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Actuaries

In this issue

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Women's Actuarial Forum

By Angela Tong *(a.tong@employersmutual.com.au)*

Women face unique career challenges requiring confidence in ability and ambition. At a recent forum, successful Australian business women opened up about their career breaks, challenges and determination to sustain valuable and balanced roles. Angela Tong reports on a sold out event.

On Monday 15 June, the Institute held its inaugural all women's event "Actuarial Women's Forum". Its format was unique, presented by Estelle Pearson as an in-depth interview of five female senior actuaries who are business leaders in their areas – Helen Rowell, Hoa Bui, Meredith Brooks, Noeline Woof and Nicolette Rubinsztein – followed by roundtable discussions facilitated by the panel members. Being the first event of its kind at the Institute, its organiser was eager to find out what the response would be like. This was quickly put to rest when, within the first couple of hours of sending out the email invite, the event sold out, with many signing up to be on the waiting list. (Incidentally, I had also missed out on RSVPing in time. But volunteering to write this article gave me an express pass to the event – one of the perks of being on the Actuaries Digital Editorial Committee.)

I thoroughly enjoyed myself at the event. You can imagine the opinions and discussions that having a big group of female actuaries in a room together would generate! The experiences and perspectives shared, not only by the panellists, but also amongst the audience who ranged from board members, senior actuaries to recently qualified fellows, provided much food for thought.

The discussion began with Estelle presenting thought-provoking statistics about gender diversity in the actuarial field. While most of us might be aware of the low representation of women in areas such as directorship on ASX boards, did you know that:

4 out of 12 Institute Council members are women;

Younger women are taking longer to qualify as fellows;

Only 2 of 12 plenary speakers at the Actuaries Summit were women?

Below, I reflect on a few topics discussed in the panel interview.

Further (Non-Actuarial) Education

One of the audience members, Elaine Collins, commented that "an actuarial career is a great starting point for a lot of good end points." While becoming a qualified actuary can take many years of studying and hard work, taking further education in a different area such as courses from the Australian Institute of Company Directors (Elaine) or a Masters of Business Administration (Nicolette) can provide a different perspective and a wide focus.

Networking

The negative connotations associated with the concept of networking, and expressed by the panel, are interesting. Perhaps it's the often parodied image of a serial networker who systematically 'works the room' collecting and dispensing business cards in an almost mechanical fashion that we don't like. Panellists all agreed they do not network for the sake of getting their names out there. However, as Meredith pointed out, networking will follow if you are curious and "get out and see what is going on out there". The point here again seems to be to take a wider perspective on things, to have a genuine interest in the people and issues outside your immediate work circle, in the wider community.

Work-life balance

Much of the discussion here drew from the panellists' experiences in juggling the demands of both work and raising a family. Noeline is currently the CRO and Chief Actuary at Allianz Insurance, as well as a mother of two kids. One of the inspiring things I found from her story was that when the position at Allianz was advertised, it was as a full-time role. Although Noeline was (and still is) working a four-day week, she did not see her situation as a barrier to the role. Key to her success in balancing work with family responsibilities is the support of both her husband and a team that shares her values, as well as being firm about boundaries to ensure that work does not encroach on her time reserved for kids and family.

"As one of the panellists reasoned, work-life balance is about making conscious rather than unconscious decisions, and making these without guilt."

Whilst it is common to see women work part-time for family, it was also encouraging to hear of examples of men taking, or intending to take, time off for family or other interests. Whatever the reason, the balancing act can be difficult at times, particularly when others often judge how good a worker/mother/father we are based on their expectations made under their specific situations. As one of the panellists reasoned, work-life balance is about making conscious rather than unconscious decisions, and making these without guilt.

Getting a mentor?

Our panellists were keen to espouse the value of having a mentor. The idea doesn't have to equate to having a formal mentoring relationship but can also extend to less formal learning, such as observing a more senior actuary you respect or in situations like a forum such as this one.

"It is important to realise that the mentee drives the relationship as much as, if not more, than the mentor."

A key point that Hoa made regarding an effective mentoring relationship is the responsibility of the mentee to make decisions for him/herself rather than be reliant on the mentor. It is telling given the great number of young members registering interest for the Actuaries Institute's mentoring program but who, when given the names of three possible mentors, often fail to display the same level of enthusiasm to initiate contact. It is important to realise that the mentee drives the relationship as much as, if not more, than the mentor.

Leaning in

Sheryl Sandberg's (COO of Facebook) 2013 book "Lean In" has sparked much discussion around the progression of women into leadership roles. One of the points that came up in the forum was a concept termed the "confidence gap", which refers to evidence that apparently indicates women are less self-assured than men. The issue with such a concept is that it paints women as the problem. As Meredith points out, the evidence used to support the "confidence gap" might just really be saying that some people are more realistic. The key to being more self-assured then is to not inflate but objectively recognise one's abilities without telling pork pies. Helen pointed out that when she took her role at APRA, it was a "leap of faith" on her part and theirs, but that leap is grounded firmly in her skills.

One point that stood out for me is the advice given by all the panellists that success, in whatever form it takes, has to be unique to each individual. The forum is not meant to be a how-to guide for succeeding in your career and life. Rather it provided me a glimpse into the decision-making processes of some successful female actuaries, the factors that they considered, the attitudes that they held. From these, I hope that I might gain a wider perspective when I come to making decisions in my career and life.

Australian Roundtable Wins International Recognition for Disaster Recovery

By Arun Isaac *(ai8888@gmail.com)*

The Australian Business Roundtable for Disaster Resilience and Safer Communities – consisting of IAG, Munich Re, Westpac, Investa Property Group, Optus and the Australian Red Cross – has been awarded the Certificate of Distinction in the 2015 United Nations Sasakawa Award for Disaster Reduction. It is the first private sector organisation to do so in the 30 year history of the awards.

The honour, which recognises individuals or entities that have made innovative efforts to reduce the impact of disasters and build resilience, was awarded to the Roundtable for their continued research into the potential budget savings in ongoing disaster costs in the next 30 years.

The Roundtable won from a competitive field of 88 nominations from 44 countries this year.

The Roundtable's White Paper "Building Our Nation's Resilience to Natural Disasters" explores potential proactive approaches which could be taken to equip all levels of the Australian government in tackling the large, unexpected costs of natural disaster. According to the Paper, while the public cost of natural disaster recovery in 2012 was estimated to be $6 billion, this is expected to increase to roughly $12 billion in 2030 and $23 billion by 2050 (in 2011 values).

Many of the suggested actions – ranging from raising dam walls to building more resilient housing in flood and bushfire prone areas – were tested using benefit-to-cost ratios, which included all potential costs incurred without a resiliency strategy, and the cost of implementing an effective resiliency strategy.

International Actuarial Input to Global Insurance Accounting Practice

By Dave Finnis *(davefinnis@pfsnet.com.au)*

Why do we keep banging our heads against the wall?

Well, I guess the flippant answer is that at least we get some exotic international walls to head-butt.

For the past 15 years, the Insurance Accounting Committee has been providing input to the IASB on the International Financial Reporting Standard for insurance contracts. Suddenly the answer is no longer: "In about five years" to the question: "When is IFRS 4 Phase 2 going to happen?" Things are getting exciting!

Current activity on IFRS 4 Phase 2

A wall in Zurich – (Grossmunster cloisters), Authors own photo

The latest meetings of the IAA's Insurance Accounting Committee and Education and Practice Subcommittee in Zurich in April left us all in a bit of a quandary about the actions we needed to take and when to take them.

On the one hand, the International Accounting Standards Board (IASB) is increasing the pressure on itself to meet its current promise that …" (T)the final standard is expected in 2015". Whether this means a final version of IFRS "X"[1] at 11.59pm on 31 December 2015, or further necessary delays, is still not absolutely clear. However, discussions with the IASB are becoming increasingly pragmatic, and a phrase that keeps resurfacing is the application of the new standard "(without) undue cost and effort" (In other words, the standard may well end up leaving a fair amount of room for interpretation by insurance entities and auditors alike.)

On the other hand, any "forced" decision is likely to leave even more uncertainty in its application than was already expected to be the case.

This potential outcome is increasingly leading the international actuarial community to help provide early guidance for interpretation of actuarially-related issues, rather than wait for the standard to be published before issuing such guidance.

Our current focus is on a series of "International Actuarial Notes" (IANs)[2] that are intended as support for the implementation of IFRS X. We have flagged the subject matter that we think is most urgent (either because issues are already essentially settled within the draft IFRS X, or because they are likely to need significant assistance from actuaries in their implementation).

The subjects for contemporary emphasis include:

- overall measurement (i.e. effectively how the "Building Block Approach" – or BBA – is applied);
- current estimates;
- discount rates;
- risk adjustment;
- measurement of the Contractual Services Margin (or "residual margin" in early exposure draft parlance);
- premium Allocation Approach (PAA) (i.e. the approach being allowed for contracts of one year or less, provided it is a reasonable approximation for the BBA);
- embedded derivatives;
- contract modifications;
- presentation issues (actuarial perspective);
- participating and performance-linked contracts;
- classification of contracts (including contract boundaries);
- business combinations (including portfolio transfers);
- transition issues;
- change in accounting policy; and
- self-insured workers compensation (linked to IFRS X, but directly supporting IAS 19).

The Actuaries Institute is already active in supporting these subjects through the International Accounting Standards Committee (Chair: Grant Robinson). However, given the breadth and detail of the various potential inputs, I'm sure Grant would welcome any new volunteers.

Whilst the IANs represent the bulk of our current activity, we are also supporting IFRS development both "above" and "below" the level of IAN development.

In a higher echelon is the development of a new International Standard of Actuarial Practice (ISAP) – being developed through the Actuarial Standards Committee. The plan behind this ISAP 4 is that it is sufficiently detailed to be relevant for actuarial work on IFRS, and yet broad enough to be attractive for adoption by member associations of the IAA.

Supporting the IAN development from "beneath" is further work on broader educational matters. We have already supported the publication of actuarial monographs (i.e. long-ish educational texts) on "Stochastic Modelling – Theory and Reality from an Actuarial Perspective" and "Discount Rates in Financial Reporting – a Practical Guide"[3]. Currently a monograph on risk adjustments is being drafted, with the bulk of the work being outsourced to Deloitte's international actuarial group. The main aim behind these monographs is to filter the vast amount of actuarial literature to identify and promote the appropriate elements of practical usage around the world.

Implications for Australian Actuaries

Things on the non-life insurance side of things are pretty well finalised. Effectively, use of the PAA (expected to be applicable in the vast majority of cases) means very little change to the current IASB 1023 approach, albeit that there may be some adjustments to the liability adequacy test ("onerous contracts" test) and some loss of risk parallels in the treatment of emergence of liability. So, if anything, a small step backwards for us unfortunately. On the plus side, any Australian actuary can already claim to be an expert on IFRS X if they are looking for overseas work!

Life insurance is (still) a clouded area, especially regarding the treatment of par. contracts, but hopefully the right decision (whatever that is) will soon be made by the IASB, and our IAN activity is already in place to assist.

Other Insurance Accounting Committee activity

The Insurance Accounting Committee (IAC) attempts to act as the global actuarial voice (or, at least, mouthpiece) of the membership of the IAA. It relies on feedback from membership through the biannual IAC meetings and through responses to minutes and reports (distributed to members and posted on the IAA website). In addition to having an MoU with the IASB, there are also close liaisons with bodies such as:

- the International Auditing and Assurance Standards Board, (through a seat on the Consultative Advisory Group of the IAASB);
- the International Federation of Accountants (A task-force of the IAA is currently looking at formalising this relationship);
- the International Valuation Standards Council, through a close working relationship on common issues; and
- the International Association of Insurance Supervisors (valuation issues) – the Insurance Regulation Committee provides the main contacts with the IAIS.

[1] At this juncture, it is not certain whether the new standard will retain the current number (4) or will be allocated a new number (17?)

[2] There are currently 26 potential "IANs". However this level of granularity – useful for retaining focus in the drafting stage – is unlikely to be retained when the guidance is finalised

[3] Both available through the International Actuarial Association (actuaries.org)

Actuaries, keeping children safe?

By Julia Lessing *(Julia.lessing@iinet.net.au)* and Abigail Marwick *(Abigail.marwick@gmail.com)*

From predicting referral volumes in different locations to analysing case time statistics, actuarial tools can provide sound support to the child protection system in Australia. Julia Lessing and Abigail Marwick report.

At the recent Actuaries Summit, Abigail Marwick and I shared our experience using our actuarial skills in human services, specifically in child protection. We all know that traditionally, actuaries have used their skills in insurance and financial services, but that our skills are portable and can be applied in other industries.

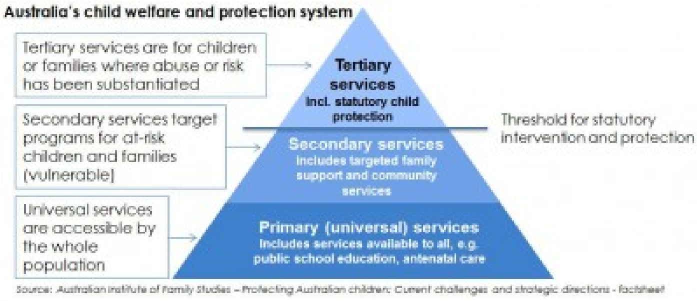
When we talk about actuaries keeping children safe, we are certainly not suggesting that we are replacing the important roles of frontline workers such as caseworkers, doctors and Police. Rather, we're referring to the work we've done using our actuarial training to provide analysis and insight to those professionals who are working directly with children, so they might be better informed and supported in keeping children safe.

What is child abuse and how does Australia respond?

Unfortunately, child abuse, specifically the physical, sexual, emotional abuse or neglect of children, occurs in Australian society. Each state has its own legislation and response system in place to identify and respond to child abuse that has occurred, and provide support to families where abuse is likely to occur. The risk of a child suffering abuse can be complex and may build over time, often overlaid with intergenerational effects and other disadvantage such as poverty and homelessness. Some of the known risk factors for child abuse include:

- Mental illness in the parents
- Domestic and family violence
- Substance abuse
- Poor parenting skills

Factors such as financial stress and family breakdown can also contribute to child abuse risk, especially when these exist with other risk factors.



The Australian child protection system comprises government and non-government service providers who deliver different services depending on the level of risk to the child.

Primary services are available to all Australians, e.g. Medicare provides free antenatal care for all Australian mums, which enables a minimum level of child protection care for all Australian babies.
Secondary services are available for families with specific risks

and needs, e.g. parenting skills programs for young parents and anger management programs for parents with anger problems can help keep families together and provide a safe environment for children.

Once a child's suspected risk of child abuse meets the statutory threshold, tertiary services are invoked and do not require parental permission. This can involve intensive family services to keep children safe at home, or if the risk of abuse is too high it may involve removal of the children and placement in state-funded care.

How can the actuarial skillset be applied in child protection?

There are many parallels between the operations of an insurance company and the child protection system. As such, many of the techniques and skills we are trained in as actuaries can be valuable in providing analysis and insight to support the child protection system.

For example, the claims management and reporting process is very similar to the process of receiving and responding to child abuse reports. Techniques used to prioritise and manage claims, as well as matching a suitably skilled and able workforce with the workload can be used effectively in child protection. Some of the tools used by child protection staff around the world are known as "actuarial tools", which provide a statistical basis to support professional judgement in the triage and risk assessment of reported child abuse risk.

In addition, both insurers and government departments have to deliver services within their budgets. Health insurers know that providing preventative services (e.g. regular dental care, subsidised gym memberships etc) can reduce the future costs of claims. This "actuarial investment approach", as referred to in the recent McClure Review and federal budget, can also be applied to child protection. Provision of early intervention services, such as parenting programs, can strengthen families and keep children safe, possibly reducing the need for children to be removed from their parent's care and placed in government funded foster care. We know that children who are placed in foster care are also more likely to have health issues, be homeless as adults and even more likely to be incarcerated. These are not good outcomes for these children and contribute to additional costs to the government throughout their adult lives.

Examples of actuarial work in child protection

One area where we have used our actuarial skills in child protection was to model family risk factors for an Australian state to inform service delivery requirements. To do this, we researched key indicators of family stress, and built a predictive model for service demand, using information on child protection reports and estimated geographical prevalence of stress indicators. We used this model to predict future volumes of referrals in different geographical locations and worked with frontline staff to understand community trends and issues that were not observable in the data to enable a practical approach to the location of family support services.

Another area we have used our actuarial skills in child protection was to conduct analysis of current and possible caseloads for caseworkers in an Australian state. This involved a combination of quantitative and qualitative analysis of casework, including statistical analysis of case time estimates captured through caseworker surveys and analysis of case characteristics and the various operational considerations that were impacting casework time. This enabled a view of current and possible caseloads that were and could be carried by caseworkers under a range of scenarios to allow more informed decision making to occur regarding workforce planning.

What else could actuaries do?

Once you have an understanding of the child protection system and can see its parallels with an insurance or financial services environment in which we as actuaries are trained, you can start to see the applicability of the actuarial skillset to a range of challenges.

The recent budget announcement has specifically called out an investment in the "Actuarial Investment Approach" in relation to understanding the drivers of long term welfare dependency. This is an interesting area that will require actuarial modelling and valuation of welfare payments, as well as analysis to understand the interactions of various welfare payments with each other and with decision making behaviour of Australians.

Data linkage is another area that governments are exploring. Recent reviews of suspicious child deaths have suggested that if better information sharing between agencies occurred, a better picture would be available to more accurately identify and prioritise child abuse risk. This has been done internationally and I believe actuaries are well placed to contribute to this work.

How do I get involved?

Our presentation focussed on the work we've done in child protection, but this could be extended to other areas of human services (e.g. disability, public health, justice, homelessness, education etc). There are a number of options to work in this area. Child protection service providers (e.g. government departments and NGOs) need internal staff who can provide analysis and insight to their challenges. Alternatively, you can consult to providers and advisors of child protection services, including providing system level advice.

You can view our full Actuaries Summit presentation here. If you'd like more information about a career in human services please reach out to Abigail or myself.

Counting the benefits - evaluation of healthcare programs

By Bronwyn Hardy *(bronwyn.hardy@teachershealth.com.au)* and Barry Leung *(barry.leung@defencehealth.com.au)*

Over 35% of all health care costs in Australia are attributable to four chronic diseases. In a recent paper, actuaries Bronwyn Hardy and Barry Leung canvassed disease management program issues for Australian private health insurers to consider.

Around the world, illness and death from chronic disease is increasingly widespread and represents a significant cost to both individuals and society. Over 35% of all health care costs in Australia are attributable to the top four chronic conditions – cardiovascular diseases, oral health[i], mental disorders, and musculoskeletal conditions (AIHW 2008-09).

Chronic diseases can have very broad impacts, on the individual, their friends and family, their immediate community and society generally. Some impacts include: pain and suffering, increased medical costs (to the individual or society), productive time lost and reduction in quality of life.

Disease management programs provide patients with coordinated community support and to empower them to self-manage their diseases, both over the short and longer term. These programs may not cure the disease, but many believe they may help alleviate the symptoms, slow disease progression or reduce secondary impacts.

For a long time, Australian private health insurers in have had an interest in disease management. Assisting policyholders to effectively manage their condition can reduce the long-term claims costs, as well as improving member retention and satisfaction levels. It also aligns with the objectives of many insurers to foster policyholder wellbeing.

An important part of the disease management framework is the evaluation and continuous improvement of such programs. Given the relatively short history of disease management in Australia, existing evaluation approaches remain highly variable and are under constant review and development. In our paper we provide a high level introduction to disease management program evaluation for Australian private health insurers. We do not provide an assessment of different methodologies, but focus instead on the key principles and issues to consider.

Evaluation framework

We develop the following checklist to ensure that critical elements of program design are captured in a timely manner, in order to assist with effective evaluation.

Program objectives

o Ensure these are clearly articulated, and that there is a common understanding of the language used

o Test whether there are secondary, or tertiary, objectives
- Marketing
- Retention
- Customer satisfaction

o Consider the most effective ways to measure success

Agree high level evaluation techniques

o Clinical (if appropriate)

o Financial
- Return on investment (need to agree how savings and costs will be determined)
- Loss ratio (accepting this is also impacted by pricing changes)
- Admission Rates
- Bed Days per 1,000 lives
- Absolute cost of program (pre or post risk equalisation)
- Cost of capital

o Other

Specify timeframes for evaluation

o Pre-program evaluation (the period selected can significantly influence the reported results)

o Intervention period

o Post-intervention period

Determine whether participants will be classified into cohorts (the initial members often have a different experience to those who join later)

o How will cohorts be determined

Agree the comparative group – noting again that the reported results will vary depending upon the group selected

o The control group if a RCT is performed

o This may be the same cohort pre-intervention (with or without allowance for trends)

o Alternatively it may be a different group (e.g. those who declined to participate)

o Consider also comparing to a broader baseline of product or insurer membership

Ensure required data will be collected and available in a usable format

o How will the data be collected?

o Is there anything that needs to be recorded differently

Consider adjustments

o Will allowance be made for reversion to the mean effects?

o Will the comparative group be adjusted to reflect differences in characteristics with intervention cohort?

Ensure the evaluation will assist the business in making strategic decisions

o Would the results of this evaluation enable you to choose appropriately between competing options? Would the results help the business to improve existing programs and other practices?

Conclusion

Disease management programs can improve self-management practices amongst chronic disease patients, and slow the rate of disease progression while maximising health and wellbeing. Although disease management in Australia is still underdeveloped compared to the US and Europe, it is gaining momentum. As the number of programs increases, the need for program evaluation is going to grow.

We believe that actuaries have a role to play as the actuarial skill set is closely aligned with the requirements of a health program evaluator. We hope the paper will provide some useful insights for those who undertake program evaluation. Every program is different in nature and evaluators should adapt their methodologies to suit the circumstances. There are many considerations that evaluators need to take into account when performing an evaluation.

While there is no recognised "gold standard" in program evaluation, the exercise is still worthwhile for both the funder as well as the wider community. As the knowledge of disease management increases through quality evaluations, better programs can be designed, and most importantly, we can help improve future patient outcomes.

View the Presentation and Audio around this paper, presented at the Actuaries Summit 2015.

[i] Oral health may not typically be considered a chronic disease or condition; however the AIHW ranks it with other leading diseases due to the costs attributed to this area. Refer for example to http://www.aihw.gov.au/media-release-detail/?id=60129546452

(more…)

12 Things Good Bosses Believe

By Trang Duncanson *(Trang.Duncanson@nab.com.au)*

Ever wondered what is going through your bosses head? Surely not swirls of worry about their own humility or mettle as a human shield, right? Head of Actuarial, Insurance at NAB Wealth, Trang Duncanson reflects on what makes a good boss.

Being a 'boss' of people is a difficult job. We spend a lot of time and energy trying to develop our people to be the best they can be. We worry about their flaws of employees and even their strengths. We ask ourselves constantly whether it is critical to actually focus on a weakness (is it 'fatal' to the team goals?) or should we just leverage people's strengths? We wonder about nurture versus nature, and how much we can actually change.

With all these 'boss-like' considerations, we need to step back and examine ourselves, every now and then. An old favourite guide for me is Robert Sutton, on the nitty-gritty of organisational life, in his book Good Boss, Bad Boss, published in 2010. This was widely discussed at the time, in major CEO and CFO forums.

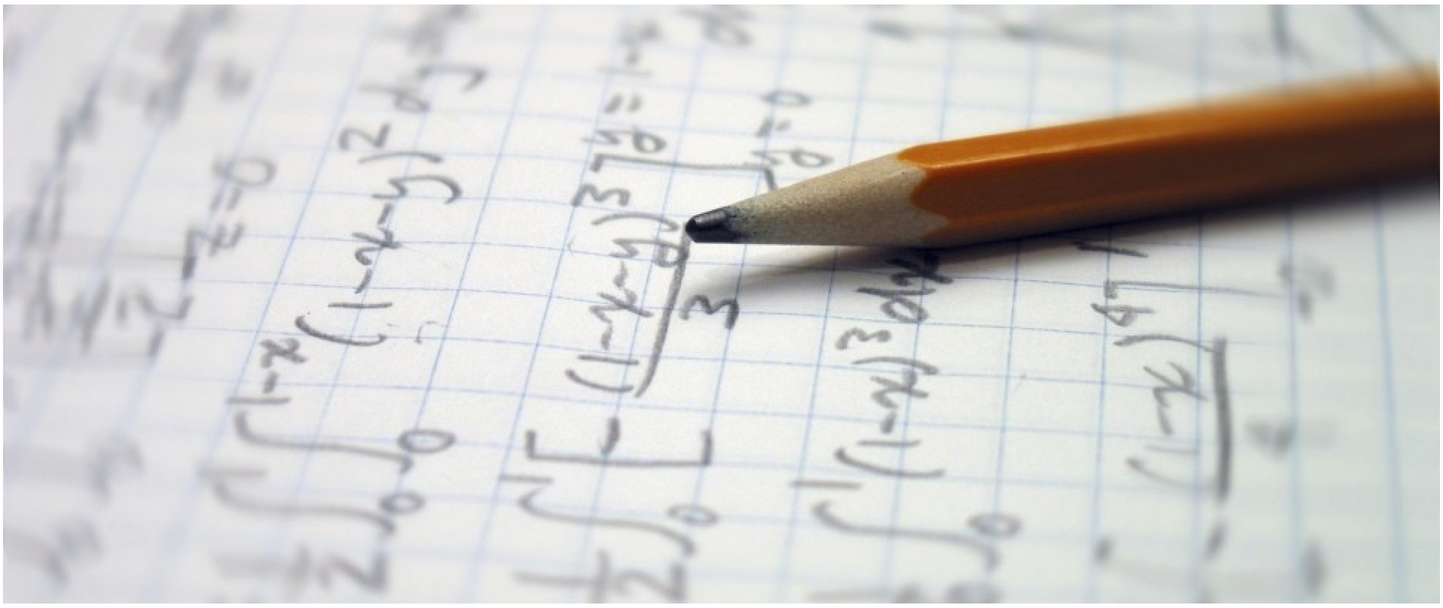
Robert Sutton saw, from his many years of research, that the best bosses had a certain common purpose or outlook on their role. He neatly summarises this into the "12 Things Good Bosses Believe":

1. I have a flawed and incomplete understanding of what it feels like to work for me.
2. My success — and that of my people — depends largely on being the master of obvious and mundane things, not on magical, obscure, or breakthrough ideas or methods.
3. Having ambitious and well-defined goals is important, but it is useless to think about them much. My job is to focus on the small wins that enable my people to make a little progress every day.
4. One of the most important, and most difficult, parts of my job is to strike the delicate balance between being too assertive and not assertive enough.
5. My job is to serve as a human shield, to protect my people from external intrusions, distractions, and idiocy of every stripe — and to avoid imposing my own idiocy on them as well.
6. I strive to be confident enough to convince people that I am in charge, but humble enough to realise that I am often going to be wrong.
7. I aim to fight as if I am right, and listen as if I am wrong — and to teach my people to do the same thing.
8. One of the best tests of my leadership — and my organisation — is "what happens after people make a mistake?"
9. Innovation is crucial to every team and organisation. So my job is to encourage my people to generate and test all kinds of new ideas. But it is also my job to help them kill off all the bad ideas we generate, and most of the good ideas, too.
10. Bad is stronger than good. It is more important to eliminate the negative than to accentuate the positive.
11. How I do things is as important as what I do.
12. Because I wield power over others, I am at great risk of acting like an insensitive jerk — and not realising it.

We'll all have different takes on the above, and the way be deploy these will wax and wane depending on the situation and where our team is on their development journey. The book itself gives many great examples of the above.

The question to us, in our 'step back' moment, is then how would we change our leadership style?

Author email: Trang.Duncanson@nab.com.au



In the Margin: June 2015 - Stuck on You

By Genevieve Hayes *(inthemargin@actuaries.asn.au)*

Have you ever become so narrowly focused on one way of solving a problem or task that you are no longer capable of considering any alternative approaches? If your answer is "yes," then rest assured that you are not alone. It's a situation we've all faced in the past, usually while under the pressure of a tight deadline, and it is so common that scientists even have a name for the mistakes caused as a result of it: "fixation errors."

Scientists have known about fixation errors for many years, and it is not uncommon for pilots and doctors, for whom fixation errors can be a life and death issue, to be trained in identifying them. However, regardless of the profession in which you work, just about everyone can benefit from an awareness of fixation errors (even actuaries).

There are actually three different types of fixation error, all of which can be equally problematic:

1. "This and Only This!" – This is the situation when you become so convinced that you have the right answer to a problem that you refuse to consider any other solutions.
2. "Everything but This!" – This is the situation where you consider a large number of causes of a particular problem, but don't rule out any of the causes, and as a result, are unable to solve the problem.
3. "Everything is OK!" – This is the situation when you continually insist there is no problem and that any data that might suggest a problem is simply a statistical anomaly.

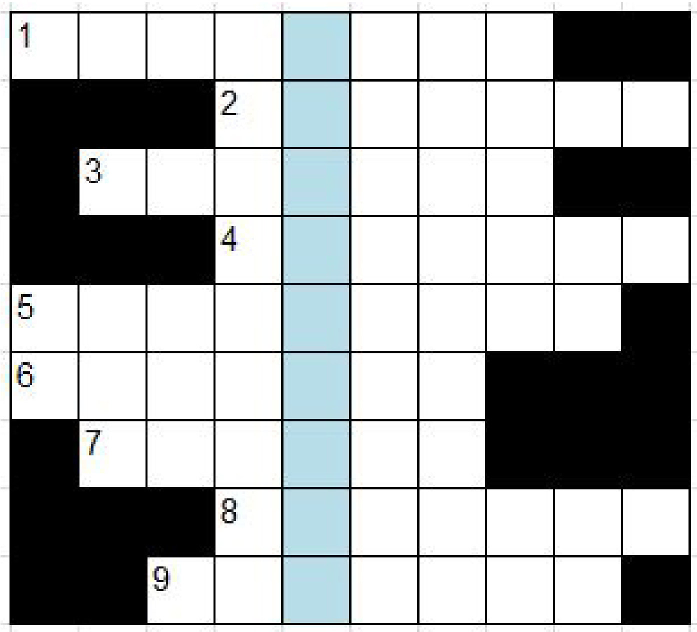
Unfortunately, although scientists have identified the phenomenon of fixation errors, they have yet to come up with a means for us to avoid them, beyond recognising in ourselves that they can occur and seeking a second opinion or taking a step back if we feel that we are falling into one of these three situations. Nevertheless, by practising solving problems, such as the one below, we can become more adept at identifying the situations in which fixation errors can occur and condition ourselves to keep looking for alternative solutions when they do.

Eleven plus two = Twelve plus one

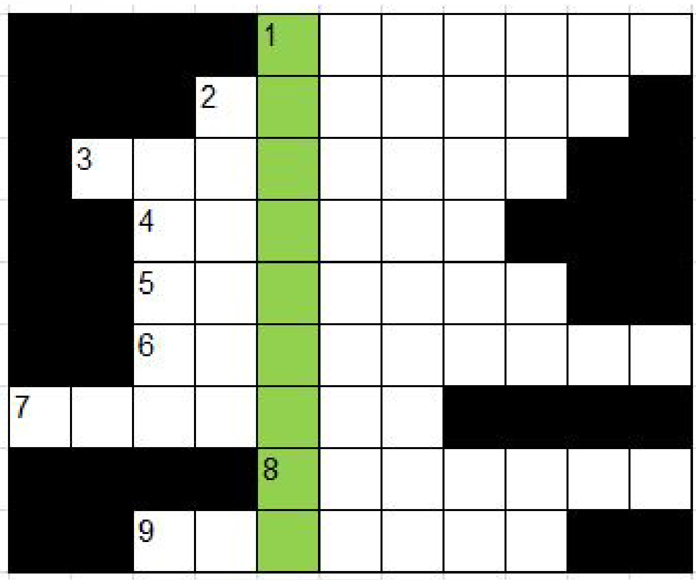
Below are a set of crossword clues, each of which suggests two words which are anagrams of each other (for example, the clue "Wedding gift for being rough and disorderly" suggests the words dowry and rowdy, which are anagrams of each other). Your task is to find the nine pairs of anagrams and then arrange them in the two grids provided so that one anagram from each pair appears in each grid and the coloured columns in the two grids form one final pair of anagrams. Note that, although the words in Grid 1 are in the same order that the clues are given, this is not true of Grid 2.

1. Greek philosopher found under glasses. (8)
2. Increase military rank. (7)
3. Make an impression on one who punishes wrongdoers. (7)
4. Guarantees against risk or harm at dawn. (7)
5. Smuttier storm of intense severity. (9)
6. Struggle to perspire profusely from the heat. (7)
7. Holy man or fairy? (6)
8. Instructor in a unit of area. (7)
9. Breakthrough stone kitchen appliance. (7)

Grid 1



Grid 2



For your chance to win a $50 book voucher, solve the puzzles and email your solution (with working) to: inthemargin@actuaries.asn.au.

Celebrity Death Match (April Solution)

In April you were given a list of 32 movie titles and told that pairs of consecutive titles share a common actor. In order, the common actors are: 1. Brendan Fraser; 2. Whoopi Goldberg; 3. Bill Pullman; 4. Oliver Platt; 5. Denzel Washington; 6. Donald Sutherland; 7. Anthony Hopkins; 8. Ryan Gosling; 9. Ryan Phillippe; 10. Chris Cooper; 11. Tim Robbins; 12. Kevin Bacon; 13. Sandra Bullock; 14. Michael Caine; 15. Julianne Moore; and 16. Rebecca DeMornay. Consecutive pairs of actors in this new list can then be linked by common movie titles, with the titles being as follows: 1. *Monkeybone* (2001); 2. *Lake Placid* (1999); 3. *Fallen* (1998); 4. *Fracture* (2007); 5. *Breach* (2007); 6. *Mystic River* (2003); 7. *Miss Congeniality* (2000); and 8. *The Hand that Rocks the Cradle* (1992). Repeating this process gives the actors: 1. Bridget Fonda; 2. Embeth Davitz; 3. Laura Linney; and 4. Ernie Hudson; and then the movies: 1. *Army of Darkness* (1992); 2. *Congo* (1995). These final two movies are linked by arguably the greatest B-grade actor of all time, Bruce Campbell. A diagram of the elimination process can be found here.

Eight correct answers were submitted. The winner of this month's prize, selected randomly from among the correct entries, was **Chris Scheuber**, who will receive a $50 book voucher.

You can call me AI

By Stephen Huppert *(sthuppert@deloitte.com.au)*

Computer algorithms can beat humans in chess, Jeopardy and medical diagnoses, so why not insurance? Actuary and Deloitte Partner, Stephen Huppert examines financial advisors free of personal bias and sales targets.

Stephen Huppert presents on Digital Disruption at the 2015 Actuaries Summit

Please don't call me a robo advisor. When you book flights and hotels on line, do you refer to a robo agent? No – so why me? I am not a robot! A robot helped make your car – that's a mechanical task (pun intended). You don't want a robot looking after your financial advice – you do want someone like me: an automated wealth manager. My algorithms can sort out your financial matters more efficiently and more effectively than one of those human advisors without all their problems. So call me an algo advisor. Or call me AI.

"Could a computer not do an equally good job dishing out standardised guidance on how much they should invest respectively in shares, bonds and other assets?" asked a recent article in The Economist. Why not, I say. If you presented the same scenario to a range of good financial advisers, would you expect similar outcomes? Why not an algorithm?

An algorithm doesn't get distracted by irrelevant information, short-term fads, or social factors. In fact, algorithms today are able to beat humans in many areas, including chess, Jeopardy, and medical diagnoses to name a few.

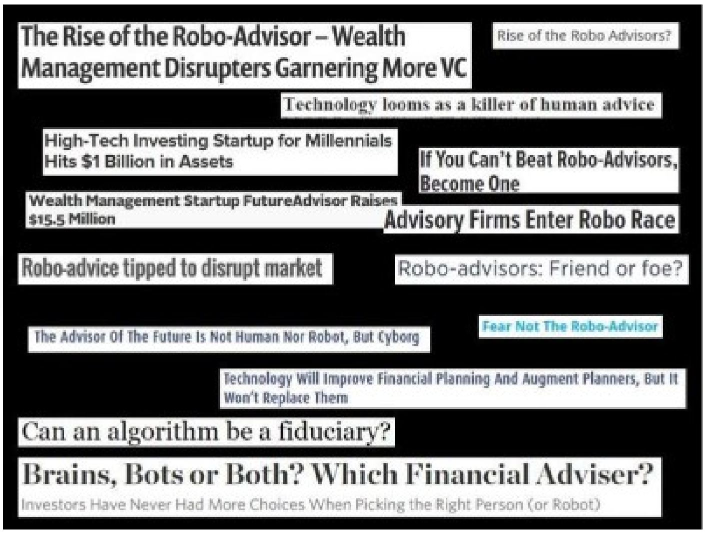
We give you a choice

Until now, there has been really only two ways for you to invest: you could go to a human advisor or go it alone. There are plenty of people not satisfied with these options. They don't need or want advisors that seem to be more focussed on selling products, and the industry doesn't make it easy for those wanting to go it alone.

"Nobody chooses a machine over a really good human. But in the absence of the option to work with a really good human, why not go with a machine" – Bill Bacharach

Algo advisors are able to fill the gap between these two options. We automate asset allocation and portfolio management, making accessible the type of financial advice once reserved for high-net-worth individuals. If you have a look at the algo advisors, you will immediately see that we are easy to deal with.

We do it for you



Robo Advice making headlines this year

The Financial Services Industry is so focussed on selling products and advice that it has ignored the most important person – you! Algo advisors are all about you and your needs. Our detractors see algo advisors as simply automated investment tools. We are much more than that. We talk to you like a person, not a prospect, in language that makes sense. We provide a range of tools, and incorporate aspects of behavioural economics and human centred design to help you understand investing. As your robo-advisor, we offer complete transparency by enabling you to log into your account from your desktop, laptop, tablet or smartphone. Other advantages we have is our ability to document members risk profiles, income needs in retirement, attitudes to risk, their expressed desired income and desired retirement age, meeting compliance requirements without the need for a human.

We make investment effortless. We make investment fun.

We are easy to deal with

Algo advisors are not new but have been hidden away by human advisors who have been using portfolio management tools for decades. Digital technology has liberated algo advisors from the back room. We are now able to take out the middle man and allow you to access these very same tools but without the need to engage a human advisor with their large minimum balances and high costs.

"Digital technology has liberated algo advisors from the back room."

Typically we have two facets: a consumer-friendly, responsive interface and a core trading platform. One of the things we have learnt from the success of distant relations such as Uber and Airbnb is that the customer interface is critical and we are now in the age of the mobile. We all spend more effort this aspect of the customer experience – much more than most established wealth management business, which take customers for granted. Our strength is the focus on the three Ts: trust, transparency, technology.

There is a considerable difference between knowing what you're supposed to do and actually doing it consistently. That's where we really excel. Not only do we have high-powered mathematical models to work out a good asset allocation and portfolio for you, we will help you invest efficiently and effectively by managing this portfolio in a way human advisors can't. We won't make biased decisions based on greed or other emotions. We're available 24/7 – we're always on, always working, always monitoring your investments. And we'll remember your birthday – what more could you ask for?

We know our limitations

Source: runoranj.com

We know our place. We can only work with information you give us. We don't read body language or work out whether you are lying to us…yet. Our algorithms can keep you on track as long as we know what track you are on. You need to let us know when your circumstances change.

There are times when only a human advisor will do. Daniel Egan, director of behavioural financial and investment at Betterment, recently said: "Our prioritization reflects the services which are more effective and efficient implemented using pure digital form. We have no desire to discuss how to divide wealth between your children, or what kind of trust to set up, or other key tasks advisors perform."

"Don't protest too loudly that an algorithm can never replace personal recommendations and hand-holding that a human can provide."

All I need to do is remind you of the recent headlines and reports on current affairs that show some of the results of these personal recommendations.

We are not all the same

Let me introduce you to some of the relatives. The two most famous cousins are Betterment and Wealthfront. They are both darlings of the Venture Capital community and attracting significant interest from high net wealth investors and millennials. Both manage over $2 billion for customers just like you using low cost Exchange Traded Funds. A recent BBC article said that 75% of Betterment's clients are under 50 and 60% of Wealthfront's are under 35. All of a sudden, people who normally don't obtain financial advice are getting into it. That has to be a good thing.

Some algo advisors allow you to do more than just invest in ETFs. Motif Investment, for example, helps you invest in baskets of stocks and ETFs. You can create your own or use one of

Motif's or even ones put together by other Motif investors. Other relations like to describe themselves as delivering "virtual advice" not robo advice. Personal Capital is one example that says "We do have technology that is helping to automate and scale what we do, but in addition to that technologies, just as important, are the individual advisors."

Another cousin, Hedgeable, describes itself as a Digital Asset Manager 2.0. Its platform allows you to invest in customizable portfolios that use complex data science and hundreds of proprietary investment technology systems. Its founders say "We started Hedgeable because the carnage of the financial crisis showed that the gap between the haves and the have nots in regards to financial product access was immense".

We work with human advisors

A number of the family are only interested in working with human advisors. Recently, Betterment teamed up with Fidelity to produce an advisor-branded version – Betterment Institutional. Envestnet recently launched 'Advisor Now' – an algo advisor designed to help human advisors embrace our technology focus on delivering value and improving financial outcomes to clients by providing services algorithms can't. A recent survey of human advisors in the US found that 45% viewed algo advisors (ok, the survey used the term robo advisor) as a technology tool for advisors rather than competition.

"Algo advisors are perfect partners for many SMSF investors that are poorly serviced when it comes to assistance in building portfolios."

Whilst most of the family live in the US, we have cousins in other countries. There is Nutmeg in the UK and Stockspot in Australia. Things have been a bit slower down under but with so many Australians not getting financial advice, there should be plenty of opportunity. Algo advisors are perfect partners for many SMSF investors that are poorly serviced when it comes to assistance in building portfolios. Superannuation funds could do with an algo advisor to help provide guidance and advice to the millions of Australians that will never be serviced by human advisors.

We work with the establishment

The establishment has responded with two very common approaches. They have started adopting family members – John Hancock acquiring Guide Financial, Fidelity of eMoney Advisor and Northwestern Mutual of LearnVest are three examples. Others are building their own automated advice solutions with Vanguard and Charles Schwab being two of the biggest wealth managers to have launched already. Schwab Intelligent Portfolios has no fees beyond the underlying investment fund costs. This changes things dramatically.

Whilst some of the establishment are busy trying to discredit us, overall I think we are having a good impact on the wealth management industry. We are seeing our core attributes being adopted by wealth managers and human advisors, including: reducing fees, increasing transparency, acknowledgement of a younger generation, increasing use of technology, focusing on communication and personalisation, to name a few.

We are here to stay

It is always difficult to make predictions about the future of technology, even for an algo advisor, but one prediction I can make with confidence is that we are not going away. We can integrate more technology rapidly and continue to evolve in a way the establishment will find difficult with their legacy systems and legacy thinking. We will see more and more of us working alongside human advisors.

As David Bowie said when talking about his 1977 album, "Heroes": "Tomorrow belongs to those who can hear it coming".

Actuaries weigh in on Govt Tax Paper

By Stephanie Quine *(stephanie.quine@actuaries.asn.au)*

As debate rages over how best to re-design Australia's taxation system, actuaries are putting forward strong recommendations on superannuation tax reform and retirement incomes policy.

As experts in financial modelling and longevity risk, actuaries are well placed to comment on the state of Australia's tax and superannuation systems. The profession has been busy bringing that expertise to the tax debate in order to provide sustainable policy recommendations aimed at safeguarding retirees' living standards and reducing pressure on future budgets.

Submissions to the Federal Government's 2015 Tax White Paper closed two weeks ago and several actuarial firms made comprehensive and thoughtful contributions. Those firms focused on Question 22 in the Discussion Paper: **How appropriate are the tax arrangements for superannuation in terms of their fairness and complexity? How could they be improved?**

The Institute established its own Tax Working Group (TWG) to review current taxation arrangements and produced a submission proposing that the Government consider:

- introducing a lifetime cap of around $2.5 million on super savings which can be transitioned into a superannuation income stream which pays no tax on investment earnings
- lowering the high-earner 30% concessional tax rate to incomes above $180,000 from the current $300,000, and;
- easing pension eligibility restrictions linked to the sale of the family home

Chair of the TWG and Convenor of the Institute's Superannuation Practice Committee, Andrew Boal, spoke with ABC Radio last week to reiterate those policy recommendations.

Mercer's submission reflected on the Henry Tax Review, highlighting the importance of determining the most appropriate benchmark for taxing super before reviewing tax concessions under the current arrangements.

The firm reiterated its August 2014 recommendations to:

- extend division 293 tax to all those on the top marginal tax rate;
- improve the government Low Income Earners Superannuation Contribution;
- introduce lifetime contribution caps but with a maximum contribution in any year; and
- limit the amount of assets that can exist in the tax exempt pension phase

Mercer also presented an alternative and more radical approach in the spirit of open discussion on super tax with no restrictions on ideas or concepts. This approach called for a move to a "much simpler" EET system which the firm termed t1Et2 representing:

- a "flat tax" (t1) on concessional contributions, together with a credit for low income earners;
- investment earnings which are exempt (E) from tax; and
- a progressive tax rate (t2) on benefits

Rice Warner's submission to the Tax Discussion suggests reducing the tax concessions for those on the highest incomes and shifting the Age Pension to be a safety net over time.

Some of the changes Rice Warner recommends are:

- Taxing the earnings of pension accounts at the same rate as superannuation accounts; they suggest a uniform rate of 12%
- Simplifying the system of tax concessions on contributions by providing a 20% rebate on all concessional contributions – and applying the tax in personal tax returns
- Removing the part Age Pension and forcing retiree couples to spend their wealth above $500,000 before they become eligible. For this purpose, the value of a family home above $1.5m would becounted as part of their wealth.

An article in Friday's Australian Financial Review set out some of Rice Warner's key points.

PricewaterhouseCoopers also made two submissions; the second drills deeper into superannuation tax reform at section 2.3, focusing on tax incentives to encourage self-funded retirement; the concessional tax environment of superannuation savings; and accessing superannuation at retirement age or death.

The Government is yet to announce when it will release its Tax Green Paper, nor whether it intends to make policy changes to superannuation in the foreseeable future.

Industry, academics, consumer groups and observers – including FSI chairman David Murray – continue to debate the issues and a consensus is emerging among stakeholders that changes to tax arrangements in super are necessary. Industry Super Australia Chief Executive David Whiteley noted in a recent speech that “the super industry is agreeing to, and advocating for change to tax arrangements of superannuation. That is in itself a remarkable set of events.”

President of the Actuaries Institute, Estelle Pearson said the timing is right to “act and fix the superannuation and pension systems which are in fact two sides of the same policy coin.”

“Superannuation should not be out of bounds for revision and review. Via a summit or an independent panel of experts, the Government should be taking advice that will halt the obvious and perplexing discrepancies that are emerging in current policy and which are confusing many workers and retirees,” said Pearson.

Nature offers insight into bank operational risks

By John Evans *(jevans@pgeaus.onmicrosoft.com)*

What has biological evolution got to do with operational risk in Australian banks? As PhD students at Sydney Business School are discovering, quite a lot. Actuarial Professor John Evans reports.

Both biological evolution and financial institutions operate in what is known as complex adaptive systems. The essential characteristics of a complex adaptive system are that:

- it consists of interconnected components;
- the interconnections lead to behaviour that cannot be observed in the constituent parts;
- the system adapts to inputs and evolves; and
- the system contains uncertainty.

There are significant parallels between the complex adaptive systems financial institutions operate in and those in which biological evolution occurs[1]. Whereas in biological evolution natural selection removes poor characteristics, in operational risk, the parallel is management intervention to remove unwanted risk events. More examples of this can be found in Josh Corrigan and Neil Allan's paper on successful adaptation of evolutionary analysis to financial institution risk events, presented at the Actuaries Summit in 2013[2].

A PhD program to further the research into the adaptation of the techniques used to understand biological evolution to capital markets has commenced at the Sydney Business School, in conjunction with Neil Allan of the Systems Centre at Bristol University in the UK.

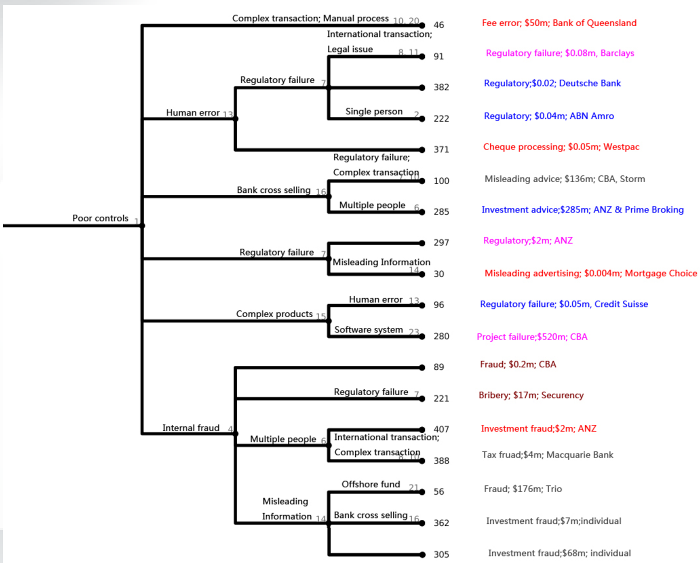
Three PhD candidates are researching the application of evolutionary analysis to operational risk, credit risk and market risk. They will present their findings in relation to operational risks in Australian banks to Actuaries Institute Insights Sessions in Sydney, Melbourne and Canberra over the next month.

The traditional quantitative models of risks in financial institutions are aimed at defining the range of losses arising from likely risk events over reasonable time periods. The problem with using this type of analysis here is that financial institutions operate in ever changing environments. This makes statistical analysis difficult as the results of the analysis are time dependent. The statistical analysis also offers no insight into why the risk event is occurring and is therefore of little value to those trying to manage it.

The technique being used in the analysis of the Australian banks' operational risk events is as follows.

Firstly, we identified from the descriptions of the risk events provided by the banks in the Riskbusiness Oprisk Intelliset, a global database of operational risk events, the main characteristics of the risk events. We then used a particular analysis known as phylogenetic analysis to sort the risk events by their characteristics in a hierarchical manner such that the families of risk events described by common characteristics were grouped together. This process produces a tree with risk events on the right and then groupings by the various common characteristics proceeding to the left until there is a single common characteristic for a group of risk events, with the number of these most common characteristics minimised. These minimised common characteristics are referred to as "Tier 1" characteristics.

As the trees derived from the analysis trace the common characteristics of all captured events, the trees are quite large. The tree below illustrates the situation where the most common characteristic was "poor controls":



In carrying out the analysis, we considered stability over time, particularly of the Tier 1 characteristics was important, as this would mean the banks could then rely upon these characteristics as being features of the risk events, and concentrate on managing these features to help reduce losses to an acceptable level in the future.

The following table shows for the analysis of the Australian banks' operational risk events the most common Tier 1 characteristics, where these are the most common characteristics that are related to the risk events such that there are the least Tier 1 characteristics.

Tier 1 characteristics of phylogenetic trees by year

	Whole tree	**Trees separated by year**		
	2010-2014	2010	2011-2012	2013-2014
Characteristics	Poor controls	Poor controls	Poor controls	Internal fraud, External fraud, Multiple people
	Legal issue	Legal issue	Legal issue	Crime, ATM
	Single person	Single person	Single person	Poor controls, Complex transaction, Manual process
	Crime	Crime	Crime	Poor controls
	External fraud	External fraud	Multiple people	Poor controls, External fraud

Whilst there are some changes in these Tier 1 characteristics over the time periods analysed, there is significant consistency, which means the banks can concentrate on these issues to reduce losses if they want to. Just to illustrate the importance of these Tier 1 characteristics in creating operational risk event losses, the following table shows the percentages of total losses from each characteristic:

Ranking of Risk Event Losses by Characteristics

Characteristic | Percentage of Total Losses
Poor controls – 60.1%
Internal fraud – 27.7%
Legal issues – 22.8%
Regulatory issues – 16.6%
Bank cross-selling – 11.4%
External fraud – 9.7%
Overcharging – 8.1%
Crime – 7.0%
Money laundering – 1.0%
Misleading information – 0.4%
Employment issues – 0.1%
Computer hacking – 0.0%
Human error – 0.0%

There is little doubt that poor controls are a major source of losses for Australian banks. This new type of analysis has promise in being able to assist management to identify the main characteristics of their operational risks which has not been possible previously, and the analysis of the operational risks for Australian banks is showing stability in the Tier 1 characteristics, which means these are likely to be the characteristics going forward and which can then be targeted for control to reduce risk losses.

Preliminary results for US and European banks are showing similar but not identical Tier 1 characteristics for operational risk events. One intriguing result for non-Australian banks is that just being a "big bank" is showing up as an important characteristic of operational risk losses. It was not possible to use this characteristic in the Australian bank analysis as the database consist entirely of operational risk events for the major banks.

[1] Allan N, Cantle N, Godfrey P, et al. (2012) A review of the use of complex systems applied to risk appetite and emerging risks in ERM practice. *British Actuarial Journal*: 1-72.

[2] Allan N and Corrigan J (2013) Emerging Risk Assessment-Latest Practice & Innovation. *Actuaries Summit*. Sydney

Actuarial Mindset: Fixed in the past or positioned for growth?

By Wayne Brazel *(brazelw@gmail.com)*

The business world, and in particular the Financial Services Industry, is rapidly evolving. Technology, medical advances, data availability and increasing complexity are creating immense opportunities for those professionals able to identify the opportunities and are agile enough to adapt. The question I would like to pose is: do we as a profession possess the mindset that will allow us to capitalise on those opportunities? This article will seek to challenge our thinking on that question primarily by way of a book review and subsequent reflections. In keeping with the spirit of the book, I make no promises to be right, only seek to provoke thought and reflection. The book is "Mindset: How You Can Fulfil Your Potential" by Dr Carol Dweck.

Dr Carol Dweck practices in the area of psychology focused on the power of people's beliefs and how they strongly affect what we want and whether we succeed in getting it. The book seeks to show how a simple belief about ourselves permeates every part of our lives and that much of what we see as our personality actually grows out of this "mindset". The book identifies and defines two mindsets, describes the impact of these mindsets and provides guidance as to how we can change our mindset for our personal growth and success.

Mindsets Defined

The two mindsets Dr Dweck defines in her book are the "fixed" and the "growth" mindsets. The fixed mindset is where a person believes "that your qualities are carved in stone" and that they live in a "world of fixed traits – [where] success is about proving you're smart or talented". The growth mindset on the other hand is "based on the belief that your basic qualities are things that you can cultivate through your efforts".

The implications of the mindset a person primarily operates under can be profound. Dweck argues that our sense of self under the fixed mindset is based upon our abilities, so where these qualities are carved in stone there is the need to constantly prove oneself. This leads to the view "you either have it or you don't", devalues effort and can create a fear of failure. Extending or challenging oneself in new areas becomes highly risky since failure at best defines the limit of our ability, or worse, puts into question the ability we thought we had.

The growth mindset, in contrast, puts the focus on development since abilities are not fixed and can be enhanced. With this focus, challenges are sought to extend and develop. Failure is no longer a reflection of one's ability but rather a tool for further refinement and development of those abilities.

To illustrate the value and importance of mindset, Dweck draws on many research projects and stories drawn from various spheres including the education of children, the development of sporting champions and examples from business.

Mindset in Business

In the chapter headed "Business: Mindset and Leadership", Dweck looks at mindsets both from a corporate perspective and an individual leadership perspective.

At the corporate level, the collapse of Enron is used as an example of the corporate fixed mindset. Enron is described as having created a "culture that worshipped talent, thereby forcing its employees to look and act extraordinarily talented. Basically, it forced them into the fixed mindset … the fixed mindset which by its very nature does not admit and correct their deficiencies." In contrast to Enron, Dweck references Jim Collins' book "Good to Great" Dweck and shifts the focus to leadership at the top – the CEO. She notes that the great companies highlighted by Collins' work were led by CEOs who "were self-effacing people who constantly asked questions and had the ability to confront the most brutal answers – that is, to look at failures in the face, even their own, while maintaining faith that they would succeed in the end." i.e. leaders who exhibited the growth mindset in action. Jack Welch (General Electric), Lou Gerstner (IBM) and Anne Mulcahy (Xerox) are profiled and described in the following manner: "As growth-minded leaders, they start with a belief in human potential and development – both their own and other people's. Instead of using the company as a vehicle for their greatness, they use it as an engine of growth – for themselves, the employees, and the company as a whole. In contrast Lee

Iacocca and Albert Dunlap (CEO's exhibiting a fixed mindset) are described as fearful of others receiving credit and firing those who questioned them.

Changing your mindset

Dweck also puts the spotlight on the impact of mindset in the context of relationships, parenting and coaching and finally devotes a chapter on how to change your mindset. She concedes changing mindset is not easy as, in many cases, the fixed mindset provides "a formula for self-esteem and a path to love and respect from others". The growth mindset by contrast embraces all things that feel threatening: challenge, struggle, criticism and setbacks. These chapters were particularly interesting and at times confronting as I could identify myself and parallels to the Actuarial profession.

Is the Actuarial Mindset Fixed?

I think the type of fixed mindset exemplified in the profiled CEOs is very rare in the Actuarial profession. However in the profession there does seem to be traits associated with a fixed mindset. For example, the reluctance of members to participate in debating issues in Insight Sessions or other public forums – is this an example of a fixed mindset, a fear of being wrong? Actuaries have expressed doubt over the suitability of Actuaries taking on CRO roles since we do not naturally have a comprehensive knowledge of all facets of the role? – given the complexity of the Financial Services Industry, are there any C-suite roles in which the person can reasonably be expected to be an expert in every facet of the role's responsibility?

It is clearly the case that Actuaries have been instrumental in developments in a number of fields such as data mining and predictive analytics, energy pricing, climate change modelling and the National Disability Scheme. These are great examples of where Actuaries have taken a lead and seized opportunities. Are these exceptions? Is there a natural thirst for personal development in the profession, a curiosity for new and better approaches, a desire to extend the bounds of the Actuarial profession? To be responsive to the evolving business environment I believe there needs to be these traits – a growth mindset in Dweck's words. Is this the mindset of the profession?

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Educating Future Actuaries

By Actuaries Institute *(Actuariesmag@actuaries.asn.au)*

What is the best way to educate future actuaries to deal with a world that is complex and changing rapidly?

The International Actuarial Association (IAA) is tackling this challenge by producing a new syllabus representing the minimum that a newly qualified actuary (an Associate in Australian terms) must have mastered.

Actuarial associations wishing to continue as (or become) full members of the IAA will have to demonstrate that their education process produces graduates who satisfy this minimum syllabus. Member associations will be free to require more of their new actuaries, in terms of either breadth or depth of learning.

Discussions in Zurich

An IAA Task Force has produced a draft syllabus which was outlined during the half-yearly meetings of IAA Committees in Zurich in April. About 90 delegates attended a seminar held over two half-days to discuss the draft. Delegates included members of the IAA Education Committee which commissioned the new syllabus.

There were many suggested changes to the draft at the detail level, but the general direction of the new syllabus was strongly supported.

The draft syllabus includes ten Learning Areas (LA's):

1. Mathematics
2. Assets
3. Data and Systems
4. Economics
5. Finance
6. Financial Systems
7. Models
8. Statistics
9. Risk Management
10. Personal and Professional Practice

New syllabus: Approach

The draft syllabus was developed with regard to a set of core competencies for newly qualified actuaries produced by an earlier IAA project. Other core considerations were:

- Maintaining a strong technical foundation for actuaries
- Applying technical skills in a range of areas (old and new)
- Developing an actuary as a professional risk manager
- Strengthening professional and personal skills
- Adding more data analytical skills

A further enhancement to the IAA syllabus is an indication of the depth of learning or performance expected by stating desired learning outcomes instead of simply listing syllabus topics.

The full draft syllabus is available on the IAA web site.

What do you think?

The intention is that a new syllabus will be approved by IAA Council in May, 2016 or thereabouts. A transition period of (probably) 3-5 years will be needed for member associations to implement the new syllabus.

The IAA Task Force will revise the draft syllabus in the light of feedback from the Zurich seminar as well as other feedback received until 15 July. The revised syllabus will be circulated in September for consideration by the IAA Education Committee at its mid-October meeting in Vancouver.

Where to from here?

Australia's accredited universities are preparing feedback on the draft syllabus and relevant Actuaries Institute committees have been invited to comment. Individual members are also encouraged to contribute to refining the syllabus.

Our Head of Learning Sarah Tedesco is receiving and collating feedback from Australian stakeholders and will pass it on to

IAA. If you would like to comment or make suggestions please contact Sarah at sarah.tedesco@actuaries.asn.au

Predicting the 2015 NBA Champions

By Murali Logendran *(murali.logendran@hotmail.com)*

With the NBA Championship Series underway, the question on everyone's mind is who will be the winner? Will LeBron finally deliver a championship to Cleveland? Or will Golden State go all the way in the postseason after boasting the best regular season record for 2014-2015?

There are a number of factors to consider here, such as Lebron's supreme talents and his amazing postseason statistics. On the other hand Golden State's record speaks for itself due to its well-rounded roster including MVP Steph Curry. However, these factors can be subjective and difficult to quantify, so I attempted to predict the outcome of NBA matches using a linear regression model.

The Model

In its simplicity, the model predicts the number of points the home team will beat the away team by. If the regression model output is 8 for a particular game then it predicts the home team to win by 8 points and if the output is -4 it predicts the away team to win by 4 points.

I used the previous NBA season as my dataset to calculate the linear regression formula. The fact that there are over 1200 games in an NBA season gave me a large enough dataset without having to use multiple seasons of data, which can distort the results as prior seasons are less relevant. To put this in perspective, an NRL season contains around 200 games, and therefore you would need 6 seasons of NRL to obtain the same dataset size as 1 NBA season.

The factors I tested and found to be statistically significant in predicting the outcome of NBA games were as follows:

Team Rating

Each player is assigned a "win-share" from the previous season and the top 12 players on each roster have their win-shares added to form a team rating.

The input into the regression equation is the difference in team rating between the home and away teams.

The Warriors have a team rating of 66, whereas the Cavaliers have a team rating of 57. If the Warriors are playing at home the input for the model would be 66-57 = 9 as the model is based on home – away. The input would be -9 for a Cavaliers home game.

This is essentially the most important factor in the model.

Power Ranking

Each week ESPN posts a power ranking for each NBA team. This provides an indication of form.

At the end of the NBA season the Warriors were ranked 1st and the Cavaliers ranked 3rd. Thus for a regular season game hosted by the Warriors, the input would be 1-3 = -2 however as ESPN does not release a power ranking list for the postseason, thus input was set to 0 for the Championship Series.

Back-to-Back Games

This is one measure of fatigue, which is a factor which significantly influences the probability of a team winning.

The input into the formula is binary, 1 for a team that played the night before and 0 for a team that did not play the night before. For the Championship series, this input was set to 0 as both teams will have played the same number of back-to-back games.

Games played in last 5 days

This is another measure of fatigue, but captures fatigue over the week rather than purely the previous night. This second measure is necessary as it is possible for a team to play back-to-back, have a day's rest and then play another back-to-back, thus playing 4 games in 5 days.

The input is calculated as the number of games the home team has played in the past 5 days minus the number of games the away team has played in the past 5 days. For the Championship series this input was set to 0 as both teams will have played the same number of games in the last 5 days.

Home Court Advantage

This accounts for the fact that most teams play better at home than on the road.

This is a constant in the linear regression model as the model is based on home-away and is therefore the team always has a home court advantage.

Other Factors

There are many other factors that would be expected to influence the outcome of an NBA game that are not allowed for in the model. For example, the conference the team belongs and the team's playoff experience.

While it is generally accepted that the Western Conference is more competitive than the Eastern Conference, I found that this was not statistically significant. However this is likely because the difference in the quality of each team across both conferences is captured in the team rating and power ranking.

Further, while a team's playoff experience is not significant for the regular season, this could prove to be crucial in the dying stages of games during the Championship Series. The Cavaliers have the upper hand in this regard, with Lebron James and James Jones playing in their 5th Championship Series in 5 seasons. To make some allowance for this, I increased the Cavaliers team rating to serve as a proxy.

What is Win-Share?

The definition of win-share is easiest to explain with an example. If the Miami Heat won 60 games in the previous season and Lebron has a win-share of 15, this means that Lebron contributed to 15 of the Heat's 60 wins. It is important to note that when the Heat win a game, the entire game is not attributed to a single player as win-share. Rather, the win is split up proportionally amongst the Heat players, determined by their influence on the game. Lebron had the highest individual win-share of any player on the Miami Heat roster last season, meaning he had the largest influence of all Miami Heat players. Whilst this may be easy to understand, how win-shares are actually calculated is quite difficult and relates to offensive and defensive efficiency of a player.

Win-Share Adjustments

I started with the win-shares at the end of the previous season from a basketball statistics website. I then made minor adjustments to individual's player's win-shares where I believed changes needed to be made. An example of this is for Pau Gasol, a quality player with a win-share of just 3, playing for the hapless Lakers last season but traded to the Bulls this season. As Gasol now finds himself on a more talented roster, I believed that he would be worthy of win-share greater than 3. I gave him an adjusted win-share of 7.5 for the current season. His actual win-share at the end of the current regular season was 10.4, meaning he had more of an influence than I had predicted.

I also made adjustments for players that were injured for a significant proportion of the 2014 season and therefore had not played enough games to be credited with a win-share that truly reflected their playing ability. This was done using win-shares for pre 2014 seasons.

As the season progressed, it was important to keep the model up to date by adjusting the observed win-share values for current season performance, injuries and other roster changes. As each player's win-share was based off last season, I updated the win-shares halfway through the season by doubling the players' win-shares for the current season with some further adjustments if a particular team had favourable fixtures up to that point in time. It was further necessary to allow for injuries to players and other roster changes. This was done by subtracting the win-share of the injured/replaced player from the team total and adding in the win-share of the replacement player.

And the 2015 NBA Champion will be…

With these observed values, the linear regression model can be used to predict the outcome of a particular game the Championship Series. Combining this with the various permutations (for example, one permutation would be that the Warriors win in 4 games), I calculated the probability of each team winning the Championship as follows:

Team	Probability of Winning Championship
Golden State Warriors	64%
Cleveland Cavaliers	36%

Thus the model has Golden State Warriors as the team to take out the 2015 NBA Championship. Interestingly, the most likely outcome is for the Warriors to win in 7 games, which would no doubt make for a memorable Championship series!

Actuary speaks on depression, FSI and a Super Industry "Cold War"

By Actuaries Institute *(Actuariesmag@actuaries.asn.au)*

View the video here:
https://youtu.be/qTV_8dn_ZPo?VQ=HD1080

Following Plenary 4 at the Actuaries Summit heard about the career lessons of Trevor Matthews, Fred Rowley and Melinda Howes, Institute HQ's Stephanie Quine caught up with actuary and Finity Consulting Principal Geoff Atkins.

Geoff reflects on difficult times throughout his career and what he learned from his experience with depression. A secondee to the Financial System Inquiry (FSI) Secretariat in 2014 along with fellow actuary Brad Parry, Geoff offers insight into the strong impression actuaries made throughout the Inquiry.

With his wealth of experience in the life and general insurance space, Geoff describes the tension that exists between funds in the superannuation industry and why this has come about.

If you think that you, or someone you know, may be suffering from depression you can visit beyondblue or call Lifeline for confidential and immediate crisis support on 13 11 14.

Standing on the precipice

By Georgina Hemmings *(georgina_hemmings@hotmail.com)*

Following the recent Financial System Inquiry (FSI), Australia appears about to embark on a period of innovation in the retirement income sector. If Murray's recommendations are adopted longevity protection is likely to be a prominent feature. Georgina Hemmings draws insights from the UK annuities market to discuss ways to use mortality and interest rate assumptions to achieve a better outcome for retirees.

A view from the Summit

In preparation for the journey ahead, retirement income products had a key role at this year's Actuaries Summit. A common theme from the papers presented appears to be a reliance on average life expectancies not only to simplify modelling but also to underpin product design. Competition in the traditional space has forced insurers to sharpen their pencils, and information and data quality are at the core of differentiated and market leading pricing. Nonetheless, when we talk about managing anti-selection associated with longevity, the same rules do not appear to apply.

Some interesting ideas on group self-annuitisation schemes (GSA) were presented. Together with deferred annuities, this product type is also mentioned in the final FSI report. Setting up a smoker only GSA was discussed during Q&A as an option for addressing anti-selection risk with an assumption that a GSA could not accommodate or, more accurately, attract the business of lives with lowered life expectancies. While listening to this I was jumping up and down in my seat wanting to say we underwrite traditional products, why not longevity?

Enhancing the annuity experience

Mortality assumptions comprise three components which address basis, parameter and trend risk. Translated this means choice of base life table table, the multiplier applied to this table, and the improvement factors which vary mortality factors over time. Taking into consideration an individual's medical history and lifestyle, underwriting influences the multiplier, but can also impact choice of improvement factors too. Underwriting rewards those in ill health, whose life expectancy is lowered, with higher annuity rates. Without it, insurers rely on cross subsidy and the consequential uncertainty is managed with contingency margins which, ultimately, the customer pays for. For me, cross subsidy isn't synonymous with risk pooling.

The UK has a well-established underwritten, otherwise called enhanced annuities market. It is suggested over 50% of retirees would be eligible for some form of enhancement[1] and that underwriting, on average, generates 20% higher rates than conventional annuities[2].

In 1995, partnering with several providers, Hannover Re pioneered the development of the underwritten market, which started with a smoker only annuity. RGA was next to enter, in collaboration with other insurers. Today, Swiss Re also provides reinsurance support, and others, such as Partner Re and Pacific Life Re have a slice of the pie. At the same time, leading insurers have sought to develop their own underwriting basis in an attempt to manage costs and improve pricing.

In addition to age and sex, at the most basic level, providers can differentiate based on postcode or annuity size. Both act as proxies for socio economic group and rely on the 'wealth health effect' to estimate life expectancies. These rating factors are particularly useful when gathering medical information is difficult, for example defined benefit de-risking schemes. While postcode and annuity size is readily available, a key challenge of using blunt instruments is the absence of information about core drivers. The European Court of Justice recognised this in 2012 with a ruling that outlaws the use of gender as a rating factor. Even though this was driven by the prohibition of sexual discrimination in insurance, it highlights the need for insurers to understand and seek information on root causes rather than settling for proxies.

The next step up from this is to gather information from applicants about factors which may adversely affect their life expectancy. Major annuity providers in the UK have collaborated to agree a set of standardised questions called the 'retirement health and lifestyle form'. This form covers personal, lifestyle, and medical questions. It includes supplementary questionnaires for heart conditions; diabetes; cancers; stroke; respiratory and lung disorders; multiple sclerosis; neurological diseases; and where appropriate, activities of daily living. In contrast to the traditional protection market, medical tests and reports are not routinely collected as part of the application process. Instead concerns about over disclosure can be managed by random post acceptance screening. Cotinine tests can be used to substantiate smoking, likewise GP reports for other conditions.[3]

Underwriting is used to price lifestyle, enhanced, and impaired annuities depending on the level of impairment.

Lifestyle annuities rate lives for smoker status, drinking habits, marital status, BMI, cholesterol, and blood pressure. Some annuity providers have had success targeting this type of business by only underwriting for these factors.

Enhanced and impaired annuities take into consideration ratings for other illnesses with the delineation depending on severity of impairment. Rating factors for various illnesses and comorbidity are usually provided by a reinsurer's underwriting manual, although some UK insurers have sufficient credibility in their own experience to develop their own factors.

There is some interest amongst insurers in varying improvement factors depending on underwriting outcomes. Using a causal based approach to understand the past and predicting the future, the outlook for medical advances in early detection and treatment, in addition to discovery of both cures and new diseases, is likely to vary depending on condition. To demonstrate this, while mortality from circulatory diseases, cancers, respiratory diseases, and external causes (which accounted for 75% of age-standardised deaths in Australia in 2012) have been declining since 1986, mortality from endocrine, nervous system, and mental disorders (accounting for the next 14% of deaths) have been steadily increasing.[4]

The elephant in the room

The importance of interest rate, as well as mortality assumptions, should not be overlooked. A recent study by the UK Financial Conduct Authority (FCA) found that an annuity provider pricing using 2006 interest rate assumptions could offer annuity rates 11 per cent higher than the 2014 level. Similarly, if 2006 mortality improvement assumptions where used, 7 per cent higher rates could be offered to today's retirees.[5]

In the current low interest rate environment it is challenging to convince retirees to lock in rates prevailing at this time, which is implicit with products that offer a guaranteed income for life. The viability of longevity protection products is dependent on there being a deep and liquid market in which to invest, however availability of long dated bonds is an issue for Australian insurers. For several years the UK enhanced market has relied on equity release assets to bolster annuity rates. Interest rate assumptions on these mortgages are in the vicinity of 150 to 300 bps higher than investment grade corporate bond yields and their long duration can sometime assist with cash flow matching[6]. Similarly there is some interest, and perhaps appetite for, alternative assets, such as infrastructure as a way to improve pricing.

The interaction between underwriting and earnings assumptions should not be overlooked. The role of underwriting becomes even more important in a low interest rate environment as more weight is given to longer duration cash flows once they are discounted.

Next steps …

Like many of us, I am eagerly awaiting the Government's response to recommendations from the FSI, particularly around implementation of default comprehensive income products for retirement.

Australia is challenged with encouraging retirees to self-manage longevity risk at the same time as addressing the perception that longevity protection products, in particular annuities, do not represent value for money. A key issue for longevity protection writers is being able to offer a reasonable return to compensate retirees for handing over their savings, sometimes without a return of capital. While product innovation is essential to navigate this, hopefully some of the ideas presented in this article facilitate this journey.

You can contact Georgina at georgina_hemmings@hotmail.com

[1]https://www.abi.org.uk/~/media/Files/Documents/Publications/Public/2014/Pensions/ABI%20statistics%20Q2%202014%20The%20UK%20retirement%20incor

[2] http://www.ft.com/intl/cms/s/0/71715054-9433-11e1-bb47-00144feab49a.html#axzz3bCF8PZzH

[3] http://www.actuaries.org/mortality/Item10_Annuity_underwriting.pdf

[4] Cumpston, R., Sarjeant, H. and Service, D. (2015). Estimates of individual life expectancies. *Australian Journal of Actuarial Practice,* vol 3*,* 35-46.

[5] Financial Conduct Authority (2014) The value for money of annuities and other retirement income strategies in the UK.

[6] http://www.ey.com/Publication/vwLUAssets/EY-Matching-adjustment-for-equity-release-assets/$FILE/EY-Matching-adjustment-for-equity-release-assets.pdf

The Changing Face of General Insurance

By David Gifford *()*

From driverless cars to claims "big data is nothing new", from telematics to robotic exoskeletons and the impending effect on actuaries, this General Insurance Seminar held a mirror up to Australia's insurance industry and called for change. David Gifford reviews a jam-packed One Day event.

On 2 June 2015, the Institute hosted the inaugural One Day General Insurance Seminar. The Seminar took place following feedback from the 2014 General Insurance Seminar that members would like further opportunities for presentations and discussions on a range of contemporary topics.

Over the course of the day, 14 speakers covering four plenary sessions presented on a wide variety of topics of current interest within the general insurance industry. There was an excellent mix of thought provoking presentations and lively debate in the panel sessions which followed. The event was well attended with over 100 delegates and presenters, demonstrating the merits of this style of event.

Pictured L – R: Kevin Gomes, Mark Kimberley, John De Ravin and IAG's Chief Actuary Tim Clark who chaired Plenary 1.

The day kicked off with three speakers examining the current **General Insurance landscape and Outlook.** The first speaker was **John De Ravin from Swiss Re** who examined the history of the general insurance industry in Australia and actuarial involvement in the industry. John highlighted the growth in actuarial involvement in general insurance – from 6 Fellows in 1981 to approximately 500 today. He also highlighted how social, technological, environmental, economic and political forces have shaped the industry over the years. John left the audience to consider how many of the changes which have taken place were unforeseen and to continue to keep learning and to be prepared for change.

John was followed by **Kevin Gomes** from Taylor Fry who gave an update on the industry based on the latest JP Morgan industry survey. Kevin predicted that a likely upcoming El Nino effect would lead to reduced claim costs (approximately $0.6bn in catastrophe costs in El Nino years compared to more than $3.0bn in La Nina years). Kevin also spoke on the growing use of alternative reinsurance capital compared to traditional capital.

The final speaker in the first session was **Mark Kimberley** from HWL Ebsworth; the lone lawyer presenting for the day who was nonetheless very comfortable with numbers. He highlighted the significant cost of regulation within the general insurance industry and more broadly, with $94 billion dollars being spent annually on regulation, and with 10% of the Australian population being employed in compliance related activities and questioned the value of such levels.

The second plenary session looked at **Technological Change and its impact on General Insurance,** with three speakers each examining a different aspect of how technology would impact the industry in years to come. **Jess Truong** from the Transport Accident Commission looked at past changes in vehicle technologies and upcoming devices.

"If all drivers selected the safest car in their class, then road trauma levels would drop by one-third," said Jess.

View the video here:
https://youtu.be/0VJxg7LI81k

Natasha Anning from Ernst and Young spoke on how telematics will impact general insurance, flagging that by 2025, over 100 million vehicles worldwide will have some form of connectivity.Pictured L – R: Alex Collie, David Gifford, Jess Truong and Natasha Anning

Pictured L – R: Alex Collie, David Gifford, Jess Truong and Natasha Anning

Evolving technologies and customer expectations will significantly influence the takeup of telematics in years to come, said Natasha, as will the challenges posed by privacy legislation.

Alex Collie from the Institute for Safety, Compensation and Recovery Research (ISCRR) finished up by with 'horizon scanning' on new medical and rehabilitation technologies ISCRR have recently undertaken. He gave some examples of particular emerging technologies which will have major benefits for those with spinal injuries, including the "Bionic" Ekso Robotic Exo-skeleton and "Smart-e-Pants" for Pressure Ulcers. These technologies will benefit both insurers (through lower claims costs) and those unfortunate enough to incur a spinal injury.

Following lunch the focus shifted with the third plenary, **Data and Analytics: Bottom Up or Top Down?**. **Karl Marshall** from Quantium spoke on his firm's approach of utilising both actuaries and other professionals to deliver their services, providing insight into the growing analytical profession within India. Karl spoke to many of the benefits he saw actuaries possessing relative to other analytics professionals.

Matt Kuperholz, Darren Robb, Karl Marshall and Julie Batch delivered the Data Analytics Plenary.

Matt Kuperholz from PwC was next, entertaining the audience with his journey via actuarial studies to analytics professional. He talked about how Facebook data can be used for risk rating purposes and also spoke about the key forces shaping big data – "CroSoLoMo" (Crowd, Social, Location, Mobile).

Julie Batch from IAG examined how past industries had been substantially disrupted by new technologies. She reminded the audience that Kodak developed their first digital camera in 1975, but that the company's unwillingness to invest in innovation led to its downfall. Julie challenged the general insurance industry not to suffer the same fate.

Finally **Darren Robb** from Allianz spoke on the factors which led to successful utilisation of analytics within institutions. Darren highlighted the importance of a strong cultural foundation within the organisation, with the value placed on analytics by senior leadership being critical.

The panel session certainly led to some interesting discussion with a wide range of views on the future role of actuaries within the insurance and data and analytics industries. Some panellists were of the opinion that actuaries' role in the future would be limited to compliance and regulation – a view that was certainly not shared by the majority of the audience! It was fantastic to see the robust debate on this topic.

The fourth and final plenary looked at **The Changing Role of Actuaries. James Lee** from Westpac challenged the audience to consider that "responsibility" was actually more important than an actuary's "role". He gave the example of a fireman whose responsibility (to save lives) gave them a higher purpose than simply considering their role.

2015 Institute President Estelle Pearson pictured with event sponsors.

Jenny Lyon from SKL spoke on the challenges and opportunities for actuaries in being employed in the future, making the point that strong analytical skills led to better decisions. Jenny challenged the audience to consider the industries which would offer new opportunities for actuaries.

Richard Brookes from Taylor Fry talked of the bright future he saw for general insurance actuaries, saying that those industries where long term projections change decisions (such as education, justice and social welfare) were all strong candidates for actuarial involvement.

Rounding out the day was **Craig Price** from Suncorp who highlighted the importance of actuaries' ability to communicate risk and uncertainty and how the profession's Professional Standards provided a potential advantage relative to other analytical professionals.

Once again a fascinating panel discussion followed with each panellist giving their views on the skill for actuaries to focus on to remain relevant – customer focus, problem solving, humility and listening were all raised by the panellists.

At the networking drinks which followed it was clear many of the points raised has given the audience a lot to consider, in particular in terms of the role of actuaries in the medium to longer term.

As convenor of the organising committee I'd like to thank each of the speakers for their thought provoking presentations. I'd also like to thank the other members of the organising committee (Aaron Cutter, Abhijeet Agarwal, Jonathan Cohen, Les Coleman, Nancy Li, Rashi Bansal and Rebecca Haden). Finally I'd particularly like to thank Lisa Pronesti and Liz Gemmell from the Institute's events team who did a sterling job of bringing such a fantastic day together. I would hope that the Seminar creates a successful blueprint for future such events.

New members meet at Institute

By Juanita Jamsari *()*

The Institute welcomed 19 new members last month. While much of the eastern seaboard was glued to State of Origin Game 1, new members gathered at Institute HQ, marking their first steps into an actuarial career. Juanita Jamsari reports.

The New Members Networking Evening was everything as it should be: fun, relaxed and informative.

Despite being held on the same night as Origin Game 1, the event was surprisingly well attended. By 6.00pm, the room was filled with enthusiastic chatters. It could have been that many of us were excited to meet new people, or perhaps, relieved that it was the end of a busy working day. Whatever the reason, everyone was chirpy and keen to network.

I was fortunate to meet Senior Vice President Lindsay Smartt and learnt more about the Institute and the Council's roles. Besides the event being a platform to make new connections, I also recognised a few familiar faces from my university days and Institute events I have attended previously, which was great.

The formal part of the evening featured a brief address by CEO David Bell and Senior Vice President, Lindsay Smartt, followed by an informative presentation on the Young Actuaries Program (YAP). The evening was insightful as I was able to speak to actuaries from diverse experience and backgrounds, besides meeting new comrades who will also be sitting the examinations.

Since joining the Institute, I have enjoyed the various seminars organised and like the idea of actuaries coming together and communicating. With that, I look forward to attending more Institute events and hope many other new members will too!

<u>NEW MEMBERS MAY 2015</u>

Australia

Stephanie Liliane BOWER	NSW
Beatrice Mei Peng CHAN	VIC
Stephen Jin Wen GOH	NSW
Nikolay Vadimovich GUDKOV	NSW
Francesca Clare HETHERINGTON-KIRBY	NSW
Richard Martin KIRWAN	NSW
Sirinthra KULAPVIRAT	VIC
Anna Elizabeth LANYON	QLD
Jing LIN	VIC
Jordan Thomas PEDDER	NSW
Tatiana POTEMINA	VIC
Sameep Singh SANDHU	NSW
Andrew SAWKINS	NSW
Xin TIAN	VIC
Jeremy James TONG	NSW
Matthew YEUNG	VIC

Overseas

Kin Chung CHU	Hong Kong
Kenneth Mark GOODALL	New Zealand
Janet Tsz Yan TSANG	Hong Kong

Viral Singapore Math Problem

By Arun Isaac *(ai8888@gmail.com)*

Viral media has gradually become central to mainstream conversation as a result of our increasing reliance on social media. Usually, this takes the form of something which instantly elicits short-term enjoyment – whether it is a video of an unruly commuter, a bizarre photo of a cat, or a Miss Universe contestant answering a question with as many non-words in 30 seconds or less. So when a logic question from a Singaporean Maths Olympiad started to make the rounds on social networks, one might question why something so complex and niche has the capacity to be shared or viewed by millions of social media users.

Here's the puzzle below. Click here for the solution and an explanation.

Albert and Bernard just became friends with Cheryl and they want to know when her birthday is. Cheryl gives them a list of 10 possible dates:

May 15	May 16	May 19
June 17	June 18	
July 14	July 16	
August 14	August 15	August 17

Cheryl then tells Albert and Bernard separately the month and the day of her birthday respectively.

Albert: *I don't know when Cheryl's birthday is, but I know that Bernard does not know too.*

Bernard: *At first I don't know when Cheryl's birthday is, but I know now.*

Albert: *Then I also know when Cheryl's birthday is.*

So when is Cheryl's birthday?

So, why did something as seemingly dry as deductive logic captivate the internet? Here are a few possible reasons for this:

- Originally, it was claimed the puzzle was taken from a Primary 5 (Year 6) maths test. It was later revealed to be taken from a Maths Olympiad, but in any case, many internet users grabbed the opportunity to provide social commentaries about the rigorousness of the Singaporean education system.
- The deceiving simplicity of the puzzle. There are many facets of the puzzle which the reader may assume to be simple:
    - The context of guessing a birthday with a month and a day does not appear to be very involved.
    - There does not appear to be a huge amount of information to sort through – but, counterintuitively, it is this scarcity of information which causes the most confusion.
    - The reader is presented with options, which would naturally be perceived as being easier in the same way multiple choice questions can appear more solvable than short answer questions.
    - The language is plain and does not allude to any complex mathematical operations. Even in the final solution, the most complex technique required is process of elimination.
- Constructing a pathway to solve the puzzle involves some lateral thinking which the reader may not be expecting:
    - Selection of detail in the question is critical. Albert's seven innocent-looking words "I know that Bernard does not know" instantly eliminate half of the possibilities.
    - Organising the logic appropriately into plain English can actually become quite exhausting. Bernard's second statement can be very easily interpreted as "I know the solution because I know that Albert knew that I had not known the solution earlier". But, by organising the logic appropriately, this should be read as "Bernard knows the answer, because he knows the month is July or August".

In any case, it was somewhat refreshing to see a logic puzzle get some airtime on the social media waves as opposed to a picture of a cat wearing a tuxedo. Unfortunately, my attempt to create a viral image of my *CT8: Financial Economics* exam only garnered genuine confusion amongst my followers.

The solution and explanation of the puzzle can be viewed here.

Were you able to solve the puzzle, and if so, did you take a different route to the solution?

Taking the Lead at the Actuaries Summit

By Chao Qiao *(chao.qiao@au.pwc.com)*, Shannon Lin *(Shannon.Lin@aia.com)* and Ken Chua *(ken.chua@au.ey.com)*

The Plenaries

"Sometimes it is the people who no one imagines anything of, who do the things that no one can imagine." This is how we see Alan Turing. This is how Air Vice Marshal Margaret Staib and many others see actuaries.

The Actuaries Summit 2015 commenced with an elevated provocation of innovation, imagination, and vision-based leadership, by Margaret Staib. Staib through her experience in the aviation industry recounted how through innovation and leadership, Australia will soon have the most advanced aircraft positioning system in the world. We are to draw inspiration from her or did she draw inspiration from us?

Actuaries like to keep a low profile and don't give ourselves nearly enough credit for what we have achieved. This theme resonated throughout Plenary 4 on Day 2, where Trevor Matthews, Fred Rowley and Melinda Howes recounted their careers. The lesson we can all extract from them is that ethics and culture are pivotal components of an actuary's professional life. The seeds of innovation and leadership are sewn in years of toil, experience, dedicated mentorship and a keen eye for opportunities. Staib tells us that Turing was such a person. So too was Captain Cook, says Fred Rowley. Did Cook find Australia by chance? Of course he did. But he wouldn't have done so if he was running off the ball. When Australia was there to be found, Cook was the only guy in the running. How can we be the modern-day Cook? How can we seize the many professional opportunities that made Matthews, Rowley and Howes who they are today?

Public policy is precisely where such an opportunity lies for our profession. It is front and centre of the new Institute strategy adopted by Council this year, and something that Institute CEO David Bell spoke proudly about. As Rodney Maddock told us in Plenary 3, don't underestimate the level of expertise of actuaries and what we can add. Geoff Atkins showed us how it's done, at the FSI. "Actuaries want to see good long term policies that are good for Australia," according to Atkins. Poignant words.

So just exactly how well is Australia doing? Not badly according to Chris Caton and Alan Dupont. Apparently, we will outperform most advanced economies in the next 10 years. In Plenary 2 on Day 1, we learnt that Australia is still exporting lots of iron ore and China is still buying them from us to grow. But do watch out for unemployment and the Sydney property bubble. Pax Americana is coming to an end, very slowly, and our economic opportunities come with risks. Isn't this where actuaries come in?

Just in case you hadn't been inspired by the end of Day 2, the Summit closed with a Plenary on the future of medicine and big data. Professor Chris Parish took us through the latest cancer-curing insights, and Tim Trumper did the same in analytics. "Innovation has always been driven by breakthroughs in advances in measurement." So here we are, actuaries, take the lead and seize the moment!

The Concurrents

The summit featured a record 56 concurrent sessions covering a wide range of topical issues facing the profession. Many concurrent sessions tackled the issue of how to get the most out of our retirement incomes, particularly challenging against the backdrop of retirees living longer and a distrust of financial advice channels. Barry Rafe explored the link between obesity and longevity, highlighting the need for further research into better predictors than just BMI to fully understand the relationship between the two. Cath Watson and Dale Jackson looked to the future of disability insurance and the challenging outlook of mental illness claims in the modern workplace. The UK actuary magazine estimates as much as 30% of income protection claims were paid due to mental illness. Julia Lessing and Abigail Marwick showed us just how useful actuarial skills could be in the area of child protection, drawing out key parallels to insurance functions we are all familiar with. This was a particularly encouraging session, drawing out much interest from the audience in how they too could get involved to help out those in significant need. Sarah Galbraith and Sarah Johnson provided us with a view into the brave new world of the NDIS. Sally illustrated the challenges in developing a meaningful measure of the success of the scheme and highlighted the role that the family play in determining success. Sarah laid out the foundations of the structure of the NDIS and the similarities to the principles that underpin insurance companies. The scale of change was made apparent, with current participants in the

NDIS of 30,000 forecasted to grow to 460,000 by June 2019. Robert Baskin pitted the generations against each other and revealed the surprisingly kid-centric shopping habits of Generation X and how your best customers may be the least loyal. Dr Bill Monday discussed the latest developments in cancer diagnostics; could DIY cancer test kits drive adverse selection?

The Networking

The Summit program kick-started with drinks on Sunday night at the Grand Hyatt. Many delegates flew into Melbourne and it was a great networking event that connected people face to face from all over the world

The Gala dinner was a night that began with a high level of anticipation as people did not know what to expect. In case you haven't figured it out yet, the theme for the Gala dinner this year was "Taking the Lead". The night began with a few more drinks with delegates sharing their thoughts after day 1 at the Summit. As always, there were the "cool kids" that stayed out a little too late the night before, but were sober enough and were wondering why the place felt "a bit too dark". Then the space transformer-looking robots came out and it all made sense why the room was dark. After Optimus Prime's visit, we had acrobat dancers as entertainment before we were served our entrée.

The night continued with live music on the stage and many ended up on the dance floor. Good on those brave souls that kindled the dance floor into a flame, and well done to those with the energy after a full day at the Summit to dance into the night. We will never forget you! Viva Actuaries!

Check out further highlights from the Summit.

Tech and telematics poised to transform insurance

By Actuaries Institute *(Actuariesmag@actuaries.asn.au)*

View the video here:
https://youtu.be/0VJxg7LI81k?VQ=HD1080

“The ability to look at distruption and change is crucial for a company that wants to survive,” said Julie Batch, Chief Analytics Officer at Insurance Australia Group, at Tuesday’s General Insurance Seminar.

The One-Day event at the Actuaries Institute examined the general insurance landscape in Australia and the effects of technological changes – from driver drowsiness detection to robotic exoskeletons – on a well-established insurance industry.

Speakers warned of investing in legacy products at the expense of innovation and the pitfalls in failing to accept the value of ‘unstructured, volatile and real-time’ big data. All this in the context of the changing role of actuaries.

View all event presentations here.

Flying closer to the sun – the new drivers of decarbonisation

By Sharanjit Paddam *(editor@actuaries.asn.au)*

Pension funds, investment managers and now global insurers and energy companies are preparing for a carbon-free future – and we actuaries must do the same.

Henri de Castries, chairman and CEO of AXA SA – France's biggest insurer, took many by surprise last week when he announced that AXA has decided to divest its carbon assets[1]. Not only will AXA sell €500m in coal assets by the end of the year, it will also seek to invest €3 billion in renewable energy, green infrastructure and green bonds by 2020.

De Castries noted that: "Extreme weather events are increasing in intensity and severity. Last year alone, AXA paid out over €1 billion globally in weather-related insurance claims. Climate risk for us is neither an ideological or theoretical issue: it is a core business issue, as we are already seeing the impact of increasing weather-related disaster risks."

This business imperative means insurance is "one of the only industries with a role to play in both the adaptation and mitigation aspects", he said.

"Insurers are in a uniquely long-term business, with some insurance liabilities that stretch up to 30 years."

Climate risk for us is neither an ideological or theoretical issue: it is a core business issue

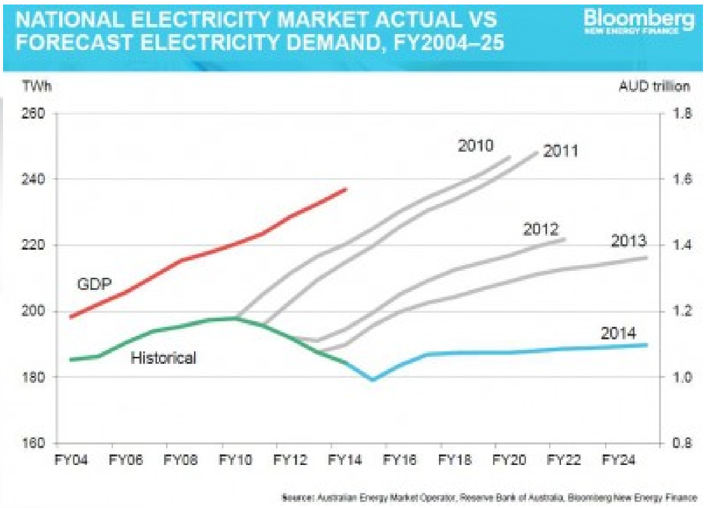
AXA is the first major insurer – and the first global investor – to divest from carbon-intensive assets. Until now, churches, universities and ethical investment funds have been leading the divestment. Many international and local pension funds have recognised the long-term risk of investing in carbon-intensive assets and taken a variety of actions in response[2].

The International Energy Authority (IEA) has estimated[3] that no more than one-third of known fossil fuel reserves can be consumed prior to 2050 if the world is to restrict global temperature increases to 2°C – currently the limit agreed by virtually every country (including Australia!). Effectively this means that two-thirds of carbon assets will become unburnable, or "stranded", if there is enough political will to enforce this 2°C limit.

That's a big 'if'. However, there are signs that the reduction in the value of carbon-intensive assets is not just as a result of political activity or even environmental concern. Increasingly, carbon divestment is being driven by economic and technological factors.

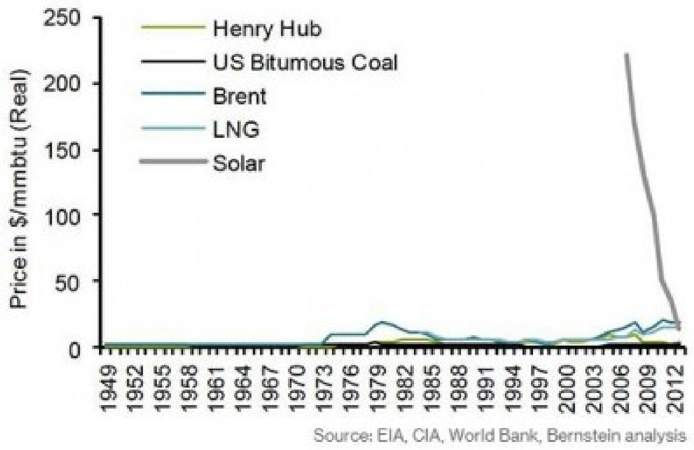
Reducing demand for energy

Despite forecasts expecting demand for energy in Australia to increase with increasing GDP, actual demand has been reducing every year since FY 2010, due to both economic factors – a response to the increase in electricity prices, and technological factors – improving efficiency enabled by technology. We simply don't need as much energy as we used to.



The price of renewables is falling far faster than envisaged

The IEA notes that the cost of solar is already well below retail electrical prices in several countries, and rapidly approaching the level of conventional alternatives[4]. This reduction has been driven by improvements in technology and economies of scale in the massive increase in production over the last few years.



Storage

The most obvious problem with solar is that it cannot provide power in peak periods. However, battery technology has also undergone a massive transformation, most notably with the launch of the powerwall[5] by Tesla Motors.

Increasingly, carbon divestment is being driven by economic and technological factors.

Even Australian energy companies are moving away from fossil fuels. AGL, the largest emitter of greenhouse gases in Australia, recently announced a new policy, providing a pathway to decarbonisation of its electricity generation by 2050[6]. Shortly after, it announced that it too will be retailing battery storage[7]. Whilst AGL stated they were supporting the 2°C limit, I imagine that they would not have implemented their new policy if it wasn't technically feasible, and economically profitable.

AGL notes that 88% of energy generation in Australia is currently from fossil fuels. That won't change overnight, but it appears that business is no longer waiting for political reform, and getting on with the job.

[1] http://www.axa.com/en/news/2015/climate_insurance.aspx
[2] See http://aodproject.net/ and http://montrealpledge.org/signatories/
[3] https://www.iea.org/newsroomandevents/pressreleases/2012/november/name,33015,en.html
[4] http://www.iea.org/media/freepublications/technologyroadmaps/solar/TechnologyRoadmapSolarPhotovoltaicEnergy_2014edition.pdf
[5] http://www.teslamotors.com/en_AU/powerwall
[6] http://www.agl.com.au/about-agl/media-centre/article-list/2015/april/agl-policy-to-provide-pathway-to-decarbonisation-of-electricity-generation
[7] http://www.agl.com.au/about-agl/media-centre/article-list/2015/may/agl-is-first-major-retailer-to-launch-battery-storage

Scientists uncover evidence of large earthquakes under central NZ

By Paul Somerville *()*

Scientists have discovered evidence that two very large earthquakes occurred under Wellington, New Zealand in the past 1,000 years. Whilst current seismic hazard models have taken these types of earthquakes into account, this is the first time direct geological evidence of a "subduction earthquake" has been found, and it suggests they may be more frequent that previously thought. Paul Somerville of Risk Frontiers discusses the latest findings.

Seismic potential of the Hikurangi subduction zone

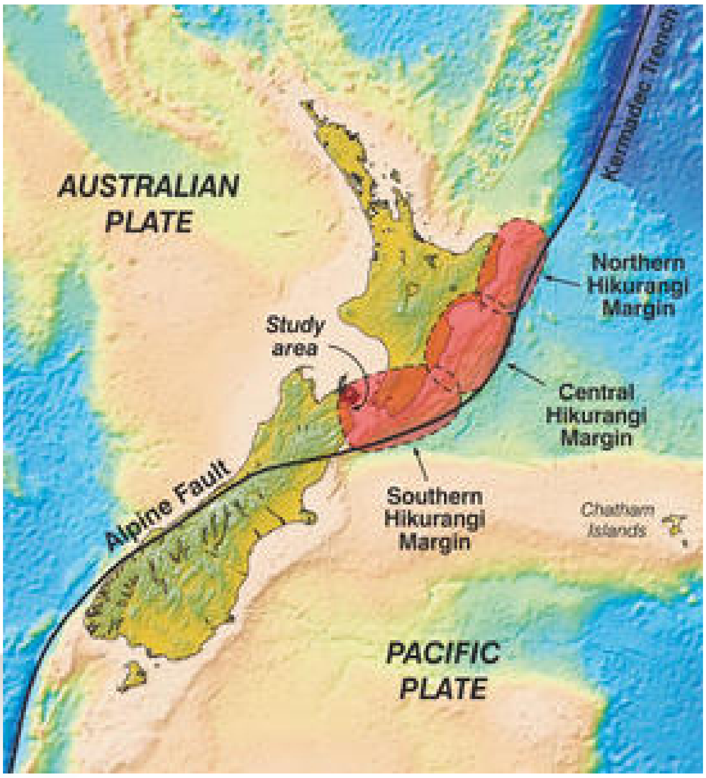
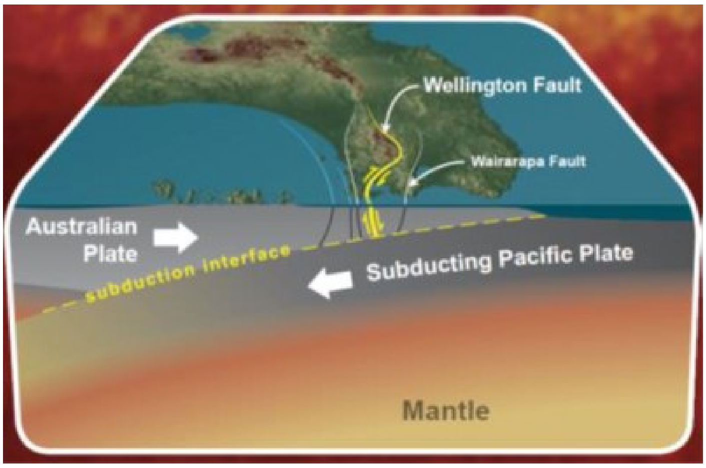


Figure 1. Map and cross section (below) showing the geometry of the Hikurangi subduction zone. Source: GNS Science.

The Hikurangi subduction zone, which lies off the east coast of the North Island of New Zealand (Figure 1), is one of the few circum-Pacific subduction zones that has not had a great (Magnitude >8) subduction interface earthquake in historical time (since 1840), and it has a less complete record of prehistorical subduction earthquakes than many other subduction zones around the Pacific Ocean. There is evidence for the prehistorical occurrence of large subduction earthquakes on the central Hikurangi subduction zone, but until now there has been no evidence for prehistorical subduction earthquakes on the northern or southern Hikurangi subduction zones.

Latest evidence



The southern Hikurangi subduction zone, which underlies Wellington, has had no significant (Magnitude >6:5) documented subduction earthquakes in historical time. The assumption, used by GNS Science in generating the seismic hazard map of New Zealand, that it has the potential to generate large earthquakes, has been based on seismological and geodetic evidence rather than direct geological evidence. Now, in a paper published in the Bulletin of the Seismological Society in May 2015, Kate Clark and others report the first geologic evidence to confirm that the southern Hikurangi subduction zone generates large earthquakes.

Method

Kate Clark and her colleagues used sediment cores extracted from Big Lagoon (Figure 2), a large coastal lake east of Blenheim, to find evidence for two earthquakes producing coseismic subsidence and (in one case) a tsunami during the past 1000 yrs. The earthquake 520–470 years ago produced about 25 cm of subsidence at Big Lagoon. The earthquake 880–800 years ago produced about 45 cm of subsidence at Big Lagoon and was accompanied by a tsunami that inundated ≥360 m inland with a probable height of ≥3:3 m.

Figure 2. Big Lagoon. Source: GNS Science.

Implications

The most likely cause of the subsidence and tsunami events is subduction interface rupture, although the older event may have occurred in conjunction with a crustal fault (such as the Wairarapa fault) in the upper plate. The relatively short-time interval between the two subduction earthquakes (about 350 yrs) is shorter than the recurrence interval of about 1,000 years that has been used in current seismic hazard models, suggesting the possibility that large Hikurangi subduction earthquakes are more frequent than had been thought.

Clark, Kate J.,Bruce W. Hayward, Ursula A. Cochran, Laura M. Wallace, William L. Power, and Ashwaq T. Sabaa (2015). Evidence for Past Subduction Earthquakes at a Plate Boundary with Widespread Upper Plate Faulting: Southern Hikurangi Margin, New Zealand. Bulletin of the Seismological Society of America, Vol. 105, No. 3, May 2015.

http://www.gns.cri.nz/Home/News-and-Events/Media-Releases/subduction-quakes

Project Management Skills – Your Career

By Sophia Sophos *(sophia.sophos@mercer.com)*

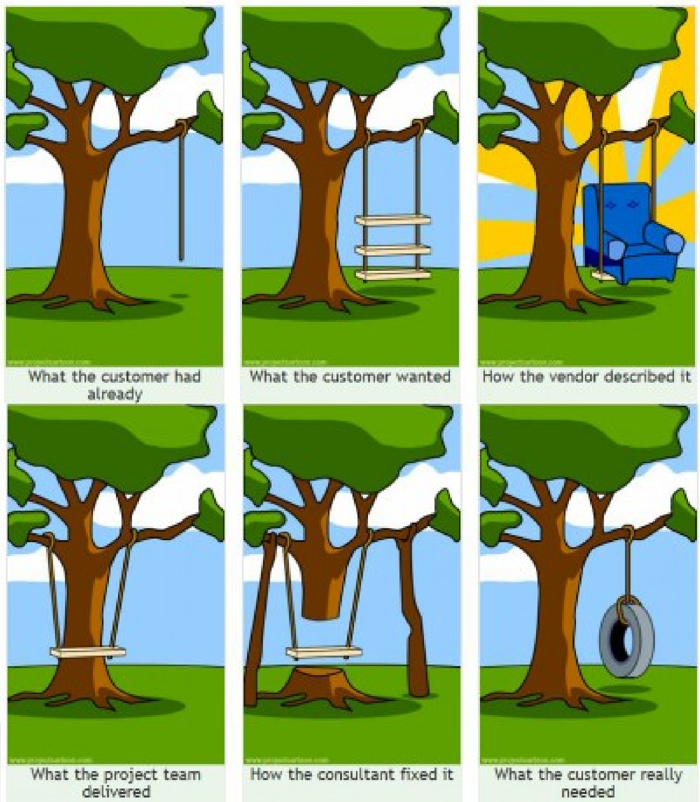
Project Management – now that's a buzz word we always hear! But do we, as actuaries, associate that skill with ourselves?

With little time in the work force to really have refined many of the great skills experienced actuaries call upon without hesitation, the Young Actuaries Program (YAP) audience is always interested in ways to accelerate our development. Following a very successful Actuaries Summit in Melbourne on 19 May, the YAPsters continued their learning with a Project Management Session with Trang Duncanson, a master of Project Management and an actuary keen to share her wisdom

So why should actuaries master this skill? Trang explained that project management skills are a way to differentiate ourselves, imaginably could be our career advantage. They could be the other string to our bow that our peers and competitors may not have. By its very nature, project management highlights in born leadership skills.

Project management could be described as the art and science of 'making things happen'. It's not a static time outcome, but rather a journey of trade-offs between cost, time and scope with ever emerging risks and issues. Ultimately project management drives execution. Whilst we often associate this task with sophisticated tools and tireless reporting, we learned that at the core of project management lies leadership – telling and selling a vision.

Before embarking on a project management journey Trang reminded us to really understand our customers and their needs, and appropriately illustrated this with the comic below.



We often become exposed to the sales process and find ourselves over-selling a result for unachievable budgets, only to deliver an over-complex solution to a really simple problem. The project manager may then be sailing this doomed ship into grey waters. Instead, a trusted advisor is likely to provide the customer with what they really needed and will benefit from the future business this trusted relationship will produce.

The role of a great project manager is to lead and to handle crisis. This requires a doer rather than a bystander, active management and the ability to wear many hats simultaneously. The most important part of this juggling act is being able to engage upwards rapidly and to quickly agree to any changes. It is then easy to understand why project management is much more about people and politics than it is about technical ability. In addition, this is part of the reason why project management could be seen as a competitive advantage for aspiring actuaries, as this role strategically positions the manager to showcase their leadership skills.

Trang humoured us by commenting on the hundreds of quoted textbook tips out there, and summarised these into seven ways to succeed as a project manager. And not to disregard many of these tips and tricks, she managed to eloquently include a further seven tips on ways to fail as a project manager. As for the number seven, well it seemed to be the famous number for almost anything – seven wonders of the world, seven habits of highly effective people, seven notes on the music scale, seven days of the week!

7 Ways to Succeed

1. Be able to give, and receive, criticism – build resilience
2. Know how to conduct a meeting
3. Be able to manage your time well (do not dawdle on low-level issues)
4. Be open to new procedures
5. Do not sit on the fence
6. Maintain a sense of humour
7. Be able to use project planning support tools effectively

#Tip

Know your team members' weaknesses and strengths.

7 Ways to Fail

1. Scope, deliverables, reliance not well defined
2. No agreed baseline project plan to manage against
3. Not understanding your team's strengths and weaknesses
4. Failing to address issues immediately
5. Forgetting quality
6. Not delegating – doing all the work yourself
7. Not keeping stakeholders informed along the way

#Tip

The more you keep your stakeholders in the loop the *higher your credibility* as a project manager.

Whilst the presentation spoke to the project manager in us, we learned that project team members have responsibilities too. Not only should team members follow the plan, but should do so with *energy*. Secondly, they should alert the project manager to any potential delays or issues to tasks and timelines. Although this third responsibility may appear difficult at first without experience, team members should engage the project manager to assist with materiality calls. Lastly, if in doubt about the task or timeline then simply *ask.* From her experience, Trang explained that the proactive analyst/actuary often learns much more and much quicker than the analyst that quietly sits on a particular task, determined to solve it alone.

#Tip

No project team member should make a decision alone that has the potential to impact the project timeline or project cost.

One of the key points Trang made was that project management skills can be used for Business As Usual tasks such as assumption setting, and experience analysis and often the key stakeholders are our internal clients. This means that project management can be applied at a very early stage in our career.

The presentation concluded with three reasons why you should become a great project manager:

1. Get noticed – as great project management skills are not common.
2. Growth – to be able to challenge ourselves to build resilience, agility and adaptability.
3. Leadership…can start now!

All in all, this presentation on project management was far more than the ins and outs of managing a project, but additionally a motivational gesture of encouragement to young actuaries who are keen leaders but don't quite have the opportunities to showcase this quality. Project Management may just be your opening!

View the video here:
https://youtu.be/uhuFqE8nEUI

Seven Healthy Sessions at the Summit

By Nicholas Stolk *()*

The 2015 Actuaries Summit was held in Melbourne from 17-19 May 2015. In this article, Nicholas Stolk overviews seven sessions presented on private health insurance and related topics. All papers and presentations of the Summit proceedings are available at the Institute's website.

Implications of the Changing Nature of Participation in Australian Health Insurance

Peter Grigaliunas & Andrew Gower

Peter and Andrew analysed the impacts of population age structure and participation rates on two key aspects of the Australian Private Health Insurance market: hospital benefits per insured life, and the proportion of benefits included within the age based risk equalisation pool.

Their paper puts forward a number of participation based scenarios and explores how risk rating, youth engagement with PHI, and existing trends might impact insurers' pricing, product design and hospital contracting in the coming years.

Paper
Presentation
Audio

Contemporary Issues in Private Health Insurance

Ben Ooi

The health practice committee (HPC) held its ninth discussion workshop of the same name at the Summit. Ben initially laid out some foundational background information before diving into his view of the issues faced by different stakeholders in the industry – consumers, insurers and actuaries.

Key issues explored included:

- Affordability
- Product downgrades
- Product complexity
- Insurer sustainability.

Ben also briefly touched on the achievements of Appointed Actuaries following their introduction in 2004. The presentation deck includes a detailed appendix featuring a number of interesting analyses of industry membership, rate increases and other financial trends.

The discussion featured many great questions for actuaries to consider, including how actuaries might find a solution to product complexity and what an alternative metric for assessing health costs for the industry might be?

Presentation
Audio

Compulsory Health Insurance: Should Government still be the Health Insurer of the First Resort?

Jamie Reid, Collin Wang, Kris McCullough & Matthew Crane

Jamie and Matthew took on the highly topical debate around whether private health insurers should be allowed to fund primary care by providing a financial analysis of how much it might save the Commonwealth. They also provided a view on whether there might be sufficient scope and volume for potential efficiency savings to be worth further political consideration.

The paper considers a variety of scenarios including insurers taking on coverage for GP visits versus all primary care and examining the impact if the eligibility for either of these measures was income tested.

The authors found that there may be a 'sweet spot' for Government and insurers for primary care coverage of higher income Australians.

Paper
Presentation
Audio

Counting the Benefits – Evaluation of Healthcare Programs

Bronwyn Hardy & Barry Leung

Bronwyn & Barry provided guidance for actuaries who need to perform disease management program evaluation. They comprehensively explored the issues to consider when designing a measurement system or evaluation criteria, including:

- Considerations for selecting a comparison group
- Determining an appropriate baseline, and
- How the choice of evaluation timeframe might impact the analysis.

Key messages included the need to clearly define the program's objective and the importance of planning prior to program commencement to maximise the value of later evaluation.

Paper
Presentation
Audio

A Day in the Life of a Health Actuary – 2025

Ignatius Li & Nicole Stransky

Ignatius and Nicole provided a view on the future of the health actuary by looking at the various drivers of change, how these changes impact the industry's stakeholders, the skills needed by stakeholders to take advantage of these changes and subsequently, the opportunities for actuaries in providing those skills.

Some of the key drivers included:

- 'The informed health consumer'
- Technology and wearables
- Better individualised and population data
- The ageing population.

The authors also put forward their own views of how the demands for various skills from actuaries and other practitioners will increase and found that expertise in understanding consumer behaviour and communication skills will assume greater importance over the next ten years.

The session concluded with an invitation for health actuaries to join the conversation about what they want from the next ten years and a challenge to the profession to respond to the coming changes.

Presentation
Audio

Obesity and the Longevity Myth

Barry Rafe

Barry took a different perspective on the general view that the so called 'obesity epidemic' may dampen the long-term impacts of increasing life expectancy.

His paper demonstrates that conclusions based on an individual's body mass index alone risks missing some of the more subtle health issues relevant to public policy debates and projections of mortality and morbidity.

Paper
Presentation
Article
Audio

A Collection of Risk Management Thoughts

Simone Leas & Greg Martin

Simone and Greg began by saying that they saw "clunkyness" in a number of areas of common ERM practice and wished to address this in three areas.

1. They proposed a different perspective when considering the universe of risks faced by a business: distinguish by the risks' particular characteristics (value adding versus non-value adding, systemic versus non-systemic), which they have found useful when discussing and defining Board risk appetites.
2. Secondly, they outlined a bottom-up approach to operational risk measurement that they suggest is practical for day-to-day risk management activities, and provide a reconciliation between this and a top-down capital reserving approach (including the "dark risks" gap).
3. They acknowledged that succinctly communicating an organisation's risk profile can be challenging. The authors shared one of their reporting tools – a high level risk map "on a page" – that they found useful in communicating overall risk profiles to Boards and senior management.

Paper
Presentation
Audio

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