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Actuaries DIGITAL

In this issue

IMPORTANT INFORMATION FOR CONTRIBUTORS
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Brexit exit - a trip down hindsight lane

By David Bell

CEO David Bell reflects on the essay by Oliver Hartwich called 'Why Europe Failed' in light of the recent Brexit vote to leave the EU. He also shares some lessons civil society can take from this event.

"In the midst of war and crisis nothing is as clear or as certain as it appears in hindsight."

Barbara Tuchman, historian

I have only just read a remarkably insightful (in hindsight of course) essay called "Why Europe Failed" published in 2015 by Oliver Hartwich. I suspect if I had read it before the Brexit vote I might have understood why the 52% of Britons who voted to leave the European Union (EU), voted to do so (I hasten to add I still disagree with them, but that's irrelevant of course as I live in Australia).

Instead I chose to listen to people who agreed with me that, surely, it was not possible for a rational people to turn their back on what has, by and large, proved to be a successful economic union boasting 28 members, and with others (like Scotland – if it becomes a nation state) wishing to join. I relied on my instincts and upbringing that the citizens of Winston Churchill's Sceptred Isle would never ever actually bring themselves to undo one of the centrepieces of the post-World War 2 structural arrangements designed to prevent the ravages and turmoil that characterised late 19th century to mid 20th century Europe.

And yet they did to the surprise of even the leaders of the British Eurosceptic movement.

In the weeks, months and years to come when Britain painfully moves to exit the European Union and unscramble the EU omelette, there will be plenty of hyperbole and metaphors used to describe what has happened – 'tectonic shifts' and the like. But what will be just as interesting is to actually understand why it happened, and what it might mean for policy in liberal democracies like Australia.

A good place to start is the aforementioned Mr Hartwich. Hartwich provides a pen picture of Europe's decline and says that while "… Europe is still one of the most prosperous, and most liveable places on earth … the cracks are clearly visible. It is a world region that made the past but will not make the future."

Hartwich brands the European project of integration as an elitist undertaking, and cites evidence to show that it has always lacked popular support, and which continues to decline. This has been compounded (or caused) by a lack of interest by Europeans in EU affairs.

As an interesting sidelight – astonishingly - eight hours after the Brexit polls closed, Google reported that searches for "what happens if we leave the EU" had more than tripled in the UK.[1]

Hartwich says that the only reason the European integration project has continued is because European politicians have kept, and keep on, pushing it. One of their tools has been to seek legitimacy through referenda – but, he says, if a referendum doesn't achieve the 'right' result then people are given a second chance to come with a better or more correct result. He cites the treaties of Rome, Maastricht, Nice and Lisbon as examples of this behaviour.

He also says that European elites are seemingly blind to this behaviour and, instead, choose to emphasise the fact that Europe is a democratic project – the European Parliament after all, is the second-largest electorate in the world after India. Hartwich dismisses this argument with the riposte that "… the common European hardly takes any notice of it." This is problematic because it passes laws that affect the citizenry of nation-states who then have no capacity to deviate from them.

Not all of the EU is bad says Hartwich. There has, for example, been an increase in the freedom of movement through the Schengen agreement which allows free cross-border movement for people. (Interestingly, though, concerns with migration appear to have been one of the issues resting in Britons' minds when they voted last week).

He goes on to say that these freedoms, however, have not been sufficient to overcome the inherent flaws in the EU. There is a lack of a European people – people still identify with their home country first. Without this sense of national identity (the totalitarian USSR state suffered from the same problem) Hartwich argues there can never be a true democracy –diversity

in this instance is apparently running counter to the interests of the EU.

Hartwich also delves into a controversial contention that one of the ways in which Euro-politicians have been able to buy the public's silence and acquiescence for the EU project was to establish a welfare state and increase welfare payments – a modern day version of the Roman bread and circuses approach. The consequence has been high tax burdens for citizens and all the implications this has had for their economies.

So what are the broader lessons for civil society?

- *Elites can get it wrong*. Just because you are elected or appointed to high office with a first-class education does not necessarily mean that you are always right.
- *Ignore grass roots views at your peril*. Brexit appears to be yet another example of political hubris blinding decision-makers to the fact that their decisions need to be grounded in popular support. Arguing that the leadership card will trump the opposition of the majority is a dangerous path to tread.
- *Don't believe your own rhetoric*. Most of us have done it. We've become so convinced that our own researched, honed and polished arguments have such authority that not only can they not be denied, but that we refuse to acknowledge the views of others.
- *Is globalisation necessarily a good thing?* Unsurprisingly those (typically the elites) who have benefited argue yes. It has also become an accepted nostrum that global rules in such areas as the regulation of capital and trade are for the good. Of course those people who get left behind and don't reap the dividends that globalisation brings, equally unsurprisingly, become resentful. How much of this was present in the Brexit vote will be interesting to analyse.
- *Is the expanding welfare state sustainable in the long-run?* A difficult topic to cover given the politicised debate that inevitably follows. It is a vital question and one which our own country is facing into with an ageing population, expectations of comprehensive and affordable health services, and limited funds to pay for this demographic phenomenon.

The digital equivalent of vast forests will be consumed by the amount which will be written on Brexit and its consequences. Mine is only an early contribution which will inevitably be outdated in due course.

[1] https://www.washingtonpost.com/news/the-switch/wp/2016/06/24/the-british-are-frantically-googling-what-the-eu-is-hours-after-voting-to-leave-it/

Permission to fail is key to success - an interview with Hollard CEO Richard Enthoven

By Stephanie Quine and Sharanjit Paddam

An aggressive risk appetite and "allowing people to fail" has been key to CEO Richard Enthoven's success. Here, he speaks to Actuaries Digital Editor Sharanjit Paddam about Hollard's appetite for innovation, and why actuaries will 'have a field day' in the next 'blockbuster' moment coming for the insurance industry.

Richard Enthoven looks out at the Chatswood cityscape from Level 12 of Hollard Australia HQ. The South African national first came to Sydney in 1998, intending to stay for two years. He arrived on a brief from Hollard to see if there was an opportunity for non-traditional distribution in the Australian market.

"The plan was for somebody else to come to Australia and take advantage of it if there was," says Richard whose grandfather Robert and father Patrick set up Hollard Insurance in South Africa a decade earlier.

In 1998, it was completely acceptable for an insurer to receive an order for a policy and issue the documents two weeks later. Most of the 'Top 10' insurance companies operating then are no longer controlled by the same owners.

"The really successful actuaries of the future will be able to do all the really hard core [data] analytics, extract the key themes from that and be able to explain it to seven-year-old children."

"There have been waves and waves of acquisitions…look at GIO, FHF, HIH. The concentration that exists today in the market didn't exist back then; non-traditional distribution didn't really exist," says Richard.

Consumers now compare and select policies at their fingertips, expecting personalised, immediate service.

"They do not judge us by the performance of the other players in the industry, they judge us by other companies from whom they consume products, and their service expectations have gone through the roof," says Richard.

Nothing to lose

Richard's appetite for strategic innovation and challenging the status quo was evident early on. He studied economics and international relations, completing a Master's degree at the London School of Economics, and moved to South America to work for AIG after graduating.

View the video here:
https://youtu.be/4swhRwYqO7s

Working in Chile and Argentina, he observed first-hand theories on 'strategic adjustment' and the effectiveness of developing nations switching to an aggressive, more market-based economic formula (often imposed by the IMF or the Word Bank in exchange for debt relief or debt).

After a stint in the US working for Progressive Insurance, Richard came to Sydney.

"You need to allow people to fail. You cannot have a culture where failure is not tolerated and expect people to innovate."

At that time, insurance brokers were offering products chiefly through branch offices and call centres. Hollard obtained a general insurance licence from APRA in 2000 and the business commenced selling home insurance. By 2005, the company started cross-selling basic term life insurance products to its existing general insurance customer base in Australia.

"We never anticipated that the direct life franchise would actually be a standalone business," says Richard, who was by then managing a team of 30. "We took a view that the opportunity did exist for non-traditional distribution and that's really a pillar that the business has grown on."

Hollard is known for its nimbleness and innovative new products. It has successfully challenged major players in the market, growing its own brands, such as *Real Insurance*, and developing partnerships with the RSPCA, Woolworths and many others.

"When you're a start-up business you really have nothing to lose so you can afford to have an aggressive risk appetite," says Richard.

In 2011, Hollard extended its product offering to pet and health insurance.

“I think the thing that has really differentiated us is our willingness to try things – whether it’s direct life insurance, pet insurance or trying white labelling opportunities or bicycle insurance, we explicitly have a high tolerance for failure in the organisation,” says Richard.

Since opening in Australia in 1999, Hollard has issued more than 500,000 policies with more than $16 billion worth of assets insured.

Permission to fail

Richard now manages close to 1000 staff and spends the majority of his working day recruiting, engaging and retaining them.

“Keeping the opportunity pipeline open for everybody and seeing how people respond to that has been the most interesting thing for me,” he says.

“Management’s job is to find the very best people and empower them aggressively. You need to allow people to fail. You cannot have a culture where failure is not tolerated and expect people to innovate.

If I look at the successful people in Hollard they tend to be self-starters: people who like to have a broad mandate; responsibility and accountability for the decisions they make.”

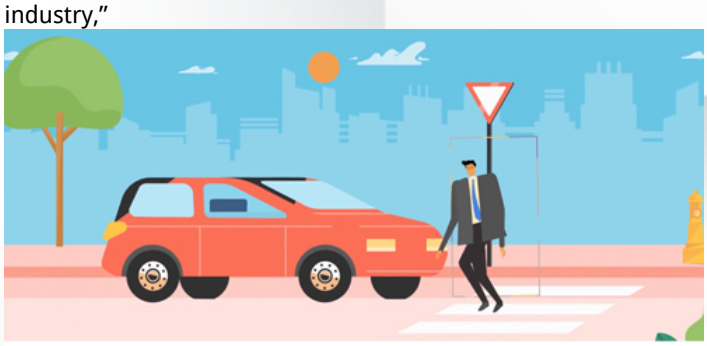
Disruption of all

Looking to the future, Richard envisages unprecedented change and challenges for insurers.

“I don’t recall any situation in economic history where every business was facing potentially the ‘blockbuster moment’ where your entire business model is undermined by technological change,” he says.

It is expected that by 2025, 104 million new cars will have some form of telematics connectivity. The impact of driverless cars will come much sooner and be "much more profound than people expect" says Richard.

“My hypothesis is in 20 years’ time, very few people will own cars. The owner-driver fleet will be 15 to 20% of what it is today...[it’s] a blockbuster moment coming for the insurance industry,”

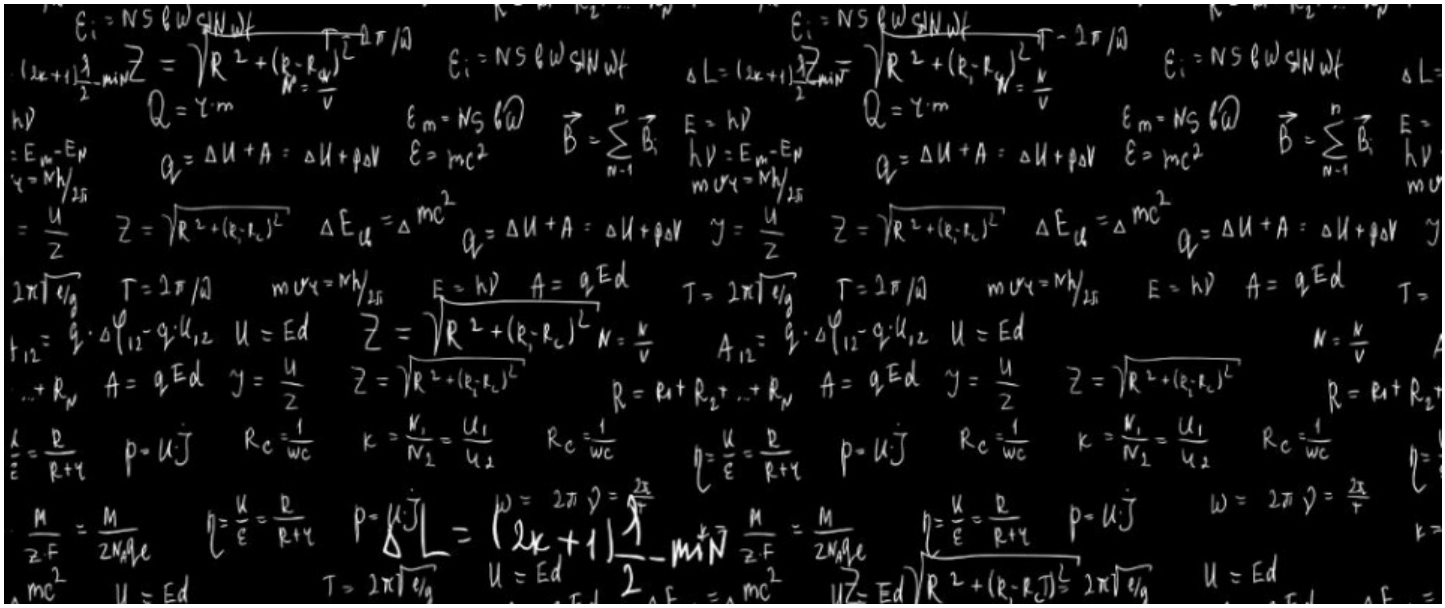


He also anticipates growing fragmentation of the industry and more specialist businesses with robust intellectual property around a single component of the industry.

“Traditionally, the obvious thing to do was to hoover all of that IP into one company and use it as a proprietary. I suspect [now] you’re going to see, for example, digital commercial underwriting platforms that will become industry-wide, almost like credit bureaus, and for the people that design them there will be much more value in servicing the whole industry than being wrapped up in a single corporate,” he says.

While insurers grapple with non-traditional data sources that will allow them to better understand and price risk, complex mathematics and analytical skills are becoming more and more valuable.

"Actuaries are going to have a field day as the quantum of information that we have access to grows exponentially," says Richard, adding that the broader economy, beyond just the financial services industry, is starting to realise and better understand the benefits of the actuarial skill-set.



The Critical Line: Volume 4

By Oliver Chambers

In this month's mathematical musing: The Man Who Knew Infinity, interesting integers, nested radicals, and peculiar processes.

Rotten Tomatoes

About a month ago I went to see *The Man Who Knew Infinity* – the captivating intersection of pure mathematics and Hollywood blockbusters. The movie follows the life of eminent Indian mathematician Srinivasa Ramanujan (Dev Patel) and his Cambridge wing-man Godfrey Hardey (Jeremy Irons). In what is probably no surprise to anyone at all, a movie about two mathematicians thinking about mathematics for 108 minutes was a little dry. Though true to rigor, *The Man Who Knew Infinity* does obey the Hollywood formula: Movie = Adversity + Breakthrough + Love Interest.

- Adversity: Hollywood-style bigotry of the Trinity College fellows
- Breakthrough: Dev Patel running through the college courtyard clutching a piece of paper on which he has scribbled down a new formula
- Love Interest: an arranged marriage stifled by an overbearing mother

Of course, the Hollywood formula does exist for a reason and to my surprise the movie seems to have received fairly positive reviews (63% on Rotten Tomatoes with 80% audience approval), so don't take my word for it.

A scene from The Man Who Knew Infinity starring Dev Patel

Anyway, I decided I would talk about this movie in the hopes that it would inspire this month's puzzle. At one point during the movie a character quipped that "every positive integer was one of Ramanujan's personal friends." This reminded me of the well-known theorem that all positive integers are interesting; below is the simple proof of this fact:

Theorem: all positive integers are interesting

Proof: suppose, for the sake of contradiction, that not all positive integers are interesting. Let S be the set of all integers that are not interesting. S is non-empty and well-ordered so it must have a least element, n: the smallest positive integers that isn't interesting. But, this is an interesting property of n - contradiction! It follows that all positive integers must be interesting.

Exercise for the reader: where is the fallacy?

Warming Up

This month's warm-up puzzles are taken from Ramanujan's notebooks.

Simplify the following expressions:

1. $\sqrt{2+\sqrt{2+\sqrt{2+\cdots}}}$
2. $\sqrt{1+1\cdot\sqrt{1+2\cdot\sqrt{1+3\cdot\sqrt{\cdots}}}}$

Click to reveal solution

SOLUTION:

1. Let $x=\sqrt{2+\sqrt{2+\sqrt{2+\cdots}}}$. Then we can express the equation as $x=\sqrt{2+x}$. This is a quadratic with roots at 2 and -1, the latter must be discarded because it is negative. So $\sqrt{2+\sqrt{2+\sqrt{2+\cdots}}}=2$.
2. Observe that for a positive number n, $(n+1)^2=1+n\cdot\sqrt{(n+2)^2}$. If we continue to expand this expression:

$$\begin{aligned}(n+1)^2 &= 1+n\cdot\sqrt{(n+2)^2}\\ &= 1+n\cdot\sqrt{1+(n+1)\cdot\sqrt{(n+3)^2}}\\ &= 1+n\cdot\sqrt{1+(n+1)\cdot\sqrt{1+(n+2)\cdot\sqrt{\cdots}}}\end{aligned}$$

If we substitute $n=1$ then if follows that:

$$\sqrt{1+1\cdot\sqrt{1+2\cdot\sqrt{1+3\cdot\sqrt{\cdots}}}}=2$$

Now for the main event…

A Peculiar Process

Start with any string of (lowercase) letters. Create a new string by following this process: remove the first letter of the string. For every remaining letter of the string: if that letter is 'z', do nothing. Otherwise, insert after that letter, the subsequent letter of the alphabet.

For example, starting with the string 'brazen', after one iteration the string becomes 'rsabzefno', after applying the process again it becomes 'stabbczeffgnoop'.

Demonstrate that given any finite length string, repeating this process will eventually result in the empty string.

Send your proof to ActuariesMag@actuaries.asn.au for your chance to win a $50 Dymocks voucher!

The Critical Line Vol.3 Solution

There were three answers to this Puzzle, and all three were correct! The winner, chosen via random draw, is Eleanor Stoeckeler. Congratulations!

The solution and explanation to the Critical Line Volume 3 can be downloaded here: Critical Line Vol3 solution

Insuring Cyber Risk – Concerns about Coverage

By Susie Amos and Alina Pettifer

What are the risks and opportunities in defining and pricing insurance cover for cyber risk? Susie Amos and Alina Pettifer explore concerns about coverage in Part One of this Two Part series.

It is fair to say that cyber insurance is in its infancy in Australia. Businesses, brokers and insurers are still working out the best way for insurance to protect against cyber risk while ensuring the insurance model is sustainable. Protecting against emerging risks is an integral part of the insurance proposition – so how does the insurance industry continue to help businesses and the wider economy manage cyber risk?

Insurers' concerns fall into two categories – concerns about scope of coverage, and concerns about managing the risks. In this article, we explore these concerns and offer some thoughts about how the insurance industry can respond in this rapidly evolving world.

INSURER CONCERNS	
Coverage	Risks
Is it insurable?	How do we price and underwrite?
How should we define the cover?	How will we deal with aggregation?
What are the overlaps with other insurances?	How do we assess claims?
Do we need to provide help as well as money?	How will the risk change over time?

Is it insurable?

Cyber risk has similar features to existing insured risks. So why should cyber insurance be an issue for insurers? The key concerns about insurability are:

- The **non-random nature** of cyber losses. More and more we are told that experiencing a cyber breach is "inevitable".
- The difficulties with **proving and measuring loss**
- **Predictability of losses** is low, due to a lack of data and the evolving nature of the risk.

While these attributes make it more difficult to insure, as an industry we have successfully managed them for other classes (workers' compensation, business interruption, crime, D&O).

Most of the insurability problems can be reduced, if not eliminated, by establishing coverage deductibles and limits, as well as clear-cut definitions of cyber risk. Over time, the insurance pools will become larger and more data will be available.

How do we define coverage?

While cyber insurance is a new product, we have already seen 16 product offerings in Australia. It has been a long time since a new general insurance product was last launched, and most market players have not experienced the journey to maturity for a new product. At this stage, there is no standard product or wording for cyber insurance – even in the US and Lloyd's, where the business has been written for a number of years.

Most current cyber policies offer some combination of first-party coverage – protecting against losses suffered by the insured – and liability coverage, protecting against claims by third parties. The *trigger* of a cyber policy varies across product offerings. Some policies are triggered by an event that results in a 'loss of data' or a 'claim' against the insured. Some policies provide a broader level of cover and are triggered when a cyber or data incident occurs.

The coverage offered by some policies is fairly limited at this stage. We see insurers excluding coverage where losses arise due to *human error, unencrypted data, intellectual property, unsecure websites access, bodily injury and property damage*. At the same time, we observe relatively low cover limits of (say) $10 million being offered.

There is no right answer to defining cyber insurance coverage. However, insurers should look to strike a balance between the needs of the business (seeking broader coverage) and the needs of the insurer (wanting to limit loss potential).

What are the overlaps with other insurances?

Traditional insurance products typically exclude cyber-related losses, and therefore current products offer little cover for cyber-related losses. Cyber insurance is intended to cover the gaps in traditional insurance coverage, as well as covering new risks which are emerging in the digital age.

The table below summarises the cyber-related covers offered by different insurance types.

Cover	Property	General Liability	MGT Liability	PI / D&O	IT Liability	Crime	Cyber Security
1st Party							
Incidence Response	✗	✗	✗	✗	✗	?	✓
Information Asset Loss	✗	✗	✗	✗	✗	?	✓
Regulatory	✗	✗	✓	✗	✗	?	✓
Cyber Extortion Expenses	✗	✗	✗	✗	✗	?	✓
Loss of Income	✗	✗	✗	✗	✗	?	?
3rd Party							
Data Privacy Liability	✗	✗	?	?	?	✗	✓
Media Liability	✗	?	?	?	?	✗	✓
Network Security Liability	✗	✗	✗	✗	?	✗	✓

✗ Not generally covered ✓ Covered ? Uncertain or varied coverage

Property and Liability insurance do not usually cover cyber-related losses, due to cyber exclusions, but some policies which do not have the exclusions will be exposed to cyber-related claims. In some cases, there is uncertainty around coverage for cyber risks, and outcomes will depend on the framing of a claim and potentially on a court decision.

Cyber security insurance covers most of the gaps in traditional products. At this stage, it is typically being offered as a stand-alone product, but as the market matures we may see cyber coverages incorporated into traditional products (essentially, removal of cyber exclusions).

There are some overlaps between cyber insurance cover and more traditional products – for example, crime and management liability policies. We expect these overlaps will be managed in the same way as overlaps between general liability, professional indemnity and D&O – i.e. through negotiations or court decisions

Do we need to provide help as well as money?

While most businesses are aware of cyber-crime risk, most do not yet have the expertise to deal with an incident. Some insurers provide expert assistance as part of their product offering – among other things, this helps minimise claims costs. Assistance may be provided by law firms, IT Forensic, Public Relations, IT Security, Privacy Compliance and Business Income Adjusting.

The approach of providing help as well as money is not unique in the current insurance market, but has been done in the (distant) past: when property insurance was first introduced in the 1800s, fire trucks were provided by the insurers.

Perhaps we will see insurers providing less in the way of assistance, as businesses develop experience and skills in dealing with cyber incidents. At this stage assistance appears to be valued by policyholders and is beneficial in reducing cyber losses.

Actuarial dares

By Gae Robinson

For an actuary, passing an exam is an important milestone. It means one step closer to the end, or just the end of their seemingly never-ending course and definitely something worth celebrating. Gae Robinson shares some memorable moments in the history of Finity's actuarial dares.

Finity's longstanding tradition of exam dares (which began in our days as Trowbridge Consulting) has seen many brave feats, strange activities, and sometimes just plain silly stuff. Here's how it works:

1. Shortly before exam results, each person nominates a dare that they'll complete if they pass.
2. The proposed dare is approved and ratified by Finity's Exam Dare Committee. Greater levels of bravado/foolishness are expected on qualification.
3. If you pass, you complete your dare – ideally, on results day.

Below, for your enjoyment, is a showcase of dares – by category.

Personal grooming

The hairdresser was a little concerned that this style was being requested

The most impressive 'personal decoration' to date is a permanent one: the Institute's logo tattooed discreetly on the inside of an ankle. And I think you can guess what happened when, years later, the Institute updated the logo. The updated version is on the other ankle, of course!

Public Performance

Busking at Circular Quay has been tried in many forms – dance, music, oratory..

The 'individual performance' dare reached its high point when one of our Melbourne men dressed in a very undersized sequinned pink outfit, stood on a sculpture in the Bourke St Mall and performed a dance to Kylie Minogue songs. This attracted quite a crowd, including just a little too much attention from one scruffy member of the public (sadly, no photos could be unearthed!).

There have been memorable group performances too.

Aerobics Oz-Style on the Opera House steps – and yes, security did appear and move them on

Christmas carolling in the building lifts.

"No, Gary, No" routine, inspired by the anti-smoking advertisement.

Imitation as Flattery

The dare may involve dressing up as one of your esteemed colleagues.

This darer had to create a bald patch for himself.

Spot the real Mel!

Services to the Public

When the dare involves providing a service to the public, the public may respond favourably. Or not.

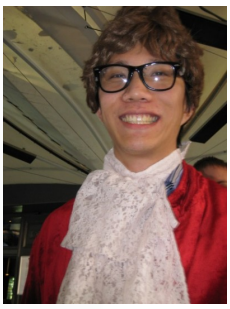
Not many takers for this one.

And we live in a world where even heavily discounted (free) kisses are hard to sell.

Character dress-up

Superheroes and other characters are, naturally, popular choices.

The rapping hot dog



Yeah, baby, yeah!!!

A very happy Robin.

Thor, spotted in a Melbourne pub.

Highly personalised

What do you do when the exam pass-er is a very vocal, dyed in the wool Liberal supporter? You ask him to dress up as Julia Gillard and present a pro-Labor speech on the footpath!

Ladyboy

Let's just say: this happened three years in a row.

And that's how it's done!

The dares make Results Day fun for everyone in the office – including the other tenants on our floor, who are now used to seeing gorillas, Superman, green-haired people etc in the bathrooms.

The great dares become legendary, and tales are passed from generation to generation. In all our years of dare activity, the only 'injuries' have been to dignity.

The tradition remains strong!

Fittingly, as I complete this article it is Results Day. Here I am with my (temporary) doppelganger.

Wealth Management Investment Competition 2016-2017

By Martin Hickling

Following the success of last year's Asset Allocation competition, the Wealth Management Sub-Committee has decided to run a new investment competition, but with a twist. Instead of acting as a Portfolio Manager, this year you must act as an Investment Analyst / Economist – and your Portfolio Manager boss is going to ask you some demanding questions!

Your Portfolio Manager boss needs help, are you ready?

You will be given twenty propositions relating to investment markets. For each proposition you must answer: 'yes', 'no' or 'unsure'.

At 30 June 2017 your Portfolio Manager boss will then assess how well you have performed. Hope you do ok!

Each proposition will be scaled depending on the responses from other participants in the competition. For a proposition which receives more 'yes' answers than 'no' answers, the scaling factor for a 'yes' answer that proves to be correct will be lower than the scaling factor that would be used for a 'no' answer if that had turned out to be correct.

The scaling factor to be used for each proposition is: the sum of all 'yes' and 'no' answers divided by the number of correct answers.

Those participants with correct answers for a proposition will be given one point multiplied by that proposition's scale factor. Incorrect answers will be given a score of zero points. Any 'unsure' answers will not affect the scale factor and will be allocated one point for that proposition.

For example, if a proposition had 30 'yes' answers and 20 'no' answers, and the correct answer was 'yes', those that answered 'yes' would get a score of 1.67 and those that answered 'no' would get a score of zero points. If the correct answer was 'no', those that answered 'no' would get a score of 2.50 and those that answered 'yes' would get a score of zero points. Those that answered 'unsure' would get one point.

Each participant's total score will be the sum of their scores for each of the 20 propositions. A 'market index' score will be 20 points. Can you beat the market? The winner of the competition will be the person with the highest total score. Fabulous prizes will be offered to the top three place-getters. There is nothing to lose, except for bragging rights!!

Entries must be received no later than **5.00pm Friday 15 July 2016**.

To enter, Click here to start the survey

When entries have closed the spread of answers for each proposition will be revealed in an *Actuaries Magazine* article. Are you bullish, bearish or just not sure?

Click here for Terms & Conditions.

Seminar eyes Future of Private Healthcare

By Nicholas Stolk

Nick Stolk reviews the recent 'Future of Health Seminar' that saw industry leaders discuss product complexity, premium increases and the lack of customer engagement in Australia's private health insurance market.

When a major industry shake-up takes place there are three things that can happen: it can put you out of business, it can create medium-term comfort or it can give you an opportunity to build something new.

This was the reflection and challenge that Andrew Matthews (Medibank Chief Actuary) left delegates at the Institute's inaugural Future of Health Seminar (FOHS). The Seminar reflected the Health Practice Committee's desire for actuaries to partner with industry in solving the challenges facing the private healthcare sector. More than 90 delegates, from both the health industry and actuarial profession, had the opportunity to hear expert speakers share their views on where health insurance must go next.

And as you might expect, there were plenty of bold ideas not least from keynote speaker Professor Graeme Samuel. Professor Samuel, sharing his personal views after completing his work leading the Government's Private Health Insurance Review, began by describing the failures of Australia's private health insurance market. To paraphrase, an asymmetry of information; overwhelming product complexity; and premium increases totally out of line with CPI have all led to a lack of customer engagement.

Acknowledging that any reform would be complex and detailed, Professor Samuel argued that if he were the Health Minister, he would limit insurers' premium rate increases to those necessary to return a 13% return on equity. He would also increase scrutiny on the capital held by insurers, given the significant levels held above the APRA minimum capital requirements for the industry as a whole.

MEDIA COVERAGE

Professor Graeme Samuel's FOHS speech can be listened to herehere. His comments were covered in these mainstream press articles:

- 'Health fund returns 'making cover costly' - *SBS News*
- 'Election 2016: Health funds must change or face 'disaster' says Graeme Samuel' - *Financial Review*
- 'Ley must lean on insurers' *The Australian*

Professor Samuel didn't limit his ideas to insurers either. He called for a transition plan that would result in the full removal of the Government's Prostheses List, and recommended insurers collectively bargain to remove the waste inherent in the current supply chain. Finally, Samuel argued that private sector services have been compromised by vested interests and an enhanced government-led comparator service was required.

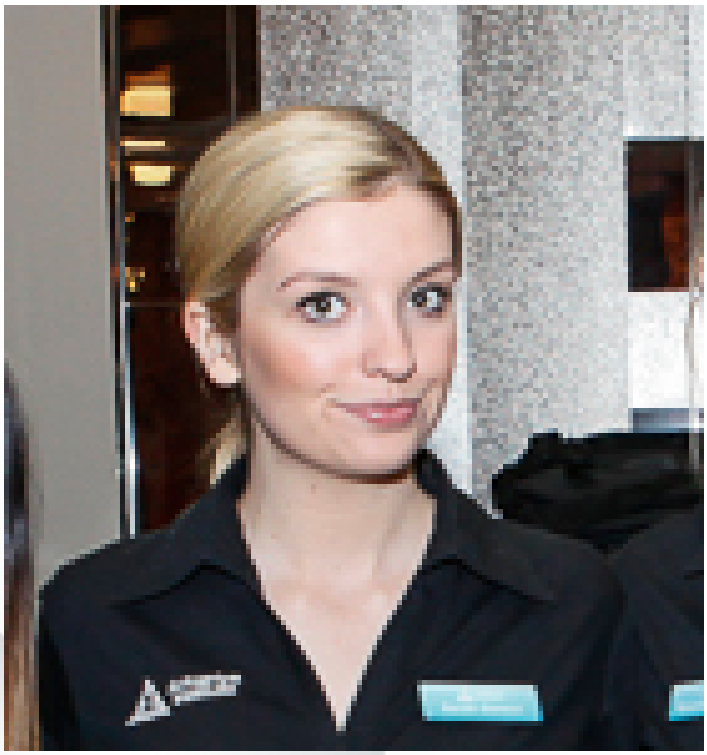
Of course not all changes have to be 'big bang.' Professor James Gillespie, the Deputy Director at the Menzies Centre for Health

Policy at the University of Sydney, suggested that reforms need to be made without starting from the idea that we can begin with a new and neater system. Very clearly there is a need to inject better evidence into practice and into health policy debate, and actuaries might be just the type of professionals needed to make that happen.

To neatly summarise the day, and as one speaker put it, "Why are we here today? Because our stakeholders are questioning our affordability and relevance. The time for change is now."

With that imperative, and so many opportunities for actuaries to lead and partner with industry, I am sure this will be the first of many 'Future of Health' Seminars.

View a Photo Gallery and all available speaker Presentations and Audio from FOHS 2016.



"It was a pleasure to see the FOHS Organising Committee's hard work and enthusiasm come together in such a successful Seminar. What a valuable contribution to their practice area." - Sarah Gibson, Actuaries Institute Events Manager

FOHS Event Organising Committee (from L-R): Nick Stolk, Bronwyn Hardy, Jamie Reid (Convenor), Ignatius Li, Indula Abeykoon, and (pictured above) Sarah Gibson.

President Lindsay Smartt thanks Jamie Reid (Finity) for sponsoring FOHS 2016

President Lindsay Smartt thanks Bevan Damm (EY) for sponsoring the event.

finity

EY
Building a better working world

Paying for Ancillary Health – Why cash is king.

By Chris Logan

Chris Logan compares six different funding models for ancillary healthcare (AH) against a set of criteria to suggest the optimum way to pay for AH/services like dental, physio and optical.

Ancillary healthcare, such as dental, physiotherapy and optical, has some interesting features:

- Governments tend to provide less funding, as it is not considered core or emergency health care
- Annual costs are moderate i.e. unlikely to exceed $5,000
- AH arguably fails the insurability test as most costs are foreseeable and not fortuitous

Hence, there is a greater emphasis on user pays. This article compares six different funding models for AH, as shown in Table 1.

Table 1. Funding models

	Funding Model	Examples
1	Cash	Legal tender, EFTPOS, eCurrency
2	Preserved / Store Savings	www.memplans.com.au mcintoshdental.co.nz/smilesaver/
3	Store / Credit card	www.pacificsmilesdental.com.au/for-patients/interest-free-payment-plans/ www.interestfree.com.au/ge_creditline/healthcare.html
4	Capitation Plan	www.smile.com.au
5	Insurance	www.nib.com.au/health-insurance/compare-extras
6	Crowdfunding	www.chuffed.org/

Most of the above payment methods above are self-explanatory, except for Preserved Savings and Capitation Plans.

Preserved Savings are savings accounts specifically for AH. Individual health providers or broader networks of providers provide preserved savings accounts. Preserved savings trades off liquidity for preferential service and discounts or capped rates from participating health providers.

Capitation Plans are where networks or individual health providers provide specified (normally preventative) services for a set fee for a given period. Capitation plans are maintenance contracts and hence fall outside of insurance regulation.

I consider each of these funding models based on five criteria:

1. Ability to deal with lumpiness of payments
2. Availability of funds
3. Visibility / transparency
4. Sharing of costs / benefits
5. Running costs

The result of our analysis is shown in Table 2, followed by some comments on each criterion.

Table 2. Score table of funding models for extra's (1 being good, 6 being bad)

Funding Model	smoothing payments	availability of funds	Visibility / transparency	Sharing of costs / benefits	Running costs	Simple sum of rankings
Cash	6	1	1	1	1	10
Preserved / Store Savings	3	3	3	2	2	13
Store / Credit card	1	2	4	3	2	12
Capitation Plan	4	5	5	4	5	23
Insurance	2	4	6	5	4	21
Crowdfunding	5	6	2	6	3	22

1. Ability to deal with lumpiness of payments

Healthcare provider distributed credit cards surprisingly are the best funding model for dealing with lumpiness of payments. Interest free periods usually range from 3, 6 or 12 months and limits on cards normally exceed insurance extras limits. Whether insurance or Preserved Savings is the next best method for dealing with lumpiness of payments depends on whether you have reached equivalent savings of insurance sub-limits. Capitation plans are only able to spread the cost of certain services, so perform poorly under this test. Cash, which does not involve any spreading, is ranked the worst.

2. Availability of funds

Cash is the most unhindered form of payment, followed by credit. Insurance and capitation plans restrict what is covered and so rank lower than preserved savings, which only have broad limitations such as a penalty or loss of benefit for spending outside of the network. Crowdfunding ranks last under this criteria due to the time taken to raise the funds.

3. Visibility and transparency

This criterion considers how well people understand where their money is going. As the payment methods become increasingly complex, transparency reduces. It is not surprising that insurance is ranked the worst given that in a recent Medibank survey more than half of those surveyed said they found the costs of private healthcare hard to understand.

4. Sharing of costs and benefits

Based on economic theory, the most efficient allocation of resources occurs when consumers pay the full cost of the goods that they consume. Hence, payment methods which do not share costs/benefits rank higher in my assessment. Crowdfunding obviously ranks the worst followed by insurance, which is community rated in Australia.

5. Running Costs

To some extent, this is a popularity measure, as more popular methods can spread the cost of more users. For instance, EFTPOS is used amongst most retailers, not just AH providers, so the running cost is lower than direct payments from insurers.

6. Overall

Using a simple sum of rankings, my analysis shows that cash is king, followed by credit for paying for AH.

Of course, this is a simplistic result and does not consider specific circumstances for individuals. For instance, if you have a large mortgage, it may make sense to take advantage of interest-free credit periods to pay for AH and then pay off the balance using a mortgage offset account.

Interestingly, the same funding models apply in other areas such as electronics (mobile plans/cover) and pet health care.

Brexit, politics and your perspective - President's Column

By Lindsay Smartt

In this month's column, President Lindsay Smartt shares his thoughts about the current political sphere, Brexit and his recent international visits within the actuarial community.

Before updating you on recent activities (see Actuarial Community below), I wanted to touch on the above – no I'm not getting political, but please feel free to tell me otherwise. Is it just me or are we in the midst of a very busy period in politics, both globally and locally?

- At the time of writing, the ASX hit a two-month low apparently on fears of Brexit actually taking place (more on Brexit below).
- Our own federal election on 2 July is approaching – politicians and candidates are saturating the media with a range of promises and attacks on opponents' policies.
- The US Clinton -v- Trump battle still has a way to run but provides an interesting spectacle, to say the least. On a personal note, I find it is extremely disappointing to see that even the horrific event in Orlando this week is being used for political point scoring.
- Back on the domestic front, page one of the *Australian Financial Review* carried a story this week about the Queensland government's intention to "raid" the public service superannuation funds to the tune of $billions despite advice from the state actuary. Good to see "actuary" appearing prominently in the media, and being relevant!

CEO David Bell and I were in the UK early this month holding an event for our Members in London (we also managed to squeeze in a tour of the historic Staple Inn buildings). I was invited to present to the Council of the Institute and Faculty of Actuaries (IFoA) in Edinburgh, which was a great opportunity to present our strategy and current thinking.

Being in the UK for a few days drove home just how much focus there is on the 23 June vote to Remain or Leave the EU. Both sides are arguing their cases in every form of media, and by all reports, it will be a close call. I don't pretend to understand all the issues or motives of the two camps, but suffice to say there is plenty of passion being expressed about the issue. On a global scale, the uncertainty and potential exit from the EU is starting to weigh in financial markets.

So I wasn't surprised that the 23 June date came up in casual conversations with our UK colleagues in Edinburgh. In fact, as I was talking with Colin Wilson, the incoming President of the IFoA, he remarked how he was very focused on 23 June. However, to my surprise, he said it wasn't about Brexit! Having been so conditioned through the media that 23 June was all about the Brexit Remain or Leave vote, it didn't occur to me that Colin may have been talking about something else. 23 June is in fact the day he assumes office as President and delivers his Presidential address.

I thought about this exchange later and it reminded me of the importance in communication of understanding your counterpart's perspective. We each bring assumptions and our own perspective to the table. However, it will be a very one-sided conversation if you don't consider the other side of the coin or the other person's perspective. This applies in many situations but it definitely has an application in business. As I chair Council I am interested to hear diverse views, different perspectives and for there to be robust debate and discussion, resulting in sound decisions.

Coming back to politics, it is, of course, a great privilege to be able to vote. I was reminded in a recent trip to Ballarat, and hearing again of the Eureka stockade, voting wasn't always for the masses. Men and women had to separately fight for the right to vote and run for parliament. We will hold our Council elections later in the year, but I feel it's never too soon to remind you of the importance for eligible Members to vote and have your say. Let's aim for a record turnout when the time comes.

President Lindsay Smartt and Actuaries Institute CEO David Bell at Staple Inn, UK

Actuarial Community

You may recall one of the themes from my Presidential message was *Our Place*. With considerable international travel over the last month, I was certainly able to observe first hand and contribute in a small way to *Our Place* in the international actuarial world.

First to Asia. We held functions with our members in Beijing, Hong Kong, Kuala Lumpur and Singapore. We also took the opportunity of meeting with the local actuarial associations and in some cases the regulator. Our members are held in high regard. One member observed that the reason the FIAA is valued is because we test for judgement and this produces new actuaries who are good problem-solvers from their first day on the job. Close to 15% of our members live in Asia and we are presently working on strategies to be able to provide improved levels of support. We found a number of areas where we can cooperate with the local actuarial associations and we look forward to closer working relationships with them.

Apart from the UK visit I mentioned above, the European visit took in the International Actuarial Association (IAA) half yearly meetings in St Petersburg. We have a number of members who volunteer on the various IAA committees and of that number we had about 10 who participated in the meetings in St Petersburg. I had the opportunity of presenting to the Presidents' Forum on Data Analytics and leading a discussion on opportunities for global collaboration. We have taken this important first step and there was considerable support to move forward. While I am going to be working for some solid developments, sometimes global cooperation means that progress can be slow.

Before concluding, let me share a little of what took place at the June Council meeting. My regular report on the Council meeting is available here.

One key decision was to conduct a comprehensive review of our qualification education system over the next six months. Education is such an important focus for Council and our motivation is to ensure we have a robust sustainable system that is reflective of modern education and appropriate for our profession. Members will of course be consulted prior to any changes being adopted.

We have commenced a review of our Disciplinary Scheme and a review of our Code of Conduct is also underway.

In my presidential message I stated I was interested in continuing to improve transparency of Council. To that end, Council has decided to make its meeting minutes available on request once they have been approved (starting with June 2016 noting that any sensitive matters will remain confidential). I will, of course, continue to provide the post Council meeting report to members and always welcome feedback.

Asian leaders in corporate Australia

By Trang Duncanson

In this editorial, Trang Duncanson gives us some food for thought in regards to cultural diversity in the workplace and the hidden disadvantages for those from Asian backgrounds. What does this mean for the actuary brand in the future?

I went to a talk recently '**Tackling the Gender Gap**' by Dr **Margaret Byrne**, UGM Consulting. As the discussion developed over lunch on the often talked about topic of the lack of females in senior leadership positions, Dr Byrne picked me out of the crowd and pointed at me, and said something like "*you are female and Asian, and reality is that this is a double disadvantage*".

"*you are female and Asian, and reality is that this is a double disadvantage*"

Well, that was uncomfortable, because while gender inequality is a common enough discussion topic these days, the topic of Asians in leadership positions (or lack of) is not often talked about.

When I looked around the room of some 200 of the more senior women and men who registered for this event from my organisation (it was oversubscribed with a waitlist) there was only a handful of us who were visibly Asian. I do not know whether there was self-selection ('we' were on average less likely to speak up and nominate ourselves on a clearly career/ leadership focused event), or there were just fewer of us who were at these levels – probably both.

There has been some 40 years of increasing awareness of the benefits of gender diversity (and I won't repeat the statistics and research here, but refer to Kate O'Reilly's 'Understanding Unconscious Bias' for a summary). At some point we should talk more openly about the lack of Asian leaders in organisations to give us a fighting chance of getting to critical mass (i.e. 30% as mentioned in Kate O'Reilly's speech) of leadership positions in 50-100 years. From personal experience, I would say that there can be some very significant cultural barriers that need to be overcome (for both the individual and also for those who manage them).

Like many 'highly academic' professions these days, the actuarial profession attracts many students and members from Asian backgrounds. So I wonder what does this mean for our actuary 'brand' in the future – will we increase our visibility as industry and organisational leaders, or will our brand decline from a leadership penetration viewpoint?

There is great article Wesley Yang wrote in the New York Times in 2011 called 'Paper Tigers', which essentially discusses why the culture of chasing academic grades alone does not translate well to gaining leadership positions in the corporate world, and in fact can be a barrier. Uncomfortable? Generalisations only? You can search for this article if you are very curious, and I should warn you that it can be a confronting read. Whether you agree with the sentiments in this article or not, it helps by generating some awareness and discussion.

Here are two more digestible articles from Dr Margaret Byrne, introducing some examples on (mis)communication challenges in the workplace arising from cultural differences. It is worth a thought.

Cultural Diversity a Difficult Dividend

Your Asian Talent – A Hidden Disadvantage of Difference

Part 3 success stories

By Kitty Leung

Kitty Leung interviews some of last semester's top scoring prize winners on the rollercoaster ride that is studying for Part 3 Exams. The four prize winners, now working for Macquarie Bank, ChinaLife P&C, KPMG and EY reveal their stories of gruelling study, hard work and success.

Part 3 Results Day is now looming around the corner – best of luck to those who studied this semester while the rest of us can look forward to (hopefully) celebrating your success and looking on as you participate in hilarious dares!

Some notable past dares heard through the grapevine include full body waxes, an Institute logo tattoo, cross dressing complete with wig, false eyelashes and shapely enhancements, as well as wearing a sombrero full of nachos being chased by seagulls at Darling Harbour.

Before this heavily anticipated day in all of our calendars, Actuaries Digital caught up with some of last semester's prize winners who scored the top mark in their respective courses to share their stories of success, the hard work that came with it and to pass on their tips and advice.

This article also contains some excerpts from the Vote of Thanks speaker at the Fellowship Dinner, Solai Valliappan, who articulated very well the rollercoaster ride of emotions that is studying for Part 3 Exams.

"Everyone receiving their certificate today has come to this point in their own way…the overall process was at times brutal, and anyone who says otherwise is frankly lying" - Solai Valliappan

David Barnes, Consultant KPMG
Katherine Robertson Memorial Prize for Meritorious Performance – General Insurance C3B

Shirley Weng, Manager, Actuarial Services EY
Andrew Prescott Memorial Prize for Meritorious Performance – Commercial Actuarial Practice C10

Daniel Rose, Associate Manager, Capital and Risk Modelling team Macquarie Bank
Andrew Prescott Memorial Prize for Meritorious Performance – Investment Management & Finance C5A

Qifeng Sun, Actuarial Analyst Chinalife P&C
Katherine Robertson Memorial Prize for Meritorious Performance – General Insurance C3A

How did it feel when you first heard the news that you had won your prize?

Daniel Rose: I was incredibly surprised; the exam was horrific and I was happy enough just to pass! It was cause for a few celebratory drinks after work that day!

Shirley Weng: Disbelief, thinking maybe it was a prank! Then super happy.

Why did you decide to become an actuary?

David Barnes: Once I heard what an actuary was, I decided that it was a career that was well suited to both my passion and skill set. The idea of a job that combined maths with logical thinking was right up my alley.

Qifeng Sun: During my high school studies, I was most interested in Maths and Economics and not surprisingly my marks for both of them were reasonably better than other subjects I had taken. Actuarial Studies is the perfect combination of the two so I chose to major in it right away and to this day, my interest in it remains a real motivator for me to continue to pursue this field.

Daniel: I always enjoyed Maths and Economics at high school, and wanted a career in Finance, so it was a fairly logical choice. I also loved Science but didn't feel the career prospects were clear (particularly in theoretical physics). Actuarial seemed to have a clear career path (in comparison!) which appealed to me.

"The intensity of these studies creates these focused determined monsters, and at times under our various levels of stress we were probably not the easiest beings to deal with, nor been able to be there in return 100% of the time." - Solai Valliappan

What were you like in "study mode"?

Shirley: Hard to be around to say the least. I probably unloaded a lot of stress onto family members in all sorts of ways.

David: If you asked my family, they'd say I never go into "study mode"! I am very lucky to be someone that doesn't stress easily, so I tend to just make my plan of things that need to be done early in the semester and gradually plug away at it.

[From David's mum]: I think David is very disciplined to work through three-hour trial exam papers. However, I would feel more comfortable if David commenced his study earlier in the term. It is still hard for me to accept that David doesn't need to study so much after seeing others who have to work tirelessly learning facts and figures.

"There are some key learnings this qualification has taught me…I've learned about discipline, emotional resilience, the importance of balance to your life, how to approach a problem which initially seems to be impossible to solve and an appreciation for when a combination of good timing and luck has helped along the way" - Solai Valliappan

To achieve these results, did you need to make any sacrifices along the way? How did you balance this?

Qifeng: I don't have a particularly good memory so the key to my preparation is repetition. I go through readings and notes at least 3 times to make sure I understand them and I consider it most important to try as many past papers as possible. As you can see my strategy is quite time consuming and I would spend at least 1.5 hours every day (3 hours on average), so study, work and life balance was quite an issue. Fortunately, my wife is also undertaking her PhD now so we could study together and provide each other with mutual support.

Daniel: I did my best to make sure study didn't massively impact my social life. I definitely buckled down in the month leading up to the exam, but generally spaced my study out over the semester so that I didn't have to make too many sacrifices at once. Generally if I had nothing planned on Saturday or Sunday, I would use most of the day to study but I would rarely say no to anything. Though in saying that I probably didn't see my family as much as I should have.

David: Balance is very important to me, so I have tried hard to minimise the impact of study on the rest of my life. I try to use my study leave as productively as possible, but certainly did miss out on a few full weekend canyoning trips and my long course triathlon career has been parked until after exams. I have however made sure to be uncompromising with regard to the things that really matter to me. I spent a week away leading a youth camp two weeks before my exam and refuse to give up time at church and with close friends.

What are you looking forward to doing now that you no longer need to study?

Shirley: Being able to plan things on the weekend, especially long weekends!

David: Sadly, my study days are not yet over. But hopefully come October that will change. Either way, I certainly have plans, there will be lots of weekends away bushwalking, canyoning, kitesurfing and cycling, and I look forward to having a bit of extra time to spend with friends and family by virtue of having a full weekend rather than half a weekend!

What are your top tips to give to members who are still studying for their exams?

Daniel: Do lots of past papers, as the questions asked sometimes aren't directly in the course materials and need you to show judgement. The more practice you get at doing that, the better you'll become. Also space your study out over the semester and start as early as you can. That way, you won't have to make as many sacrifices in the lead up to the exam.

Qifeng: Doing past exams are most important, I consider 15-20 papers as adequate and repeating the papers is also worthwhile. If I have extra time, past assignments are another valuable source of knowledge as they usually contain more structured and comprehensive questions. Also, leave aside time to review knowledge from the previous day and persistency is vital.

David:

1. I know I'm happier/healthier/able to think more clearly when I'm not pouring everything into my study, so my number one tip would be to maintain a balance.
2. Bury the procrastinator – when you study, study hard; when you are not studying, try not to think about it at all.
3. Exams are not everything, so don't invest in them as though they are. Figure out what's important to you and make sure you don't let that go.

Shirley: Stay calm and try to study as early as possible so you can remain calm when unexpected things happen closer to the exam.

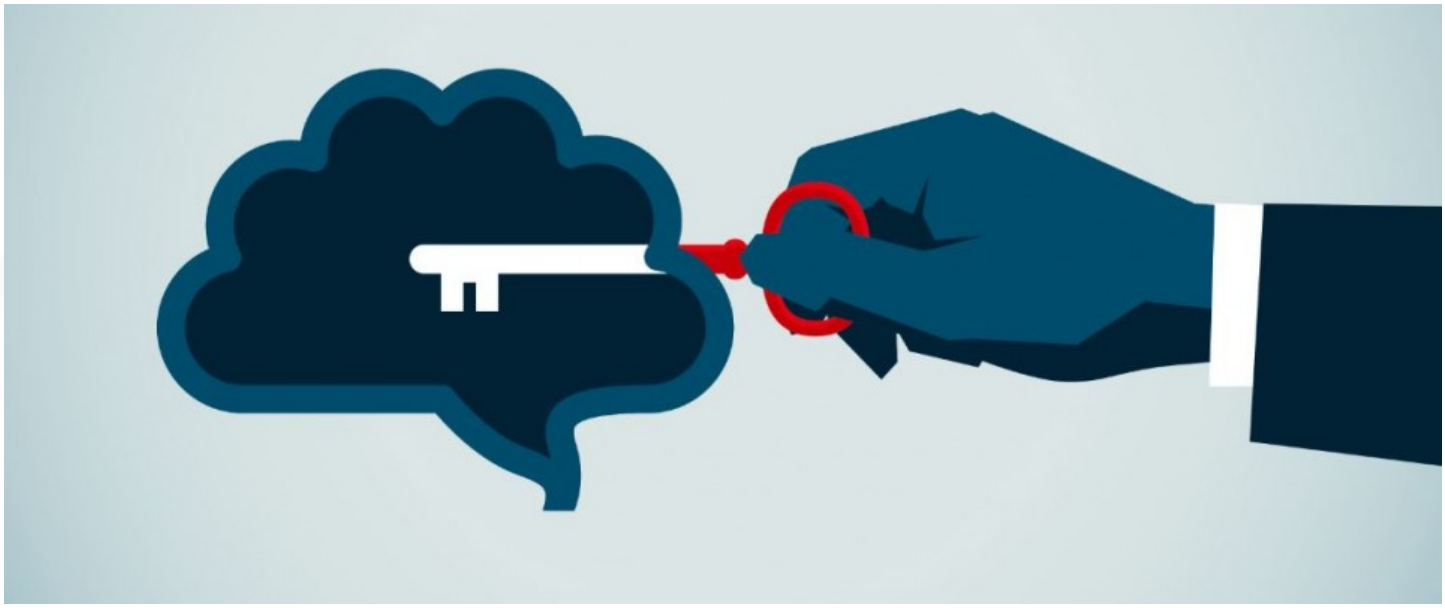
"…A very heartfelt thank you to family, partners, friends, fellow students and colleagues…your patience, tolerance, emotional support and the occasional but ever so important food care package has been most appreciated. In part this qualification also belongs to each of you involved, you have been pivotal in

helping each of us attain this level of achievement" - Solai Valliappan

Who would you most like to thank for helping you during your studies?

Shirley: My mum, for making me food and comforting me when I was stressed.

Daniel: My mum – she was always really supportive and helped out before the exam.



How biased are you?

By Kate O'Reilly

What does unconscious bias look like in your colleagues, your workplace and up the corporate ladder? Kate O'Reilly from Optimiss Consulting unpacks the conditions that support biased decisions and offers strategies to promote better thinking and practice.

When we talk about diversity we often assume we're talking about minority groups. However, women in the workforce and in the wider population are not a minority group. I often argue: if you can get your workforce right for women, you'll be well placed to start tackling the broader diversity challenges associated with age, cultural background, disabilities or sexual orientation.

Does your leadership team look like this?

The magical disappearing act

Australia has the lowest numbers of women in executive management positions compared to the UK, USA, Canada, and South Africa.

The Workplace Gender Equality Agency (WGEA) reported for 2014-15 that women currently make up 49% of paid workers in Australia and 55% of all higher education graduates, but they represent only 15% of CEOs and 27% of key management positions.

Female professionals earn an average of 28% less than male professionals (one of the biggest gaps exists in the Finance & Insurance industry).

The former Sex Discrimination Commissioner Elizabeth Broderick acknowledged that pay gaps marginalise women (*Gender Equity Summit Report*, June 2011).

People paid more appear to matter more in business - they have greater influence on decisions.

Why are so few women in senior positions? One major factor is a common bias in organisations, particularly at executive management level, in favour of men.

I heard an interesting report from Sam Mostyn, who became the first AFL Commissioner in 2005 (she is on the Virgin Australia Board), her appointment as AFL Commissioner was actually the first rigorous merit-based appointment to the position, all the men appointed before her had been selected via a 'tap on the shoulder'.

She was only assessed so thoroughly and formally because she was a woman. She went on to assure the audience that she would ensure merit-based appointments for the Commissioner roles in the future, for both men and women.

Kate O'Reilly presented at the Actuaries Institute on 2 May 2016. View her presentation slides and video for further insight on this topic.

We've had equal opportunity legislation for 30 years now, we've had women graduating in greater numbers than men for nearly 20 years, so shouldn't the problem sort itself out?

If our businesses are not accessing the full range of talent available to us across the workforce, as well as in our senior management team, then we are wasting talent.

Global studies undertaken by organisations such as McKinsey & Company and Goldman Sachs have found consistent correlation to superior corporate performance where there is a mix of genders, ethnic backgrounds, and ages. Organisations with gender balance in their workforce report increased collegiality, less 'group-think' and better insights into the consumer market.

Fortune 500 companies with 3+ women on the board gain a significant performance advantage (over those with the fewest), with +73% on sales revenue, + 83% return on equity, and +112% return on invested capital.

There are more than just bottom line benefits, and research has found that diverse groups make higher quality decisions. This leads to higher employee job satisfaction and engagement, increased employee commitment, and an increased ability to attract talent.

What is unconscious bias?

Unconscious bias is hidden and unintentional at the subconscious level.

Here are the key conditions that provide the perfect environment for bias to influence your decisions.

- **Ambiguity/lack of information** g. If you only know that I'm a woman, you're very likely to use everything you know about women to try and relate to me. If I told you three more things about me, you'd have more to work on. But if you have only one piece of information and everything else is unknown, then you'll rely on your biases.
- **Stress from competing tasks** g. if your goal is to complete a number of tasks , then you are going to be much less interested in collecting information as you go to give you a comprehensive picture of the situation you are in. So stress from competing tasks will lead to you relying on your biases.
- **Lack of critical mass** g. if the representatives of one group are overwhelmingly present (say there are almost no women in the room), then the lack of representation of the less represented groups will lead to it being easier to rely on biases that work for the one group in the room.

Critical mass is considered to be about 30%. So whatever category you need to focus on, you need to ensure that there is 30% representation in a data set when you are evaluating and making decisions on that group.

The importance of critical mass is most relevant for in recruitment, promotion and performance management. When we are going through a stack of CVs and job applications, there is lots of ambiguity, there is lots of pressure from competing tasks, there is a lack of information, and some groups are really under represented so there is a lack of critical mass. In these conditions, you are highly likely to rely on your biases.

What action can you take?

Consider increasing your conscious awareness of your own bias, remembering how it leads to overlooking talent. These Implicit Association Tests by Harvard are a good place to do this. Start with the Gender-Career IAT to learn about your tendency (or otherwise) to link family with females and males with career.

Increase your sense of responsibility and promote good practices by considering the following specific actions:

- **Structure decision-making**, particularly about recruitment and promotion processes with clear criteria and transparent decision-making
- **Use diverse teams to recruit**, watch your language and communications, and think laterally about your feeder sources
- **Run your teams and meetings for full participation and fair credit** – set ground rules for meeting dynamics, ensure all voices are heard
- **Push back on the likeability penalty** (words to watch: aggressive, assertive, pushy, abrasive, demanding, difficult, self-promoting, political, not a team player) – be specific and ask if the same standards are being applied to men;
- **Rotate office 'housework'** taking meeting notes etc
- **Challenge your assumptions** about working mothers and working fathers e.g. don't make assumptions that women are limited in their commitment, ability to travel or take on a new assignment – have the conversation and ask them; and
- **Manage parental leave** – for your team and for yourself. Encourage men to take their full paternity leave, question your companies' policies for parental leave.

"Mountains are molehills piled one on top of the other."

While any one decision may seem minor, small imbalances and disadvantages accrue and can have major consequences in salary, promotion, and prestige, including advancement to leadership positions.

The key areas where unconscious bias can have a major (unfair) impact are in recruitment and promotion decisions, in line management and performance appraisals.

If we don't acknowledge bias then we can't do anything about it. If each of us makes a small change, then we can have a big impact.

Remember:

- Be conscious in your actions;
- Watch for biases in yourself;
- Watch for it in others, and call it out.

2015-2016 Asset Allocation Competition: Results

By Ben Trollip

Sixty-two investors entered last year's Asset Allocation Competition that challenged competitors to assess risk and return in various sectors. Join Ben Trollip as he reveals the results of the competition and speaks to our winners.

In April 2015, the Wealth Management Sub-Committee launched its Asset Allocation Competition. This contest allowed entrants to manage a hypothetical superannuation fund allocating across asset classes ranging from Australian shares and bonds to global infrastructure, hedge funds and commodities. Prizes were to be determined based on the results for the year to 31 March 2016 and awarded to:

1) The highest total return.

2) The best risk-adjusted return (excess return over cash divided by volatility).

3) The closest return to CPI + 5%.

As we know, the twelve months to March were a challenging time for investors. The table below shows the results from the various sectors available to competitors:

Aus Equity Large Cap	-10.4%		Infrastructure	2.8%
Aus Equity Small Cap	3.7%		Global Prop	4.6%
Global Equity (unhdgd)	-3.9%		Hedge Funds	-7.4%
Global Equity (hdgd)	-3.1%		Commodities	-28.7%
EM Equity	-7.7%			

Aus Bond Composite	2.0%		Global Bond Corp	2.9%
Aus Bond Govt	1.9%		Global Bond Sov	5.0%
Aus ILBs	-1.0%		US Bond High Yield	-2.2%
Aus Cash	2.2%		Emerging market debt	4.4%

With the sea of red in the results ledger, only one of the 62 competitors managed to outperform cash, one matched cash (by investing 100% in said asset class throughout) and one marginally underperformed cash to take home the third prize.

The top return overall went to Jack Ding. Jack achieved this by investing in a combination of infrastructure and global property; having a rocky ride before rallying strongly in the last few months of the period. His comments on his strategy were:

"From the beginning of the competition I had ruled out shares and bonds from being good investment choices at the time. As at March 2015, interest rates [were] already at historical lows so bonds returns would be very limited, while price earnings ratios of both Australian and US stock market [were] above historical averages so the shares looked expensive to me.

The reason I have chosen infrastructure and property was that I believed these asset classes should benefit from the low interest rates and cheap financing.

Last year was quite a year of turbulence for the stock market, and both assets I had invested are listed assets, in the short term they do have very high correlation with shares.

So the portfolio actually did not perform well and the cumulative return was negative for most of the year. This is the main reason that I had not rebalanced, as the portfolio was not performing until both asset classes rebounded strongly in March 2016. This was very lucky for me as it was the last month of the competition."

2016. This was very lucky for me as it was the last month of the competition."

Jack also had some informed comments on the nature of this competition:

"This competition has an investment horizon of one year which is kind of short to evaluate long term strategies which are most relevant for superannuation funds.

My belief is that long term investing is all about: 1. Looking for assets that are relatively underpriced. 2. Ignore short term fluctuations and hold while it is still underpriced. 3. Leave the rest to luck."

These are very fair comments. The contest was chosen to simulate the job of a CIO at a superannuation fund – a steward for investors whose time horizons in many cases span decades. Thus the measurement period of just 12 months, was exceedingly short and represented a mismatch of time horizons. With that said, this is a conflict (albeit an extreme example) that is often faced in our industry, where the agents in charge of investors' savings often have significantly different motivations.

Returning to the torrid time in investment markets, the second prize went to **Chao Gan**, who invested 100% in cash throughout the contest, and shared the following comments:

"To be honest, I didn't expect to win at all. At the start when I saw the three objectives, I knew the only one that I had any real chance of winning was the "best risk adjusted return", so it was clear that would be my objective. I put all in cash because in theory that would generate the minimum volatility and hence the best risk adjusted performance. In hindsight, maybe I should've put 1% in another asset class just to differentiate from anyone else also using this strategy.

I recall that a few days later, an email was sent to clarify that the return was measured in excess of cash return, so I wasn't sure if my strategy would still be valid. None the less […] I decided to stick with the strategy as an experiment and see how it would play out."

Chao's strategy indeed generated a low volatility but in rising markets may have lagged sufficiently so as not to take home the best risk adjusted return. Nevertheless, with all others (except Jack) underperforming this year, a risk-adjusted return of zero was good enough!

Finally, the third prize went to the "least worst loss" which was obtained by **Helen Lu**. Helen split her portfolio between high yield bonds, emerging market debt and global property. Unfortunately she was unavailable to provide comment.

Overall, this contest provided an interesting lens of investor behaviour. The average starting allocation was approximately 57% to equities, 19% to bonds and 24% to the remainder (property, infrastructure, commodities and hedge funds) – not too far out of line with industry practice. And of particular interest was that most contestants took a "set and forget" approach with only around 30% choosing to actively manage the portfolio by rebalancing their portfolio at one of the quarterly opportunities.

Watch this space for future new and (hopefully) exciting investment competitions run by the Wealth Management Sub-Committee.

How to lose your shirt in private health insurance: Part two

By Jamie Reid, Hadyn Bernau, Matthew Crane and Andrew Matthews

Welcome to the final instalment of the two-part series! This article outlines ways in which capital can be managed to build resilience.

Recap - What we're asking:

- *What are the circumstances that could cause you to 'lose your shirt' in PHI in Australia?*
- *How might you build financial readiness and resilience?*

In order to identify the types of circumstances, we study the drivers of previous occurrences of financial distress for private health insurers. We also consider whether the reasons that general insurers fail are also relevant to private health insurers.

We then look at how capital can be used and managed to avoid an insurer 'losing its shirt'—both from the regulator's perspective and from an insurer's perspective.

As such, the roadmap for the articles are:

Part one

1. Recent history of stresses and failures in PHI
2. Potential causes of failure in general insurance, and the implications for PHI

Part two

1. How the regulator (APRA) uses capital to build insurer resilience
2. How private health insurers manage capital to build resilience
3. Conclusions

Our intention is that this article will help inform discussions around:

- the nature of these circumstances and how they differ to general insurance;
- minimum regulatory requirements; and
- capital management policy considerations for resilience in the face of stresses.

1. How the regulator (APRA) uses capital to build insurer resilience

From APRA's point of view, a private health insurer would 'lose its shirt' if it was (close to) being unable to pay a claim. One of the ways APRA tries to prevent this is through its capital adequacy standard (HPS110), a principles-based standard enacted in 2014 which incorporated learnings from the cases of financial distress outlined above. The capital adequacy standard has two key components:

1. A minimum amount of capital that every insurer must hold—we'll refer to this as the regulatory requirement (RR). This is intended to be enough capital for the insurer to survive the next 12 months at least 49 times out 50, even if its management took no corrective actions. In other words, it should buy enough time for most potential causes of financial distress to be fended off. On average, the RR in PHI is about 5.5% of forecast annual premium revenue.
2. The effective capital requirement, in practice though, is higher than the regulatory requirement. APRA requires private health insurers to have, and comply with, a Board-endorsed capital management policy (CMP), with appropriately set internal capital targets, triggers and management responses, based on the insurer's own risk assessment. In other words, an insurer breaches the capital adequacy standard if their capital falls below a target or trigger level and they do not carry out the actions specified in their CMP. The focus of this requirement is around insurer practice—as noted above, recent instances of financial distress were averted when the insurer was able to put into practice their capital management plans.

APRA uses the term "Surplus Capital" in its quarterly statistics publications, to refer to the capital amounts over and above the RR. But, in practice, this capital is not "surplus", as insurers are required, through the capital adequacy standard, to hold the majority of this capital (in the form of their capital target), or to rebuild capital if it depletes over time. The term "Surplus Capital" may lead to unintended pressure on insurers to reduce their capital targets or to allow capital to fall below their targets,

for example through the premium approval process. This could lead to a higher risk of an insurer 'losing their shirt'.

APRA's RR has the following components for an average private health insurer, giving a rough sense of the size of the various risks:

- A **significant** requirement in relation to *capital management* (through the CMP);
- A **large** component that reflects *under-pricing* risks (part of the RR);
  1. This requirement becomes significantly larger when insurers are *growing* (or shrinking);
  2. It also increases as expected profitability reduces, as insurers targeting small profit margins are more likely to end up making a loss than insurers targeting higher profits;
  3. The impact of differences in fund size on financial volatility are also considered;
- A **moderate** component that reflects *investment* risks (part of the RR); and
- A **small** component that reflects the risk of *inadequate provisions* (part of the RR).

The three largest elements of APRA's capital requirement (relating to under-pricing, growth and capital management) match the three largest contributing factors of recent financial distress.

2. How private health insurers manage capital to build resilience

Private health insurers hold more capital than the RR for a combination of good reasons, including:

- They are required to—through the CMP requirement, APRA compels insurers to manage their capital to internally set targets, with trigger points for corrective actions. Clearly these levels must exceed the RR.
- They have different risk appetites to APRA—an insurer would probably say that it had 'lost its shirt' if it breached APRA's capital adequacy standard (due to the legal and reputational ramifications). Holding more capital than the RR is a way of protecting against this eventuality.

Target capital levels, trigger points and action plans are not public information. However, we attempt to illustrate how this might look for a 'typical' private health insurer with a risk appetite for no more than a one in 200 chance of breaching the RR within 12 months. The choice of one in 200 is illustrative, but is the stated sufficiency of regulatory minimums in a number of other insurance industries around the world, and would also reflect this insurer having a lower risk appetite than the regulator.

We estimate that this insurer would need to hold capital of around 8% to 10% of forecast annual premium revenue on top of the RR. In reality, the size of this buffer would depend on the size and risk profile of the insurer—typically, larger insurers would require less than this amount and smaller insurers more.

In total, this insurer targets around 14% of forecast annual premium revenue—the 5.5% RR plus a buffer of 8.5%. The only two publicly disclosed capital targets in the Australian PHI market are for the funds with listed parent companies—Medibank Private Limited targets 12% to 14%, and nib health funds limited targets 13.8%.

Some general insurers quote capital targets as multiples of the APRA RR for general insurers (which is set at a 1 in 200 probability of sufficiency). For example, Suncorp and IAG quote targets of 1.4 to 1.6 times APRA's prescribed capital amount, and QBE uses 1.6 to 1.8 as its range.

If an average private health insurer used a capital target multiple of 1.5 times a one in 200 RR (estimated above at 8% to 10%), this would be around 12% to 15% of forecast annual premium revenue.

Potentially more important than the amount of capital held, is the management response to a challenging capital situation—including the discipline of the monitoring processes and whether or not the corrective actions included in the plan are followed effectively

3.Conclusion

Findings: Recent examples of financial distress in PHI have arisen from a consistent set of risk factors—pricing, growth and capital management. An FSA study[1] included a finding that *"Management problems appear to be the root cause of every failure or near failure."* This indicates a need to focus on underlying internal causes and importance of governance and stewardship such as monitoring trigger points and action plans.

Comparison to General Insurance: Many of the issues that are significant for general insurance (catastrophes, reserves, business changes, impaired affiliates or reinsurance failures) have not been experienced by private health insurers.

On the other hand, Government decisions (through health policy changes, and through its role in the premium increase process) have played a significant role in some instances, which contrasts to their relative lack of influence on general insurers.

While the risks differ, the need to anticipate how risks interact is common for both GI and PHI. For example, correlations between operational risk, underwriting risk and structural change risk could be considered in a 'group risk map'.

Implications: A risk-based approach brings benefits and implications. Forward-looking tools (such as scenario analysis) are required in order to set capital targets and triggers, and these are inherently subjective in nature. Despite being good practice (and required by law), capital targets and triggers above the RR can be wrongly perceived as being 'surplus to' or 'in excess of' requirements.

Limitations: This paper explores themes at the industry level. An individual insurer's own risk assessment and capital stresses can vary significantly by size and qualitative factors.

Possible next steps:

- Shift the focus of insurer practice from regulatory capital calculations towards scenario and resilience planning in relation to a range of different future landscapes
- Benchmarking Australian PHI not just against GI, but also against global leading insurance practices, including Solvency II
- Review the use of the term 'Surplus Capital' to refer to the amount of capital that insurers hold above the RR.

Reflection questions:

- To what extent are pricing errors driven by a lack of technical ability/resource, or by inherent bias (e.g. management incentives)?
- Are capital problems usually driven by a poor CMP, or by a lack of adherence to the CMP?
- Is there any correlation between weaknesses in key relationships (e.g. CEO-Board, CEO-Appointed Actuary, pricing team-sales team) and instances of financial distress?

See the full report here: How to lose your shirt in Australian private health insurance.

[1] *"Managing Risk: Practical lessons from recent "failures" of EU insurers"*, 2002, William McDonnell, Financial Services Authority Occasional Papers Series

How working in New Zealand can help fast track your career

By Jenny Lyon and Jas Singh

Thinking about working overseas? Jas Singh and Jenny Lyon break down the reasons why you should consider New Zealand, and speak to three actuaries who are already there.

The benefits of working overseas are well documented. It can be a great way of developing new skills and meeting new colleagues. It can offer an alternative lifestyle and the opportunity to really understand a new culture and location. To achieve this from Australia usually means a long plane trip which reduces the chances of visiting home frequently.

New Zealand is one of the closer options for Australians considering working overseas. It's financial, insurance and legal systems are reasonably similar to Australia's and, on the plus side, it also offers magnificent scenery.

With a smaller financial services industry than Australia, one might wonder if a move to New Zealand could be a career limiting move. However, we would argue that it can offer some leverage opportunities if you do want to return to Australia or move elsewhere.

- Organisations and branches are typically smaller in New Zealand and this means that actuaries often get to work across a wider range of issues and have greater access to senior management. This enables them to develop their commercial skills earlier in their career.
- Without the number of actuarial university courses which exist in Australia, there are fewer entrants to the profession who are close to qualification on graduation and therefore a higher proportion of people who are studying the Part I equivalent subjects. Working as a recently qualified actuary you are more likely to have a team of people working for you than might be the case in Australia. This enables you to develop management skills at an earlier stage.
- With a smaller pool of potential candidates, actuaries are found in many senior management roles in financial services companies in New Zealand.
- If you are ambitious there is the opportunity to manage a business or the P&L of part of a business. This experience is vital to developing skills and demonstrating to employers elsewhere that you have the skills to take on roles at senior management level.

We spoke to three Australian actuaries currently working in New Zealand about their experience there.

Bartosz Piwcewicz

Bartosz joined Sovereign in August 2015 as the Chief Actuary. His experience had previously been in general insurance and most recently consulting so moving into a corporate life insurance environment was an unknown for him. However, in his words *"I am not looking back"*.

Bartosz was able to secure this role as he could demonstrate a high level of technical ability and had well-developed communication and influencing skills so that even though his experience was not directly applicable to the role, Sovereign saw that he could develop the knowledge he needed to operate in their market.

He noted that the role has provided him with a great opportunity to develop broad leadership and commercial skills and he contributes and has influence at executive and board level.

Outside of work, Bartosz believes New Zealand is a great place for young families. With two kids aged three and five the family enjoys living in Auckland. He has been impressed by the outdoor lifestyle, availability of resources for families and the quality of childcare services and schools.

"I am not looking back" - Bartosz Piwcewicz

Len Elikhis

Len is the Chief Officer of Health Business at Sovereign, responsible for Sovereign's health insurance division.

Len joined Sovereign in 2014 as Head of Health Product and Strategy. His motivations for the move were to gain commercial experience which included running a P&L, distribution and marketing, business unit strategy, product

development, and having engagement with the board. The role also provided him with the opportunity to further his develop leadership skills within the division and the enterprise as a whole.

Len commented on why considering a career in New Zealand might be worth exploring, particularly for an insurance actuary looking to gain broader commercial experience.

"Comparing major insurance companies in Australia and New Zealand, I would make the following general observations:

- *Roles in New Zealand tend to have broader responsibility and there is more opportunity to become involved in strategic company initiatives / projects.*
- *There is greater opportunity for engagement with senior management.*
- *There is a strong culture of collaboration and working towards a common outcome.*
- *New Zealand companies seem to be more agile when responding to market trends."*

In addition, he has also found New Zealand a wonderful place to live, especially for people who enjoy the outdoors. The weather is mild, the landscapes are breathtaking, the food is outstanding, and the people are friendly. Also, there are no snakes nor spiders.

Adam Follington

Adam has lived in Auckland, New Zealand for 10 years after meeting his future (Kiwi) wife in London. He is currently heading up Quantium's entry into the New Zealand market having recently left Deloitte, where he was a Partner in the actuarial team. He is a member of the Council of the New Zealand Society of Actuaries.

In his view some of the professional benefits of working in New Zealand include:

- *Roles tend to be less specialised and so there is an opportunity to broaden your experience.*
- *Organisations tend to be smaller so there is a greater opportunity to "make a difference".*
- *Focus on achieving a healthy work/life balance.*
- *the opportunity to work at a more senior level which can progress your career more rapidly.*

He sees some of the social benefits of working in New Zealand as:

- *A great outdoor culture with access to beaches, lakes, mountains.*
- *Smaller cities meaning there is less of the "rat race" (if that's what you prefer).*
- *More rugby teams that win matches (but balanced by the cricket and league!).*

He did note that *"on the downside you have to endure a lot of jokes about Aussies bowling underarm balls"*.

So in summary, while New Zealand may not have been top on your list for career development it is worth considering as an option for the future.

Eurovision, a major actuarial exercise?

By Arun Isaac

Arun Isaac delves into the statistics in the 2016 Eurovision Song contest, revealing 10 surprising patterns and trends along the way.

Historically, Australians love a good bandwagon which allows us to be patriotic, invent drinking games, and watch the UK getting crushed. For these reasons, the Eurovision Song Contest has been a huge hit in Australia over the last 34 years. Bizarrely enough, Australia has been invited to participate in the contest since last year, despite still being well within the Southern Hemisphere.

This year's winner came from the Ukrainian entry *1944*, about the Stalin-era deportation of Crimean Tatars into Central Asia – narrowly beating out runner-up Australia, represented by the now-world-famous Dami Im, who wowed the international audience with her song *Sound of Silence*.

So how does the voting work? The contest starts with 42 countries, with only 26 qualifying for the Grand Final. Each of the 42 participating countries submit two sets of ranks for the finalists (not including themselves); one set of points is taken from their local 5-member jury, and the other comes from their public vote. The 84 sets of points are then combined in order to crown the winner of this annual glitterstorm.

Every year, the voting system comes under scrutiny of being perverted by political favouritism, jury corruption and poor judgement. With the power ogranular data released by the European Broadcasting Union (10,716 independent data points from this year), generally good but potentially spurious statistics, and quite frankly, a lot of spare time, I hope to address some of these claims.

So, get your wind machine and a table of Critical Values of your favourite statistical distribution: it's time to begin.

1. The juries dragged public-favourites Russia down.

Amongst public voters, Russia was the clear winner – 30 of the 41 countries' televoters placed Russia in their Top 3 (from 26 finalists), and every country's public vote awarded Russia at least 3 points. In contrast, juries were far less favourable: more than half of the juries awarded Russia 0 points.

But, the worst jury treatment for Russia came from four of the national juries who slapped Russia in their bottom 5 despite favourable public votes. Three of these juries happen to also be from the three European countries most recently invaded[1] by Russia:

Ranking out of 25 given to Russia by each recently invaded country's Jury and Public.

Invaded Country	Jury Rank given to Russia	Public Rank given to Russia
Ukraine	22nd	1st
Georgia	23rd	3rd
Czech Republic[1]	25th	2nd

The fourth jury to downvote Russia was Lithuania, with four of the five jurors ranking Russia in last place, which seems like a bit of history repeating.

Ranking of Russia (out of 25 finalists) over the last two years by Lithuania.

	Lithuanian Jury Ranking of Russia	Lithuanian Public Ranking of Russia	Rest of Europe Ranking of Russia
2015	20th	3rd	2nd
2016	25th	3rd	3rd

2. Europe has been enlisted in the Dami Army.

Australian representative Dami Im, who charted well around Europe, would have won based on last year's voting system. Points are given only the top ten acts ranked by each cohort. In the former system, a "cohort" was a country (with jury and public votes aggregated), but this year, the public votes and jury votes of each country were treated as independent cohorts. As Ukraine's song was divisive between the juries and the public, it would have received less points under the former system.

Number of cohorts giving Australia, Ukraine and Russia points, segmented by Jury and Public votes (41 Jury Cohorts, 41 Public Cohorts).

	Australia	Ukraine	Russia
# Public Cohorts	37	40	41
# Jury Cohorts	38	24	20
Place under 2015 system	1st	2nd	3rd
Place under 2016 system	2nd	1st	3rd

Despite this, Dami still managed break into the some of the strong voting blocs, securing Top 2 rankings from countries in most historical blocs: the Balkans, the Warsaw Pact, Scandinavia, the Baltics, the former Soviet Union, and the Mediterranean.

3. Statistically, the Australian public is not the European public.

Why bother with basic geography when you have p-values? At the 95% level of significance, when all 42 countries' public votes were combined, the only individual public vote statistically uncorrelated with the rest was Australia (r=0.36; Critical Value of r=0.39). Below are the four weakest correlations and a fact about each country.

Country	Correlation	Fun Fact
Armenia	0.41 - weak correlation	Not in Europe.
Azerbaijan	0.45 - weak correlation	Not in Europe.
Australia	0.36 - not significantly correlated	Surrounded by the Pacific and Indian Oceans, which in turn are surrounded by Africa, Asia, South America and Antarctica. Not in Europe.
Switzerland	0.44 - weak correlation	The public has rejected referendums to join the European Union and the European Economic Area, and supported a referendum limiting migration within Europe.

From the five Australian jurors, most were significantly correlated with the votes of the Australian public, with Australian Idol runner-up and cult hero Shannon Noll being the least correlated with the Australian public vote (r=0.25; not significant).

4. The public ranks male contestants based on their looks.

Who doesn't love fit-for-purpose (invented) statistics? This is captured by a statistic called the IBOGL Index (Influenced By Others' Good Looks, and pronounced "eye-boggle"), which measures the tendency of a voting cohort to rank performers on their looks. This is calculated by stratifying a cohort's voting ranks by gender, and then using a Spearman Rank Coefficient for each segment's votes against a proxy for the performer's

attractiveness. I've used results from a fan poll[3] called "Eurovision's Next Top Model" as the baseline for this –fortunately, it carries a decent sample size of 66,000 votes, and is pre-segmented by gender.

Number of cohorts with statistically significantly IBOGL indices (Critical Value of IBOGL Spearman Coefficient is 0.53 at the 95% level of confidence).

	Number of Voting Cohorts with a significant IBOGL index for Male Performers	**Number of Voting Cohorts with a significant IBOGL index for Female Performers**
Public	18	0
Jury	2	4

Almost half of all voting countries' publics exhibited statistically significant IBOGL indices for ranking male contestants, indicating that these public cohorts were ranking male contestants based on attractiveness. Zero public voting cohorts judged female performers in the same way, which might speak to the general demographic of Eurovision fans. Juries hardly exhibited this type of voting pattern for male or female performers.

5. Serbia was the biggest beneficiary of bloc voting this year.

Serbia's 18th place result was its worst in a Eurovision Final ever, but this was boosted by strong jury ranks and unanimous first place
rankings from all former Yugoslav republics:

Rank given to Serbia by each voting cohort

Country	Jury Rank	Public Rank
Bosnia & Herzegovina	3	1
Croatia	9	1
Macedonia	4	1
Montenegro	5	1
Slovenia	6	1
Rest of Europe/Australia (Median)	19	23

During the first semi-final, the public voters of Greece and Cyprus mutually ranked each other in first place. Only Cyprus managed to qualify for the final, where again, they received top points from the Greek public and no one else, leaving Cyprus in 21st place overall.

6. The Swedish jury somewhat didn't agree with their public.

Sweden's massive impact on the music industry globally was visible in this year's competition, with 10 other countries' songs being written or produced by Swedes (on top of Sweden's entry). The below table shows the Swedish public and jury votes for three of these countries – Czech Republic, Azerbaijan and Malta.

Performing Country	Swedish Public Rank	Swedish Jury Rank
Malta	23rd	4th
Azerbaijan	24th	2nd
Czech Republic	25th	8th

Essentially, the Swedish public's bottom 3 were ranked in the top 8 by their jury.

After stripping these three anomalies from the Swedish votes, the correlation coefficient between the Swedish jury and Swedish public significantly jumps from 0.14 to 0.51 (Critical Value is 0.39), which would then make the two cohorts significantly correlated at the 95% level of confidence.

7. The Czech Jury statistically significantly ranked performances the opposite of their public

That's right – if you reversed the Czech jury votes, they would significantly predict the Czech public vote at the 95% level of confidence (r = –0.41).

But, as the Czech public was significantly positively correlated with the rest of Europe (r=0.62), this indicates that the jury was statistically unaligned with most other voting cohorts. The table below shows that the Czech public's top and bottom three are somewhat aligned to the final place given by all countries, but the Czech jury votes are in a very different direction.

	Performer	Czech Public Rank	Czech Jury Rank	Final Place from all countries
Czech Public Top 3	Ukraine	1st	24th	1st
	Russia	2nd	25th	3rd
	Armenia	3rd	18th	7th
Czech Public Bottom 3	United Kingdom	23rd	7th	24th
	Malta	24th	5th	12th
	Croatia	25th	3rd	23rd

8. The juries – not the public voters – downvote non-English songs.

Only Bosnia and Herzegovina, Macedonia, and Austria performed with entirely non-English songs. In each semi-final, whereby only the Top 10 of the 18 semi-finalists qualify for the Grand Final, juries showed a clear aversion to these three songs:

Ranking (out of 18) segmented by public and jury votes during the Semi-Finals only. Green highlighting indicates a Top 10 (qualifying) rank.

Ranking (out of 18) segmented by public and jury votes during the Semi-Finals only. Green highlighting indicates a Top 10 (qualifying) rank.

	All Public Votes	All Jury Votes	Combined Votes
Austria (Semi-Final 1)	2nd	11th	7th
Bosnia and Herzegovina (Semi-Final 1)	8th	14th	11th
Macedonia (Semi-Final 2)	8th	11th	11th

Based on the public votes alone, all non-English songs would have qualified; based on the jury votes alone, none would qualify. Only Austria – who strangely enough, sang in French – managed to qualify for the Grand Final once the votes were combined.

Furthermore, these songs were ranked higher by juries from countries where the language has some recognised minority or official presence:

1. Bosnia and Herzegovina sang in Bosnian: a recognised minority language in Croatia and Montenegro. Both of these countries contributed 10 of the 26 jury points given to Bosnia and Herzegovina in Semi-Final 1.
2. Macedonia sang in Macedonian: a recognised minority language in Serbia and Albania. Both these countries contributed 24 of the 34 jury points given to Macedonia in Semi-Final 2.
3. In the Grand Final, sole qualifiers Austria received a strong 8th rank from the public; far from the harsh jury rank of 24th (out of 26). Interestingly, from the few jury points received, the juries from all three officially French-speaking participating countries – France, Switzerland and Belgium – ranked Austria's French-language song strongly:F

French-Official countries' ranking of Austria's song: green highlighting indicates jury members with significant French-language media presence[2]:

		Individual Juror Ranking (out of 25)					Combined Jury Rank
	Key Languages	**#1**	**#2**	**#3**	**#4**	**#5**	
France	French	7th	8th	2nd	9th	1st	3rd
Belgium	French, Dutch	11th	15th	3rd	4th	4th	6th
Switzerland	French, German, Italian	1st	15th	24th	5th	2nd	7th

The above table is a breakdown of each juror's vote, and individual jurors who have a significant French-language media presence[2] are marked in green, who collectively appear to rank the song more favourably.

9. The juries continue to downvote Poland.

It's hard to develop a statistic or index to explain why this trend has continued for the last three years, so here's a table to show the difference between public and jury ranking of Poland:

	Number of Finalists	Combined Jury Rank given to Poland	Combined Public Rank given to Poland
2014	26	25th	3rd
2015	27	27th	15th
2016	26	23rd	5th

10. Eurovision might just be a major actuarial exercise.

At this point, you might be mistaken into thinking that a European Call Option is the phone number to vote for another country's song. Fear not: for next year, I'm calling on the Actuaries Institute of Australia to form a Specialist Sub-Committee and commission a Research Paper into optimising Australia's entry. Strobe light flashes should follow a standard Brownian Motion process; ideal on-stage costume changes could be optimised by a Markov Chain; and the words "love" and "peace" arrive in song lyrics according to a Poisson Process. But no matter how many times a Stochastic Stiletto Simulation is run, there is one limiting factor that can't be avoided…Australia *still* isn't in Europe.

Footnotes:

[1] Taken from Wikipedia "List of Invasions". Ukraine was invaded by Russia in 2014; Georgia was invaded by Russia in 2008; Czechoslovakia was invaded by the Soviet Union in 1968.

[2] French-language media presence was taken by a significant online in French-speaking media, so it does not imply that others cannot speak French. Beglian juror Jo Lemaire has a strong French and Dutch presence, and was therefore flagged as having a significant French-language media presence.

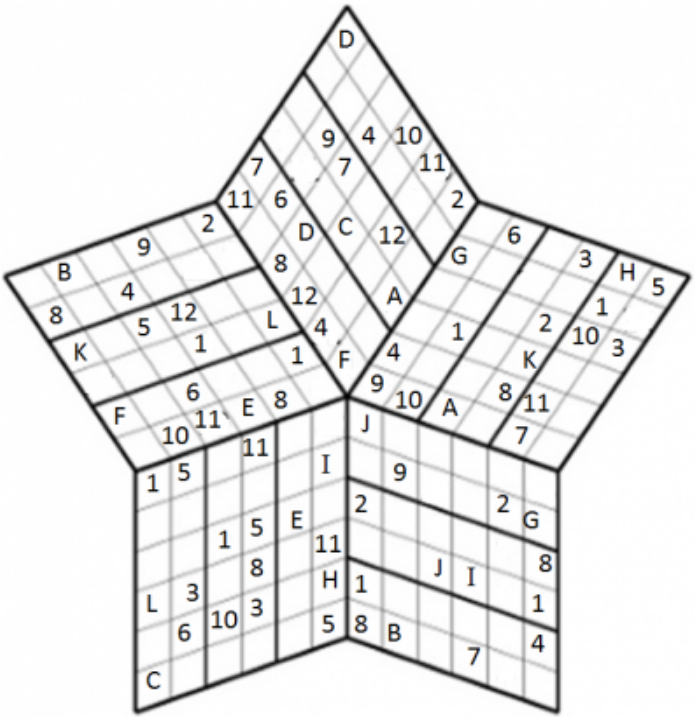
[3] Taken from wiwibloggs.com

The Critical Line - Volume 3

By Chris Ebbs and Jevon Fulbrook

Welcome to the third instalment of the Critical Line brought to you by Jevon Fulbrook and Chris Ebbs. This month we would like to draw your attention to a pattern seen daily by most of the world, but whose existence we are mostly unaware of.

The EURion constellation is found on most of the world's banknotes. The pattern broadly resembles the Orion constellation which is visible from most places around the globe. There are many theories about its actual purpose, but it is generally thought to prevent the creation of counterfeit. Therefore, the secret of how it prevents counterfeits is closely guarded by banks, governments and printing companies. The internet is scattered with theories on its use should you wish to further understand the EURion. We give you our EURion themed puzzle...



In order to solve the star Sudoku and become the Sudoku star, you'll first need to work out what the starting numbers are. To work out these numbers, you'll need to solve the clues that correspond to the letters inside the star. Some of the clues are a bit cryptic – think outside the box!

A. sounds like a vine coated in iron
B. perform Buddhism
C. mixed up haul
D. x in the function e^x
E. $ is divisible by two
F. human resources in casual shirt
G. pixie-like digests MDMA
H. headless height
I. brief foul meets pirate
J. back to front soccer goal
K. New Zealanders getting down and dirty
L. neon surrounds the inside

To complete the star, each region, row and column must contain the numbers 1 through 12. Send in the solved Sudoku for your chance to win $50! For an extra prize (honour and glory), send us alternative cryptic clues for the numbers.

The Critical Line Vol.2 solution

Although there were two correct answers, congratulations to Hugh Miller who was first to send through his solution.

The solution and explanation to the Critical Line vol.2, by Dan Mayoh, can be downloaded here: Critical Line 2 - Blackjack solution.

Health Insurance in Australia: A Sustainable Future?

By Ignatius Li

Health Actuary Ignatius Li discusses risks to the sustainability of Australia's private health care system, ahead of the Institute's inaugural Future of Health Seminar.

What trends are impacting your work as an actuary in the health sector?

Health actuaries interface with different parts of the health sector every day, seeing trends through the lens of various stakeholders and problems. They work in a variety of capacities, from "traditional" actuarial work to "greener" fields such as designing population health strategies. The following list is certainly not exhaustive but describes some of the trends I am currently observing:

- Increasing health data – the increasing proliferation of wearables opens up the options for how health providers interact with patients, how individual's health is monitored and how health payers can incentivise healthy behaviour.
- Rise of consumer driven health care – individuals will increasingly demand and get tailored personalised medicine, aided by better capture of their individual data. How should this best be funded and delivered?
- Dealing with chronic disease – as medical advances keep us alive for longer, we are also witnessing increasing prevalence of chronic conditions. How can chronic disease management programs be made more effective and targeted? How do you reconcile and recognise the long term benefits against the short term costs and what is the best method of delivery?

What risks are there to the sustainability of our Private Healthcare system?

The issue of sustainability is ultimately about keeping health costs down while simultaneously delivering more and or better quality health services to patients. As health actuaries are all too aware, there is a major public conversation taking place around the value proposition of health insurance. All too often, the public perception is shaped by a focus on the rise of insurance premiums, without much discussion (if any) around the underlying drivers of premium increases.

Therefore, there are a number of risks to the sustainability of the system. Some risks go to the fundamental issues around provider costs that drive medical bills higher each year. Some go to the public perception of health insurance, and may ultimately be about how to better align the product offering with expectations, and in my opinion, making the transition from being purely a health payer to being a partner in their member's health.

What challenges are facing consumers?

Affordability is a major challenge. As premiums have recently increased at a faster rate than wages and general inflation, consumers are responding by downgrading or dropping private health cover altogether.

Another challenge is product complexity. The product design can be quite detailed, and exclusions and restrictions are applied on treatments that not all members fully understand. The definition of restrictions differs from insurer to insurer and is not easily understood.

I believe there are 60,000 products on offer across Australia so comparing and analysing different products is not easy and understandably stressful.

What challenges are facing government?

The government faces challenges on multiple fronts in the private health sector. Ultimately the challenge is around how to allocate the limited public purse in an efficient manner and how can government policy create the "ideal" conditions for the mix of public and private providers to meet consumers' health needs.

By definition, some of these challenges are structural and will require a long term solution. Others are more immediate and fall into the basket of potential "quick wins" although they also have implications for the long term policy direction.

At the Future of Health Seminar (FOHS), I expect that we will hear opinions from our speakers on how the government can help steer the sector, either through policy changes and or through their approach to funding. Some of the specific challenges for government that I think will be relevant for the conference include:

- enabling greater innovation to help health insurers transition from being just health payers to partners in health;
- helping address the public perception and consumer frustration with private health insurance;
- enabling the data revolution, whether that is greater take up of electronic health records, through to better data being made available to encourage greater competition and transparency by health providers; and
- enabling creative solutions that address the impact of an ageing population

How are actuarial skills assisting in this space?

Actuaries bring a long term perspective to problem solving. In addition, we are skilled in forming solutions from a principles based approach while still grasping the commercial and practical challenges that are attendant.

These skills are supported by our collective understanding of the health system and its interactions, which we reflect in our approach to modelling and thinking through the risks.

Ultimately, we always aim to bring a view that is informed and arrived at from analysis and reasoning. We can enrich the public discussion by providing an objective voice.

Why is the Future of Health Seminar an important conference at the present time?

Just prior to going into caretaker government mode, there were no less than six government inquiries into the health sector. Health actuaries are all actively focussed on the issues touched by these inquiries.

The health system is complex. As health actuaries, first and foremost we are drawn to work in this sector because we are interested and care deeply about the way health care is financed. It is therefore important that we contribute to the public discussion about the future of the health system.

This conference is a great opportunity for actuaries to share their differing perspectives and unique experiences and to take learnings from outside our profession

What unique insights will some of the Plenary speakers share?

We are very fortunate to have such a fantastic line up of speakers! The organising committee has worked hard to develop a great programme. Each speaker will bring unique insights based on their research, and direct industry experience. Here is a sample of their experience:

- leading a variety of government enquiries including into health insurance;
- developing health care programs;
- researching chronic disease management;
- contracting and relations between health funds and private hospitals;
- health system modelling for government;
- appointed Actuary of a major health insurer; and
- design and execution of health fund strategy

Find out more about the conference and register here.

Going for gold

By David Bell

CEO David Bell reflects on Olympic champion Alisa Camplin's inspiring speech at the 2016 Financial Services Forum this month.

I confess that I had writers block with this latest column – that was until I heard the fantastic presentation by Olympic Winter Olympics gold medallist Alisa Camplin. Her appearance at the Institute's Financial Service Forum in May was inspirational – that was certainly the feedback of some of the hundreds of you who were there.

I know, I know - that's her job and she's done it many times before … but it was a great story and there were some meaningful life lessons in what she said (at least I thought so).

"I never stopped believing and here I am" - Alisa Camplin, Australian Olympic gold medallist, 2002 Winter Olympics, aerial skiing.

I've heard half-a-dozen really great presentations in my time – and this was one of them. Like great cooking which is an ephemeral art, listening to speeches and presentations is a transitory experience – unless you capture the essence of them quickly, they disappear and all that is left is the impression of a great experience.

The immediate impression of Alisa was a person who was driven to succeed at almost any cost. You felt that her single-mindedness and the extraordinary lengths she went to prepare herself for the ultimate goal of winning an Olympic medal, made the result an almost foregone conclusion.

Yet, of course, it wasn't. Her success was built on a bedrock of self-belief, hard work, an insatiable hunger to achieve her goals, and clear vision of what she wanted, and how she was going to get there. She also presented a human side which tempered the impression of a hard-edged competitor.

Sports figures who join the speaking circuit are almost a dime-a-dozen. Their stories are great but where they find difficulty, typically, is translating their recipe for success into something that resonates with people who work in the corporate world, whose success doesn't hinge on (sometimes) seconds of performance at a sporting event. Alisa was able to bridge that gap with her strong corporate background, backed by her tertiary qualifications.

So what were the lessons I took away from her presentation which I thought were relevant to me working in the business world?

- Understand where you want to get to, and how you are going to get there.
- Do something you really want to do – otherwise, it's just a job to bring in money
- Preparation and planning are essential to success – most things don't just happen
- As a leader, you need to take people along with you
- Don't let adversity set you back – use it to become stronger – learn from it
- Assemble a great team - it's hard to do things by yourself, or with people you can't work with
- Be prepared to back your own judgement
- There is no substitute for hard work – and don't cut corners

And that's the end of my homily – sometimes it's best to keep things short!

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