the development of more efficient retirement income products and to facilitate trustees offering these products to members. The Treasury has just completed consultation on Comprehensive Income Products for Retirement (CIPRs), or MyRetirement products. There does not seem to be much consensus as to how this should be implemented.

In 1993 the FitzGerald report on national saving said, “It goes almost without saying that further change to superannuation is not desirable in itself - continual change in recent years has engendered complexity and uncertainty and diminished confidence.”

This is still a constant refrain but changes are needed. The retirement income system will always be a work in progress as society, technology, and the economy are always evolving. There is still much work to be done to, amongst other things, better prepare members for a longer and more complex retirement. The big question is: can the various stakeholders work together to achieve this?

GI Glimpse 2017 Event Report

By Suba Chelva

Reading time: 3 mins

The 2017 GI Glimpse Seminar focused on the actuarial career; latest developments and outlook for the general insurance (GI) industry; as well as updates on the long tail classes. Suba Chelva reports.

On 1 August 2017, the Institute held the third GI Glimpse seminar, after two successful years previously.

The seminar was opened by our very own President, Jenny Lyon to 100 delegates in the Forum of the Institute's Sydney office, and 20 attending via webinar.

Jenny welcomed Win-Li Toh of Taylor Fry as the facilitator for the seminar. Win-Li did a great job of facilitating the Plenary and Q&A sessions.

Actuarial Career

Win-Li Toh and Elaine Collins

Keynote Speaker, Elaine Collins of Zurich Financial Services was introduced next and she spoke on the Actuarial Career. Elaine provided valuable insights into how young actuaries can develop their soft skills to supplement hard skills to become successful actuaries. These insights included working with talented people which will enhance one's actuarial career, working on a variety of projects and working in other countries (as it provides a different perspective). Elaine also encouraged young actuaries to join the Institute's working groups and committees. her own experience participating in boardroom discussions, she said, was invaluable to her career as a Non-executive director. Elaine also touched on the importance of balancing work with life and the value of networking and using ones own network.

Plenary 1 - 2017 Industry Insights

After morning tea, Win-Li Toh and Kevin Gomes of Taylor Fry provided the 2017 Industry Insights for the first plenary session. Win-Li presented on three main areas:

1.) The current economic environment for GI

2.) Big Data

3.) Climate Change.

Win-Li discussed that premium rates have been falling in the past year, however, there are some signs of an end to the soft market cycle, in particular for the commercial GI market for motor and property classes. Given that no bumper profits are expected for the GI industry, efficiency will be the key for General Insurers. Win-Li mentioned that Big Data is gaining momentum; the time is right for digital disruption and the main concern for companies is cyber risk.

"There are two types of companies: companies that have been hacked and companies that do not know they have been hacked," she said.



Win-Li also stated that climate change will have a significant impact on the GI industry, if it hasn't already, and that Australia is one of the developed nations most vulnerable to climate change. Kevin provided a broader overview of the GI Industry, highlighting underemployment as being more of an issue than unemployment. Yields and currency are still low but there are some signs of an uptick, he said. The shift away from El Nino to more neutral conditions will give rise to more favourable catastrophe experiences and higher growth in alternative capital relative to reinsurance capital due to higher yields, he added.

Plenary 2 - the Changing Face of the GI Industry

Jonathan Shen of Suncorp touched on how the Internet of Things (IoT) can impact short tail insurance lines. From having Connected Devices around the household, to helping save lives and lower claims costs (due to earlier identification of breaks or damages), to better interaction with customers (due to predictive services), Jonathan highlighted the benefits of IoTs. However, Jonathan warned that the security of IoTs is vital.

Next, Will Scully-Power of PASCAL51 presented on how general insurers can use machine learning, artificial intelligence and Insuretech to improve their competitive advantage as well as increase their business efficiency. Will also advised young actuaries to continually learn, test their learning and read extensively if they were interested in becoming an 'Analytics Ninjas'.

Jonathan Shen

Will Scully Power

Plenary 3 - Long tail insurance

Plenary Three was jam-packed with telling the 'Long Tail Story Short'. Firstly, John Jeaitani of Finity Consulting presented on the CTP scheme in NSW. He highlighted the key issues of the increasing claims costs in this scheme which are driven by a favourable legal environment, increased legal representation of less severe claims, and fraudulent claim activities. John then explained how the CTP scheme is being reformed in NSW to address these issues including reducing access to Common Law benefits and better fraud mitigation.

Q&A in session

Susie Amos

Next, Susie Amos of Finity Consulting provided updates on the Financial Lines class. She confirmed that the loss ratio for

Financial Lines continues to deteriorate with class action claims now being well established in the Australian market, with fierce competition. However, Susie did mention that premium rates are beginning to rise due to reduced capacity to underwrite Financial Lines globally - with this driven by a higher combined ratio for international insurers and the political environment on an international scale.

Finally, Simon Guthrie from the NDIS provided insights into the funding mechanism agreed to by the different states, and the claims management system and controls in place to manage the scheme costs.

The Seminar ended with delegates and presenters networking over lunch and discussing the diverse content of the seminar. I believe everyone who attended definitely caught a glimpse into the GI industry and took away valuable insights!

On behalf of the 2017 Organising Committee, I would like to thank all the presenters for their insightful presentation as well as Jess Telford and Liz Gemmell from the Institute's Events team for the flawless execution of the seminar. These types of seminars are vital for engaging and developing actuaries of the future! See you all at the next GI Glimpse!

Thank You to our Sponsor, PwC

GI Glimps 2017 Organising Committee

I am an Actuary - August 2017

By Martin Mulcare

Reading time: 7 mins

To become an actuary requires endless perseverance, passion and support but is that much more rewarding. In this instalment of the I am an Actuary series brought to us by Martin Mulcare, read about seven actuaries who share their rewarding careers following the Melbourne Professionalism Course.

Alison Visser

"Oh wow, did you say an Actuary? You must be smart". I always answer this by saying, "Oh no. You actually get two types of actuaries. Type one are geniuses but type two are those of us who are too stubborn to give up and just keep turning up to the exams until they pass us." In reality, I think it's actually a bit of both.

I have had my share of setbacks with exams. I have two Part IIIs under my belt from SEVEN Part III attempts. I was pregnant with my first child on my first Part III attempt and navigating studies, paid work, a young family and personal happiness (?!) ever since. I'm 30 weeks pregnant now and was aiming to have a third subject passed before bub #2 arrives, but unfortunately I missed out.

Why do I keep going? Being an AIAA or FIAA is such a valuable asset to my career, including the remuneration I can earn for my family. It is unlikely I will be living in Sydney or Melbourne in the foreseeable future. My husband is in the Air Force and, sadly, serving your country does come with a lot of personal sacrifices and I will be at a locational disadvantage.

Remarkably, I am currently doing the most interesting and rewarding work of my career in a company which supports me entirely. I never feel like the constraints of my personal life are a barrier. I am offered every opportunity and not penalised for those I turn down. If we are to achieve equal gender representation in the workplace this has to be the model, for both men and women, and I am proud to be part of it. Thank you Guardian Actuarial for sending me on the course and recognising my potential.

Cecilia Li

Compared with my peers, I went with a less traditional path and completed a double degree in actuarial and computer science. I believed that would give me the foundation for a successful career in business, analytics and technology. I recently went to a forum where actuaries, statisticians and data scientist discussed their professions. The obvious question of "what is the difference between the three" came up. I think if I was to sum it up in one sentence I would say "actuaries are business people, statisticians are mathematicians and data scientists are technologists".

Traditionally, actuaries work in complex financial organisations and as part of our job we need to understand the business and the environment that it operates in. It is this knowledge and our strong analytical skill which means actuaries can work in diverse roles. In my career so far, I have had well rounded experience in: superannuation, including commercial management of a super fund in preparing pricing recommendations and insights; performance scorecards and Board reporting; actuarial consulting on defined benefit schemes; and online projection calculator development to support advice and modelling retirement outcomes for members.

What I love in my current role as a commercial analyst is that I am in the middle of all the action and having to work with a large range of stakeholders from sales, client service, finance, product management, operations, strategy and management.

Next, I am curious to explore how I can use my skills to help drive business transformation, particularly in the areas of data analytics and machine learning.

Michael Vassilopoulos

I was recently looking back over my high school year book and read my response to the question "What will you be doing in 10 years' time?" My response - "Designing cars". I knew I wanted to study Mechanical Engineering and when I was fortunate enough to be accepted into a double degree at Monash University I thought Actuarial Studies would be ideal as I always enjoyed probabilities and investments.

Six years later, I finished my undergraduate degree and although I still had a love for cars I knew I wanted to pursue a career as an actuary. I never saw myself as a traditional actuary in the insurance industry and with the skills I have acquired and my passion for investments I now want to have an impact as an actuary in the banking and investments industry. I am currently working at Ernst & Young in the Actuarial Services team, specifically in Banking and Capital Markets.

I enjoy coming to work each day and helping our clients find the solution to their complex problems and assisting them in developing market leading practice.

Being an actuary is only part of my story. Athletics is also a big part of my life. I compete in the Discus at an elite level. Each day after work I make my way to training where I forget about the numbers, give my mind a break and focus on being an athlete. Athletics has taught me the benefit of hard work and dedication, as well as giving me a competitiveness which drives me to achieve more. I am currently the Victorian state champion in the discus event and ranked in the top five throwers in Australia. I couldn't imagine my life without athletics and I will continue this pursuit alongside my career as an actuary for as long as possible.

Qifeng Sun

When I finished high school, and was deciding what to do at university (and perhaps for the rest of my life), being an actuary was always promoted as one of the most demanded and promising careers in China because the insurance industry had grown at 20%pa over the past five years and China didn't even have an actuarial association.

Being interested in both mathematics and economics, becoming an actuary seemed to be the best career for me. Looking back, it has been very fortunate that I persevered and finally I can call myself an actuary after attending the professionalism course in Melbourne.

I have been working at China Life P&C in Beijing since I graduated from Melbourne University. At the time I joined the company, there were only six people in the actuarial department with three Fellows. The group has been growing significantly but is still very small compared to general insurers in Australia with similar premium income. Because we are shorthanded, I have opportunities for exposure across a broad range of work in finance, investment, reinsurance, and risk management. As the actuarial profession in China is relatively young, apart from all the technical work, I have to make considerable effort to communicate actuarial results to a variety of people in the company. This is where 'contextualisation' really takes place.

Post qualification, I am deciding what to do next. Before that, however, I have a big celebration awaiting.

Timothy Lee

There has never been a more exciting time to be an actuary.

After studying at university, I started off my career as a graduate at Telstra. Despite it being non-actuarial, I quickly found myself called upon to be involved in many exciting projects ranging from the more data driven (e.g. designing new algorithms to detect suspicious behaviour; setting a pricing structure for a mobile app) to projects that required a more strategic focus (e.g. re-engineering business processes to manage operational risk; recommending customer advocacy initiatives). I had such a fantastic time as not only was the work challenging, but I also had the opportunity to collaborate with a diverse range of people and learn from their expertise.

Almost by chance, I discovered a niche area in the business which employed actuaries. Working on a number of projects there, I was drawn to their rigorous, yet commercially focused way of delivering business solutions. I decided to surround myself with more actuaries and joined Group Actuarial at IAG. Since then, I've had a wonderful time. I've been most fortunate to be working with exceptional leaders who not only champion an uncompromising degree of professionalism and integrity in conducting their work, but also foster a positive working environment to nurture each member in the team.

I've been so lucky to have been mentored by so many brilliant people who have dedicated hours of their time to me, whether that be in front of a computer or more casually over coffee. In my spare time, I explore ways to share my knowledge and experience - whether that be as a guest speaker at an event or mentoring and advising my fellow peers.

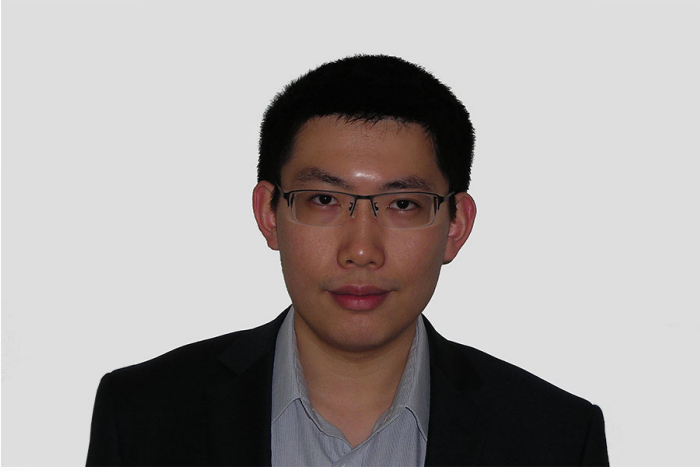
Vernon Hu

My journey towards becoming an actuary has involved both traditional and non-traditional work in a general insurance setting. After studying actuarial science and finance at university, I joined IAG as a graduate in 2015. My time as a graduate saw me rotate through various actuarial functions within the

company including technical pricing, capital modelling and regulatory reporting.

I am now part of IAG's analytics team, focusing on areas such as pricing, marketing and claims. Most of my work is project-based, giving me the opportunity to work on a range of portfolios and learn about different parts of the business. Each brings its own unique set of challenges, and I have always enjoyed coming up with creative and yet practical solutions to these problems.

Although I am nearing the end of my studies and looking forward to a much needed break, it is also important for me to keep in mind that actuaries need to constantly update their knowledge and skills in order to stay relevant in this changing environment. Recently, I have started to gain more exposure to data science, which I feel will complement the specialised knowledge and problem solving skills that actuaries are already well-known for.



The two-day professionalism course in Melbourne was an interesting occasion. It was not only a requirement for becoming an actuary, but more importantly, it was a chance to meet new people, hear about their experiences and appreciate what it means to be an actuary.

Violet Luo

I have found my actuarial training and experience beneficial in many aspects of my life. During my study at the University of Melbourne, I have applied statistical and problem solving skills in two management consulting projects at major banks in both Melbourne and Shanghai.

After university, I further explored data and modelling in the general insurance industry. I moved to Sydney for my first job working as an Actuarial Analyst at Aon Benfield. With little knowledge of how a reinsurance intermediary works, I was fortunate to have received intensive graduate training on reinsurance analytics. My projects included catastrophe modelling and dynamic financial analysis for insurance companies. I was then seconded to the Beijing and Hong Kong offices during their busiest reinsurance treaty renewal period. Having grown up in China, it was an exciting opportunity to understand the Asian reinsurance market and work culture.

Currently I am a Senior Pricing Analyst at Suncorp based in Melbourne.

I am always fascinated with the various projects where I apply pricing concepts and advanced modelling techniques to create value for customers. I have grown more interested in how Data Analytics can be utilised to solve real business problems.

Recently, I participated in the Datathon held by Melbourne Business School and our team was one of the six finalists out of the 60+ participating teams.

In my leisure time I practice traditional oil painting and go for day hikes near Melbourne. My personal goal after becoming an actuary is to continuously learn new technology to adapt to this ever changing world.

What can you expect at the 2017 ERM Seminar?

By Brett Riley

Reading time: 3 mins

Following the strong feedback received for last year's event, the Actuaries Institute's ERM Seminar is back in 2017. Brett Riley looks at the topic, speaker and opportunity line up.

Around 80 to 100 people are expected to attend this year's ERM Seminar in Sydney on Wednesday 13 September 2017 . This year's theme is 'Responding to Risk'. All organisations face a multitude of risks. The successful ones have clear and well developed strategies, plans and processes to deal with their risks, whether they have materialised or not.

The organisers are expecting Chief Risk Officers, risk managers, risk analysts, non-executive directors, actuaries working in a range of roles and others interested in risk management to attend. Based on last year's seminar, we are expecting significant attendance from non-members, drawn to the practical and topical nature of the seminar and the opportunity to hear from thought leaders and key regulators.

The keynote address will be given by Dr John Hewson. He is one of Australia's most experienced economists, financial commentators and company directors. Dr Hewson served in Federal parliament, most notably as leader of the Federal opposition for four years. He is currently Professor at the Crawford School at ANU and Adjunct/Professorial Fellow at four other universities, Chairman of ABN Amro Australia and Chair of the Asset Owners Disclosure Project on climate risk. Dr Hewson also comments frequently in the media.

Dr Hewson will offer his perspectives on some key economic, financial and political risks facing Australia and the world.

The first plenary on Conduct Risk features two speakers. Darren Williams, Head of Risk, Wealth Advice and Distribution for ANZ will give his view on industry-wide conduct issues in financial services. Then Tal Morgenstern from Oliver Wyman, will provide a view of matters in Australia and overseas.

Plenary Session Two will be the regulators' turn. Firstly, Fahmi Hosain, Head of Governance, Culture & Remuneration at APRA will provide APRA's perspective on risk culture and related issues, including an update on APRA's pilot reviews of risk culture within industry.

After a networking lunch opportunity, the third plenary's theme is "Responding to Paradigm Changes". Warren Dresner of Willis Towers Watson and Stephen Britt of IAG will discuss how changes in the business environment can impact companies' risk profiles. On the one hand, this change presents challenges for updating and maintaining a range of risk models. But these shifts can also disrupt markets – for example, since the global financial crisis the move to a low interest rate environment has implications for asset-liability and capital management, particularly with new entrants enter insurance markets seeking higher returns.

Plenary Session Four explores how resilient organisations respond to risk better. It is preferable for management and the Board to proactively managing the risks and threats they face, rather than constantly "fire-fighting". Paul Hurrell, a noted cyber and fraud risk expert, will discuss how this specific threat can be better managed. Tony Harb of InConsult will then explore some cases studies and lessons learnt from prior business continuity events. Finally, Saskia Goedhart, Group CRO for AMP will share her risk insights from working in consulting and corporate roles in Australia, Europe and North America, including dealing with strategic risks.

In Plenary Session Five we will summarise the responses from our inaugural survey of Chief Risk Officers of APRA regulated entities, with a focus on understanding different approaches by industry (e.g. banking, general insurance, life insurance and private health insurance), and by size of organisation.

The final, sixth plenary is titled "Organising the Response to Risk". In this session we will explore the relationship between executives and Boards in managing risk. Potential improvements to governance arrangements will be considered, including lessons learnt from overseas. An introductory

presentation will be given by Nicolette Rubinsztein, who is an actuary, former executive at Colonial First State/Commonwealth Bank and now a non-executive director and author. Nicolette will then be joined for a panel session including Dominique Fox (Executive Manager Risk and Compliance, Westfund Health Insurance), Rob Curtis (Global Regulatory Leader for Insurance at KPMG) and Jacob Mamutil (Principal at Finity Consulting and Enterprise Risk Management Practice Leader).

The ERM Seminar will have multiple networking opportunities, during registration, at lunch and afternoon tea and in the networking drinks session after the plenaries have concluded.

Registration for the ERM Seminar is open. Early bird registrations close on Friday 25 August 2017. Register your place and invite your colleagues and your network contacts to attend as well, to help you organise your response to risk.

Welcome to New Members - July 2017

By Actuaries Institute

Reading time: 2 mins

Welcome to the Institute's newest members!

July 2017

Australia

Ibrahim BARIFCANI (QLD)

Brendan Lawrence BOTT (NSW)

Joshua BOX (NSW)

Pamina Elise BUECHNER (NSW)

Chun Yiu CHAN (VIC)

Eddie CHEN (NSW)

Tianzhi CHEN (ACT)

Kevin Chin Loong CHIENG (VIC)

Seung Hyuk CHOI (VIC)

Emily Fiona CHOONG (NSW)

Alegra DAJIC (VIC)

Ridham DANDONA (NSW)

Anujan DHARMALINGAM (NSW)

Antonius EVAN (NSW)

Chuchen FENG (QLD)

Hua FENG (ACT)

Joel Wayne FENNEY (VIC)

Inna GALAT (NSW)

Kang il HAN (NSW)

Yining HUANG (VIC)

Nikhil JAIN (NSW)

Hanwen JI (QLD)

Jun JIAN (VIC)

Jessica Louise JOHNSON (NSW)

Matthew KOBILSKI (NSW)

Keshav KOTECHA (NSW)

Daniel Peter LANGFORD (VIC)

Ann Rea LAU (VIC)

Aaron Shou Huan LEE (NSW)

Cheuk Kit LEUNG (VIC)

Angela LI (NSW)

Chuxue LI (VIC)

Kieran Hao Nan LI (NSW)

Lanlan LI (NSW)

Zhiyuan LI (NSW)

Ryan Rui Yang LIM (QLD)

Anita Candy MANSBRIDGE (QLD)

Rhys Edward MANTELL (QLD)

Samantha Jane MCDOUGALL (QLD)

Zachary Reginald MEYER (NSW)

David Patrick MOLLOY (VIC)

Ramesan Nair K Govindan NAIR (QLD)

Bhavya NANDA (NSW)

Kevin Wee Shan OH (ACT)

Pei PAN (VIC)

Xiaoyue PAN (VIC)

Sabrina PANG (NSW)

Suiyin PANG (NSW)

Danwei PENG (ACT)

Jessica PRAMUDITHA (NSW)

Keerthanan RATHAKUMAR (ACT)

Omer RIZWAN (NSW)

Geerthana SADAYAN (VIC)

Andries Dawid SCHREUDER (NSW)

Anthony Eugene SCIANCALEPORE (NSW)

Christopher Dong-Won SEO (NSW)

Wai Han SEOK (VIC)

Blake Kane SHAW (QLD)

Robert Eric SHEGAN (NSW)

Jieyi SHENG (ACT)

Meiling Lyn SHI (QLD)

Dong Kwang SHIN (NSW)

Zhanxiong SONG (ACT)

Krishna Gokul SRINIVASAN (NSW)

Anna Margot STEPHENS (NSW)

Shiromini Angalla SUGIRTHANATHAN (NSW)

Bo SUN (NSW)

Yuxiang SUN (NSW)

Nicholas Peter James SYMONS (NSW)

Wan Lin TEE (VIC)

Brendan TRINH (NSW)

Ngoc Phuong Tra TRUONG (NSW)

Crystal Elizabeth TSANG (NSW)

Garvin Ian TSO (VIC)

Olivia Savitri TUNGFAMIR (NSW)

Mattice Henri VERHOEVEN (NSW)

Phuong Anh VU (NSW)

Visakhan VYTHILINGAM (NSW)

Jiaqi WANG (NSW)

Rui WANG (VIC)

Andrew Alan WAYMOUTH (QLD)

John Jong-Eun WOO (NSW)

Alex WU (NSW)

Jialong XIAO (NSW)

Clement Ruo-Fan XIE (VIC)

Zhixin XIE (QLD)

Tingyun XU (VIC)

Zhicheng YIN (QLD)

Hannah Ah Hyun YU (NSW)

Zhikang YU (NSW)

Yazhu YUAN (NSW)

Muhammad Raza ZAIDI (NSW)

Yao ZENG (ACT)

Hui ZHAO (VIC)

Wei ZHAO (NSW)

Keyu ZHONG (ACT)

Shirley ZHOU (NSW)

Hao Dong ZHU (VIC)

Clive ZIMBEVA (NSW)

Overseas

Shuk Yi CHAN (Hong Kong)

Han Mae CHIA (Singapore)

Janet KOSMAN (Indonesia)

Ho Kit Edwin LEUNG (Hong Kong)

Keyi LI (China)

Jiali ZHU (China)

Highlights from the Mentoring Program information session

By Timothy Lam
Reading time: 3 mins

Last month, the Mentoring Working Group held an information session as the 2017/18 intake progressed. Tim Lam, Consultant at KPMG, shares a summary of the session and some highlights.

For most university graduates like myself, the transition from university studies to full-time work can be quite hectic. The steep learning curve both at work and with studies and the need to balance work, study and our personal life are just a couple aspects that we need to learn and develop at the beginning of our careers! At such times a mentor who has experienced what you are currently undergoing can be vastly beneficial to your journey. The upsides of mentorship are not limited to the early stages of our careers however, and certainly provide benefits to both mentors as well as mentees. To illustrate this the Mentoring Working Group held an Information Session at the Institute to discuss survey findings, hear from existing mentors and mentees and showcase an exciting development.

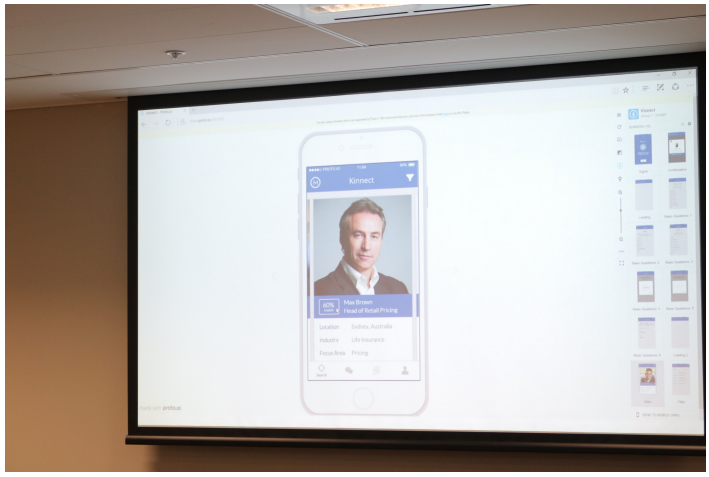
Gloria Yu (Deloitte) leading the Mentoring Information Session

The session was chaired by Gloria Yu (Director at Deloitte), and began with a presentation of survey findings on the views of the mentoring program from past participants. The results showed a wide distribution of background areas for both mentors and mentees, indicating that the program is suitable for everyone regardless of the industry they current work in. The results also showed that the mentoring program is an effective platform to assist mentees to determine goals that they would like to achieve and more importantly achieving it under the guidance of the mentors. Overall the survey showed that both mentors and mentees were satisfied with the Institute's Mentoring Program.

From left, Michelle Ng (Suncorp), Leon Yan (Covermore) and Sammy Liu (KPMG)

The focus was then shifted to a panel discussion with three existing mentors and mentees. The panel included:

- Michelle Ng, Senior Actuarial Analyst at Suncorp who has been a mentee for several years.
- Leon Yan, Actuarial Manager at Covermore Travel Insurance, who has experience in being both a mentee and a mentor.
- Sammy Liu, Associate Director at KPMG Australia, who has been a mentor to multiple mentees over several years.



The key take-outs from the discussions were:

- The career development and networking opportunities are priceless regardless if you are acting as a mentor or mentee.
- Being a mentor is a great way to give back to the actuarial profession in helping younger actuaries by sharing their own experiences.
- Sometimes we may only be able to see something from a single view only – a mentor can provide a bigger picture/more diverse range of views.
- Being able to assist someone more junior in their professional development as a mentor is a rewarding experience.
- Opportunity to learn from the experience of someone more senior to avoid potential pitfalls that you may not have foreseen.
- On the flipside, the opportunity for mentors to help mentees avoid pitfalls they have faced in the past can be extremely satisfying.
- The mentors and mentees do not need to be from the same working area for a mentor-mentee relationship to be successful!
- The program provides a platform to match suitable mentors and mentees and a casual environment to discuss issues that may not be suitable to discuss within a work environment.

Kinnect

At the end of the session, a new development was finally announced! Kinnect, an app built by Joseph Daley and Kevin Wong from TAL, allows users to find mentees and mentors over a social media platform. The demonstration showed plenty of promise including the ability to connect with potential mentors with experience in your area of interest in an instant. The app is expected to be released in 2018, so stay tuned for any updates!

Kevin Wong and Joseph Daley, Kinnect developers from TAL

For more information, read President Jenny Lyon's most recent column on mentoring, visit the mentoring page on the Actuaries Institute website or view the brochure.

The Actuaries Institute Mentoring Program Working Group reports to the Leadership and Career Development Committee,, Members of the Working Group are Gloria Yu (Convenor), Neil Ch'ng, Niki Appleton, Bill Konstantinidis, Katrina McFadyen and Jennifer Yu.

Stress Testing – Confluence of the Actuaries and Economists Viewpoints

By Senthooran Nagarajan and Michael Thomas

Reading time: 3 mins

How can actuaries and quantitative professionals involved with stress testing help their organisations derive more value from the practice? Sen Nagarajan and Michael Thomas give us an overview of their 2017 Actuaries Summit presentation on stress testing.

Stress testing is now accepted as a key tool for understanding capital requirements, selecting capital management tools and testing resiliency under extreme but plausible conditions. Regulators have also embraced stress testing as part of their supervisory processes, with regular industry wide stress tests run across banks and insurance companies.

Stress testing in many organisations is not well utilised in broader business management, other than in ICAAP. How can actuaries and quantitative professionals involved with stress testing help their organisations derive more value from stress testing?

Involving economists in the design of stresses and in the modelling of impacts can add significant value. Economists in particular can provide insights into how scenarios can propagate through the economy and how this then impacts the organisation through its business drivers. In our presentation, we recap how stress testing has evolved, and then provide examples on how an economist's perspective can help to better understand macroeconomic stresses. Banks in particular use macro-economic stress testing extensively given the obvious link between economic conditions and credit defaults. Banks have developed models to translate economic scenarios into financial drivers such as defaults, net interest margins and market valuations that determine the capital requirements from a regulatory and economic capital perspective.

The relevance of macroeconomic stress testing for life and general insurers is mixed. Life insurers are diverse with a mix of conglomerates, specialised insurers and reinsurers. The relevance of macroeconomic stresses varies depending on the particular lines of business that a life insurer offers. Similarly macro-economic stress tests are relevant to general insurers with exposure to specific lines such as lenders mortgage insurance and trade credit.

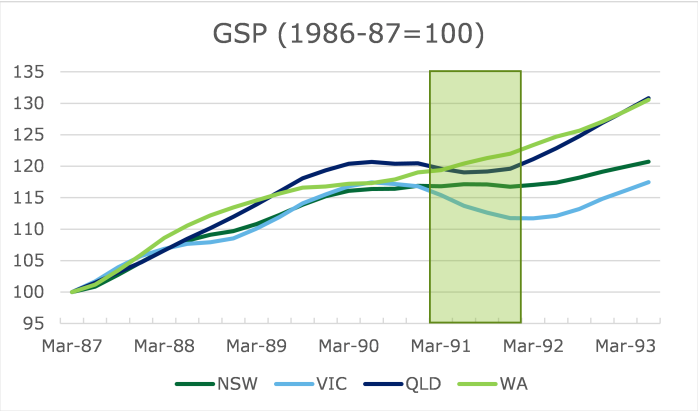
While financial institutions have developed sophisticated models and have invested in stress testing infrastructure, there are some areas where stress testing is not as well utilised. This is due to a combination of the following factors:

- The use of national aggregate scenario does not provide insight into financial institution's specific exposures both in regional, type of lending and industry. APRA for example considers a granular view of risk an important part of mortgage portfolio management *"Good practice would be for an ADI to conduct stress testing at a sufficiently granular level to enable adequate sensitivity to the risk characteristics of different loan types. These characteristics would typically include product type, LVR, LMI coverage (including counterparty credit risk), serviceability, geography, vintage, origination channel and borrower characteristics." APG 223, Residential Mortgage Lending.*
- The models used may not directly look at outcomes across connected parts of the economy such as GDP, interest rates, currency rates, terms of trade etc. According to Wayne Byres *"Some models still rely too heavily on a single economic driver or judgement alone, lacking a convincing link to the scenario or taking a high-level approach that misses the differences in risk across different types of asset."*

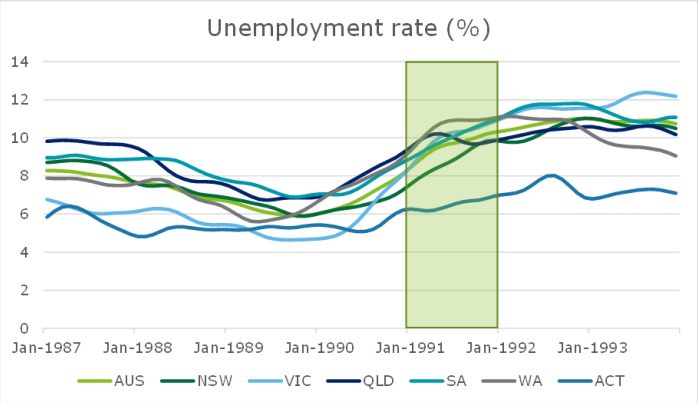
This is where economic thinking and modelling can be used in the stress testing process to augment the statistical and financial models developed by actuaries. In particular, economists have developed models that can flow a scenario through components parts of the economy to provide a richer picture of impacts across regions and industries. Previous downturns show that the impact of macro stresses can vary greatly between industries and regions. Further the impact is very sensitive to the source and nature of the macro economic shock.

In the recession of the 90s the house price impacts and unemployment increases were not distributed equally. The output by state differs during the period of the 1990s for

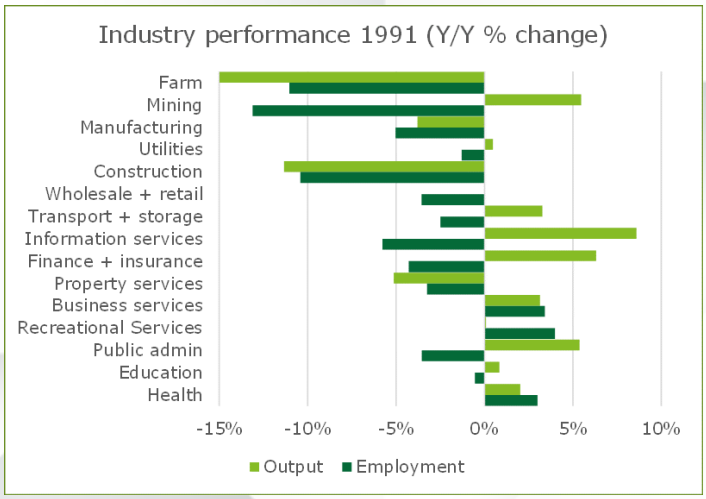
example Victoria saw a marked dip in Gross State Produce relative to NSW.



This is also reflect in unemployment rates.Unemployment is a key driver of default in lending asset classes such as mortgages and personal loans.



The differences observed at a state level are driven by the exposure that each state has to industries. Industries in turn react differently in terms of timing and depth of downturn. The source of the stress also impacts the outcome. For example industries with an export focus can benefit from currency movements that improve their competitiveness despite a downturn across the broader economy. This is where the complex interplay between interest rates and currencies can play a significant role in how a macro economic stress plays out. The chart shows how output and employment in each industry changed over the period of the 1991 recession:



Economists' models capture these interactions. Using these insights in stress testing can identify pockets of the lender's portfolio that are exposed to particular shocks. Incorporating these into stress test can provide information that can be used in risk identification, risk limit setting, concentration risk measurement and pricing.

Introducing the Wider Health Sub-committee

By Tim Goodhew

Reading time: 1 minute

Tim Goodhew introduces the Wider Health Sub-committee at the Actuaries Institute and its goal to raise awareness of the career pathway of Health Actuaries and the broader role actuaries can play in health reform and policy.

Health reform is notoriously controversial, with many vested interests and varied opinions as to what is the 'right' model of care and the 'right' way to finance it.

With the introduction of the electronic medical record (eMR) and infrastructure to support data linkage across the wealth of data held by the Commonwealth and each of the States and Territories the skillset of the modern day Health Actuary is coming into greater demand. More broadly, actuaries are also playing a strong role in systems that provide care and support outside of the hospital or

MEET THE WIDER HEALTH SUB-COMMITTEE

Tim Goodhew (Chairperson) – EY
Richard Hurley – Commonwealth Department of Health
Raymond Yeow – NSW Health
Sophie Dyson – Three Rivers Consulting
Roland Fan – PwC
James Vincent - NDIS

surgery environment – for example through the strong emphasis on data that underpins the NDIS and increasing investment in analytics within the social services system.

Recognising the role that Actuaries currently play in Health beyond Private Health Insurance the Health Practice Committee of the Actuaries Institute has established a Wider Health sub-committee to focus on the broader contribution Actuaries can make to health reform and policy.

Our goal is to raise awareness of the career pathway of Health Actuaries and the broader role the Actuaries Institute can play in advising on health reform and government policy.

To showcase the diverse and complex nature of healthcare the wider health sub-committee intends to publish regular articles from Health Actuaries in the field.

Interested in Wider Health? Reach out to the sub-committee on how you can become more involved by contacting chair Tim Goodhew at tim.goodhew@au.ey.com.

Look out for the Wider Health sub-committees first article - **Coming Soon!**

The Value of the Actuarial Skill Set in the Future World

By Tory Rowley James and Tom Aspinall

Reading time: 2 mins

Bond University Actuarial Students Tory Rowley James and Thomas Aspinall discuss why the actuarial career is an investment that will stand the test of time in all aspects of the professional sector.

The actuarial profession is a growing demand in today's competitive job market. Companies are becoming ever more aware of the importance of managing liabilities and risk exposure, resulting in the core skills an Actuary provides becoming increasingly sought after by company directors.

Employers are looking for individuals who encompass analytical as well as problem solving skills to use historic data and turn it into useful information for goals and performance strategies, whilst acting in a professional manner, without personal bias, and providing vital management consulting. Actuarial graduates need to invest in building skills that differentiate and enhance their ability to perform in the workplace optimally; not only to stand out in applications but to ensure long-term durability throughout their career.

"These skills are malleable and durable because they tier through extended learning."

An actuarial career can branch into many different pathways. Actuaries usually work in fields of insurance, finance, economics and public health. However, due to the growing demand for actuaries, the need for their skill sets are used in a wide range of industries throughout the world. The Actuarial consulting process is designed to use a management framework that works in all types of industries and situations, from calculating reserves for large life insurance companies to analysing the risks and operations of a coffee shop.

These skills are malleable and durable because they tier through extended learning. They align with the movements of information and big-data that are and continue to affect the major stakeholders of the business world. Actuaries constantly nurture their foundation skills by extending education and research on the job to withstand the ever-growing inflated hurdles which govern the short-term and long-term results of any organisation.

These skills are not only universal but are highly transferrable across the board. Actuaries are valuable to more than one industry because they aim to solve uncertainty and provide useful insight to assist strategic planning. An Actuary uses mathematics as a tool to analyse data and transform this into viable information, in conjunction with the knowledge of the internal and external factors that can affect a range of commercial practices including economical and government influences. Thus, the profession can be moulded to be useful into a range of different situations, departments and industries.

The Actuarial profession has recently found itself branching out from the traditional roles of working within the insurance sector and into other industries. This makes the career prospects of actuaries both vast and exciting. The potential future roles that Actuaries may find themselves working in include any consulting position in which they are able to provide advice to administrators and directors. It's possible that the Actuarial profession could see itself becoming more prominent within the political sector, providing advice on fiscal policy as well as risk management procedures to potential new laws or policies the government is trying to provide.

Those considering studying Actuarial Sciences will find the time required to invest in relevant study courses and build the portfolio of tools will be challenging but recompensing. They will also find themselves with a set of skills that can be utilized across an increasing number of industries and roles.

The Actuarial career is an investment that will stand the test of time in all aspects of the professional sector. It centres around risk management and answering questions and thus will always be useful from the planning to the outset of business endeavours.

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