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THE MAGAZINE OF THE ACTUARIES INSTITUTE

Actuaries DIGITAL

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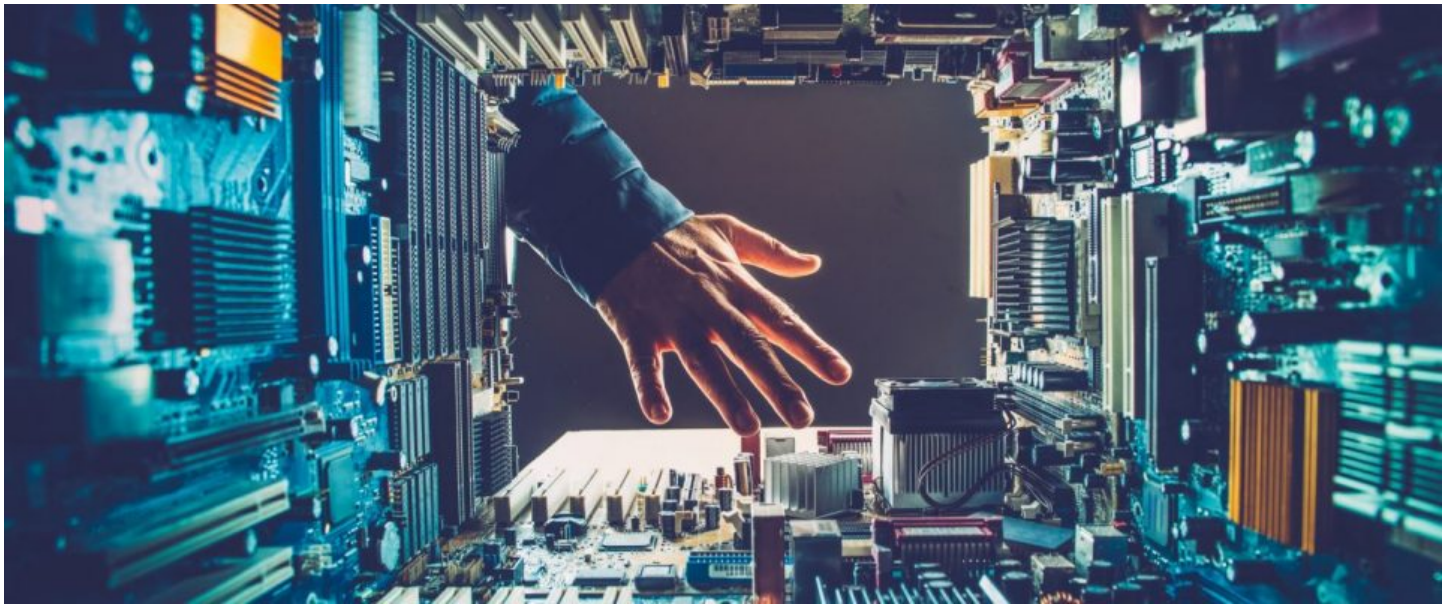


Normal Deviance - A Tale of two CT(O)s

By Hugh Miller

Reading time: 3 mins

A big data parable, wherein Alice learns steady steps and Bob aims big.

Alice is the chief technology officer (CTO) of a medium-sized financial services company. She's been asked to lead a one-year project to enhance the business as part of the company's wider 'big data' push. While a bit daunting, she's accepted that there is plenty of potential. After a quick brainstorming session, she's picked three specific initiatives that should add some value in different areas of the business: a targeted customer retention initiative, a price elasticity exercise and a project around call-centre satisfaction scores.

Bob is also a CTO of a similar company and has been given a similar brief. Bob is delighted to be given such a high-profile piece of work. Initial meetings with a wide range of internal stakeholders give him further confidence – all parties are excited by big data opportunities, particularly given the extra budget set aside for the work. The project is positioned as a whole-of-company change initiative, with metrics around increased revenue and profitability across all product lines.

Alice consults with the data warehouse team. They have been working hard for the past few years improving the accuracy and timeliness of important company datasets. This work proves invaluable; there are already relevant and rich datasets related to customer retention and call-centre satisfaction. However, there is not much information on price-elasticity. Alice adjusts the price-elasticity initiative so that the main objective for the year is a new dataset that will form the basis of future work. A team of modellers begin work on the other two initiatives, with a view to finding some target customer groups for intervention.

Bob talks to his modelling team about how they can use their big data. One analyst identifies a couple of datasets that haven't been used for much analysis yet – one relates to customers upgrading their products and the other a collection of competitor prices. Bob think these sound great, and asks the team to do some modelling and report back with some insights.

While modelling goes on, Alice talks to the customer loyalty team and call-centre managers about their thoughts for strategic improvement. The loyalty team have been considering a range of targeted offers, but haven't had information about how generous the offer should be, or which customers to target. When the modelling team reports back, they identify six distinct segments with high risk of leaving. Alice does not have an immediate feel for which targeted offers will work best, so decides to try three different offers for each segment (plus keeping a control group within each segment). Budget is approved and the trial is quickly rolled out. The call-centre similarly has some ideas; staff are trained to respond to a specific complaint in three different ways and data systems set up so the difference can be measured.

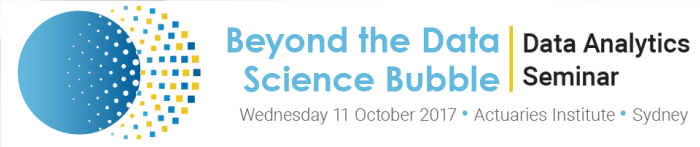
Bob's modelling team reports back and shows there are lots of significant effects. Older customers are much more likely to upgrade, as are those from high socio-economic areas. One executive asks whether this means they should advertise more to high socio-economic customers or lower ones. The modelling team aren't sure; the data doesn't really answer that question. They've also discovered insights from the competitor price data; when their competitor reduced prices there was a measurable decrease in new customers coming from their competitor. Again, they couldn't say whether this meant targeted price reductions would be effective. Bob's excited by the findings and decides to workshop them more broadly in the company.

Alice now has early results from both initiatives (and good progress on the new elasticity dataset). Two of the targeted offers are cost-benefit positive, and appear most effective on different segments. They are rolled out more broadly, while maintaining a control group for baseline comparison. One of the call-centre approaches is also materially improving customer satisfaction and that becomes the new default training for all staff dealing with that complaint. Specific metrics are measured around customer retention (and associated revenue gains), while call centre customer satisfaction was already a tracked metric.

After a month organising a meeting with key executives, Bob presents the results of the insight models. Executives are impressed enough to renew funding for another year. One executive asks how revenue improvement will be modelled, and Bob agrees that it would be good to add this to the plan. There's a long discussion about what operational responses should be, but ultimately the decision is deferred until there's more information. It's also too early to see promised improvements to revenue and profit.

Alice and Bob are both onstage in a panel discussion at an industry conference at the end of the year. They both espouse the virtues of big data analytics and its potential to improve company performance. However, Bob can't help but shake the feeling that maybe he's not doing it right…

The 2017 Data Analytics Seminar looks beyond the data science bubble to address how you can utilise data analytics to deliver real value. View the Program and Register Now here.



Michael Rice named 2017 Actuary of the Year

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

Reading time: 3 mins

The Actuaries Institute today announced Michael Rice as Actuary of the Year for 2017. Michael is CEO of Rice Warner and well known as a fearless advocate for good public policy across Australia's superannuation and retirement sectors.

Michael leads Rice Warner, an independent consultancy and research house in financial services, that he founded in 1987. It now employs close to 70 people. He is a leader within the industry, and one of a handful of expert actuaries the media calls upon for considered commentary and explanation across retirement policy, Age Pensions and superannuation. Many have heard him interviewed on Ross Greenwood's 2GB radio program Money News and elsewhere, have read his blogs, interviews in newspapers and magazines, and heard him speak at numerous external conferences.

"I encourage all actuaries to be involved in public policy as we can all make a difference and help shape society," said Michael.

"I have found the work to be very rewarding and it is an added bonus to be recognised for it by my peers."

Michael's aim has been to promote what's best for the community and the sector in as many ways as he can, and to be a champion for reform where it is needed.

"This award recognises Michael's major contribution to the development of sustainable retirement income policy across many sectors of Australian society. Michael has brought a public face to the profession, and positive attention to the value of actuarial techniques in addressing social policy challenges. The Institute thanks Michael for his invaluable contributions." - Actuaries Institute President, Jenny Lyon.

Michael was educated in Wales and South Africa and migrated to Australia in 1979 working in various roles before branching out on his own in 1987.

Michael was closely involved with the launch of "For Richer, For Poorer", the Institute's Public Policy Paper on Retirement Incomes

Over the years he has provided advice or research to virtually all financial institutions and major superannuation funds operating in the Australian wealth management industry, and has undertaken commissioned research for all the major industry bodies. He has been involved in research ranging from Age Pension dependency, superannuation fund fees, projections of both the superannuation and personal investments markets, analysis of member choices, to evaluating retirement strategies for superannuation funds.

He has led Rice Warner's team making submissions to government on major reviews of Australia's financial services. These include submissions to the Henry tax review, Cooper superannuation review and Financial System Inquiry (FSI), along with submissions to Treasury, Senate Committees and the Productivity Commission.

Michael pictured (right) with Institute CEO David Bell, former President Estelle Pearson and Chair of the FSI, David Murray.

Michael has also been a champion of women in his own firm, which took the battle for better retirement outcomes to the Human Rights Commission. From July 1, 2013, Rice Warner's female employees were offered a package of benefits, including flexible work conditions, paid parental leave, and crucially, an additional 2% payment of their salary into their super fund. Women often face retirement with significantly less in savings than their male counterparts, even though they live longer so they need to save more. Typically, they are paid less and they take time out of work to have children. The aim of the extra super payment was to partially close the gap with men, and to encourage female staff to contribute more themselves. ANZ and Unions NSW have followed Rice Warner's lead.

Michael has served on the Institute's Council and on several committees and is currently the Convenor of the Public Policy Committee. He has produced two books on superannuation and prepared several professional papers.

He sits on the Advisory Board of the College of Business and Economics at Australian National University and has chaired investment committees at major superannuation funds.

Michael's contribution to the profession and to its public standing, as well as his ongoing work, his research and dedication to matters that are critical to the importance of good policy, and the savings of Australia's general population, make him an appropriate and worthy recipient of the 2017 Actuary of the Year Award. The Institute congratulates him.

More recently, Michael has advocated better outcomes for young savers wooed into higher-fee superannuation accounts by social media savvy marketers. He has also urged the superannuation industry to identify underperforming funds with a view to improving member benefits.

AASB 17 Insurance Taskforce Update – September 2017

By David Rush

Reading time: 4 mins

This month's AASB 17 Insurance Taskforce update gives news from the Variable Fee Approach (VFA) work-stream.

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

VFA Work Stream

The VFA Work Stream is one of the technical groups of the AASB17 Implementation Taskforce which overall is focused on producing an information note for Australian actuaries. The VFA Work Stream particularly looks at the Variable Fee Approach and is divided into four sub-groups of two or three people focused on the many issues where treatment for contracts eligible to use the VFA may differ from the general operations under the new insurance contract accounting standard.

The work stream meets fortnightly, looking at a couple of issues each meeting.

Definition of the VFA

The VFA is a variant of the General Measurement Model under AASB 17 which is to be used for contracts with direct participation features. These are defined in paragraph B101 of the standard as:

… insurance contracts that are substantially investment-related service contracts under which an entity promises an investment return based on underlying items. Hence, they are defined as insurance contracts for which:

(a) the contractual terms specify that the policyholder participates in a share of a clearly identified pool of underlying items;

(b) the entity expects to pay to the policyholder an amount equal to a substantial share of the fair value returns on the underlying items; and

(c) the entity expects a substantial proportion of any change in the amounts to be paid to the policyholder to vary with the change in fair value of the underlying items.

If a contract meets this definition then the entity must use the VFA to measure it – the entity doesn't have an option. A contract that does not meet this definition in its entirety is not able to use the VFA.

In terms of the definition, the work-stream discussed the following terms:

- **'Pool of underlying items'** - note that the entity does not actually have to hold the pool of underlying items – just that there is an enforceable link between benefits and returns on the underlying items (which could be an index, say).
- **'Substantial'** - the standard doesn't actually define the term 'substantial', so it is unclear how 'big' the share needs to be, or exactly how much of the benefit needs to vary with returns on the underlying items.

Which products qualify for the VFA?

Before considering any of the other issues peculiar to use of the VFA, practitioners will need to know which products in the Australian market have direct participation features, and so should use the VFA.

The first thing to note is that what follows is indicative. Practitioners will only be able to know for certain by looking at the particular terms of the contract.

Furthermore, the above definition does not necessarily relate to whether contracts are defined as 'participating' under the Life Insurance Act 1995, or as 'discretionary' under LPS 340. Some contracts not previously defined as 'participating' or 'discretionary' (such as some Investment Linked contracts, and

Non-Par Investment Account products) may now have to use the VFA. Conversely, some contracts previously defined as 'participating' (such as Par Group Risk) are unlikely to be able to use the VFA (in the case of Group Risk business, because it is not substantially investment related).

That said, we hope that investment related contracts currently defined as 'participating' or 'discretionary' would be able to use the VFA.

Current indications are that the following contracts are most likely to be able to use the VFA:

- Participating Conventional; and
- Investment Linked bundled with rider.

Current indications are that the following contracts will probably be able to use the VFA. However, it will depend on any guarantee – if the guarantee is high then the benefit to policyholders will usually be fixed, and so not vary with the returns on the underlying items.

- Participating Investment Account;
- Participating Annuities; and
- Non-participating Investment Account (i.e. business where the accounts stay within a range of 95% - 103% of the assets).

This would apply to both individual and group contracts (but note the comment above that Par Group Risk contracts will probably not be able to use the VFA – and the same applies to Non-Par Group Risk contracts with a profit share arrangement, for essentially the same reason).

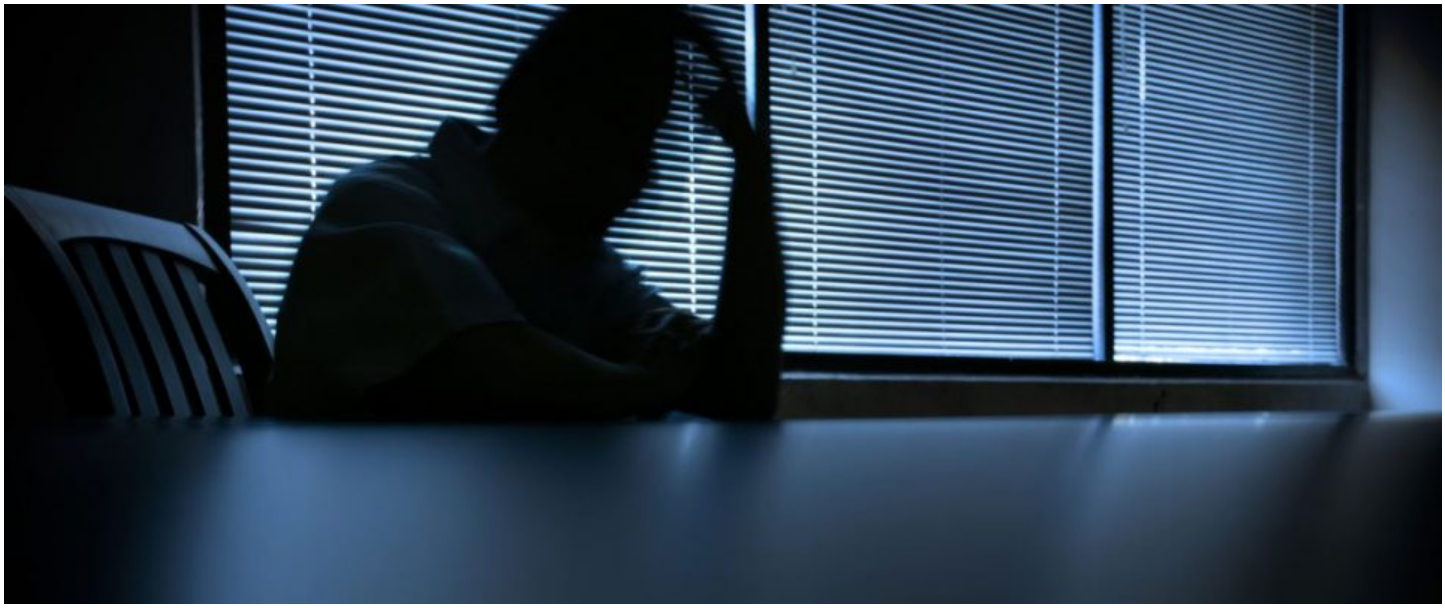
The VFA will not be able to be used for any reinsurance contracts held. And, obviously, guaranteed risk products issued by life, general or health insurers will not be able to use the VFA.

Note that the assessment of whether a contract is able to use the VFA is made at contract inception, even if the contract ceases to meet the criteria subsequently (unless it is modified in such a way that if the modification was made at inception the contract would not then have been able to use the VFA).

Once it is clear what products can use the VFA, there are other issues, which the VFA Work Stream has addressed, or will do so in the near future, including:

- What things need to be done differently - what are the main differences between AASB 17 and MoS?
- What are the main differences between VFA and BBA?
- What is the pool of 'underlying items'?
- How should allowance be made for adjustments to the cash flows where they are affected by contracts in other groups (i.e. 'mutualisation')?
- What VFA issues are peculiar to friendly societies and mutuals?
- Asymmetry (due to guarantees – explicit or otherwise – to policyholders under such contracts);
- Transition (there are particular rules applying at transition to contracts able to use the VFA);
- Contract Boundary and Coverage (it is not clear what the contract boundary or Coverage is for such contracts) - we will work with the Aggregation and Portfolio Grouping work-stream.

So, there is plenty to consider, and plenty that will be different.



IDSS to tackle mental health and insurance challenges

By Hugh Miller

Reading time: 2 mins

Mental health is a key theme at this year's Injury and Disability Schemes Seminar (IDSS). Here, Hugh Miller outlines some of the issues - including exercise benefits, best practice claims management, and secondary harm - that will be explored by speakers in depth.

Mental health issues are an increasingly important issue for many schemes. Numbers of diagnoses are increasing and sufferers often need extended periods of support. Mental health issues also have a profound impact on society more broadly; up to one in five people suffer a mental illness each year, most commonly depression or anxiety.

Given its rising importance, it's no surprise that mental health is a key theme at this year's Injury & Disability Schemes Seminar (IDSS) in Brisbane this November. First, one of the Plenary sessions will be devoted to the topic. Facilitated by Dr Norman Swan, Australia's leading health journalist, it will feature four panellists with experience in how mental health is impacting our society. The panellists will explore the challenges of mental health issues for schemes and employers, and for those people with a lived experience of a mental health issue. The Actuaries Institute's newest Green Paper 'Mental Health and Insurance' (which is set to launch in mid-October) will also be discussed by panellist Geoff Atkins, who co-wrote the Paper.

Second, there are no less than four concurrent sessions devoted to mental health. Joshua Martin and Jefferson Gibbs will present an introduction to mental health, covering perspectives from occupational health and safety, claims management, and an actuarial view. This will naturally lead into what the actuarial community is doing, and whether it could do more to add value to schemes seeing high levels of mental health claims.

Dr Simon Rosenbaum and Steven McCullagh will be exploring the benefits of exercise for mental health sufferers. Simon will show how structured exercise, such as the St John Of God Health Care's Richmond Hospital's PTSD treatment program, can improve outcomes for sufferers of post-traumatic stress disorder (PTSD). Relatedly, Steven will share insights around NSW Police's initiative to introduce specialised gym programs to help police force members suffering psychological injury, including PTSD.

Margo Lydon, Professor Niki Ellis and Kane Sinclair will be presenting a framework recently published by Superfriend that they believe is current best practice for managing psychological claims. This is based on the principles of centring the person on claim, working on different levels of intervention, and seeking continuous improvement. The discussion will have particular relevance for superannuation funds and group life providers.

Finally, Sue Freeman and Geoff Atkins will discuss how we assess mental health conditions, and ask whether we add harm in some of our current practices in the insurance process. There is a challenge in promoting recovery, as often mental health sufferers can experience secondary harm and struggle to break downward spirals.

IDSS will be a great opportunity to explore an issue that affects most of us – either directly, or through people we know. Better understanding is the first step to better programs, outcomes and insurance response to mental health conditions.

Actuaries Digital download and print edition - August 2017

By Actuaries Institute Reading time: 1 minute

Welcome to our round-up of the articles posted on Actuaries Digital during August 2017.

We have collated them into a convenient PDF format for you to print and read at your leisure.

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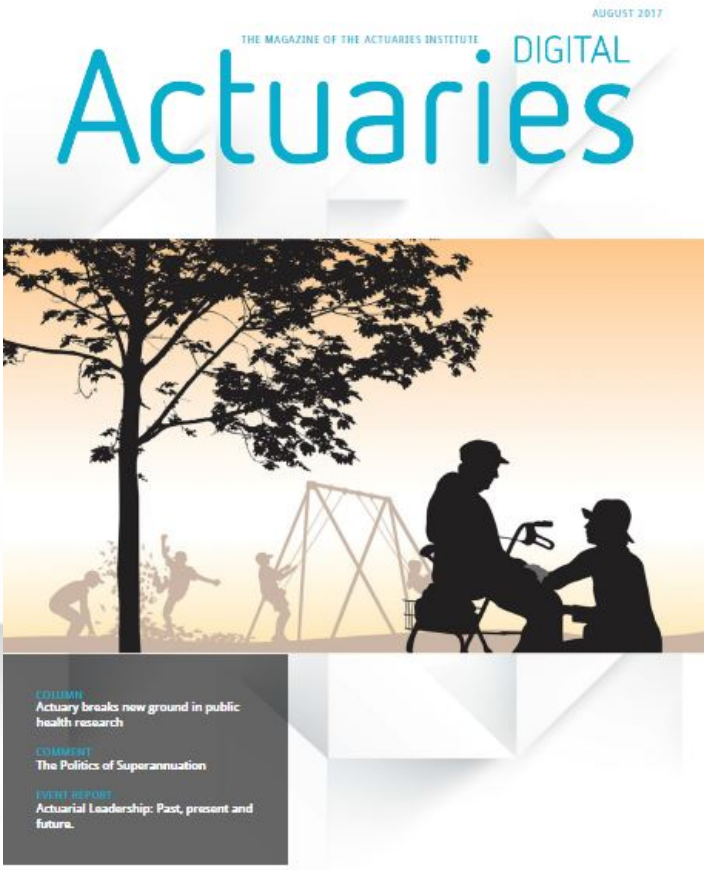


President's Column – towards an equal playing field

By Jenny Lyon

Reading time: 3 mins

Actuaries Institute President Jenny Lyon comments on the lack of diversity in leadership roles across Australian businesses, and draws our attention to the terminology actuaries use to define themselves. The impact of both issues is important as the Institute's Council sharpens it's focus on diversity.

One of the challenges a Board faces is how to reach consensus in decision making without losing the benefits of a diverse range of views. This can be particularly difficult in a membership organisation where it is important to consider all members interests, while also maintaining a holistic view and managing the sustainability and growth of the organisation. Perhaps there is an even greater argument for diversity on the board of such organisations.

Lily Meszaros, our Committee and Volunteer Engagement Manager, drew my attention to a Ted Talk by Mariam Veiszadeh. Mariam Veiszadeh is a lawyer, a diversity & inclusion practitioner, advocate and a social commentator. Proud of her refugee background, Mariam is passionate about championing the rights of minority groups in an endeavour to normalise 'difference' or rather, normality. In this talk she reflects on how stereotyping, unconscious bias and societal privilege contribute to an unequal playing field for people from diverse minority groups. I recommend the talk to anyone who has an interest in the topic - and even more to those who don't!

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

In the AFR a few weeks ago, there was an article titled Harnessing cultural diversity is hard – but crucial' by Corrs Chambers Westgarth chief executive John Denton. It commented on a 2016 report by the Human Rights Commission Leading for Change: A blueprint for cultural diversity and inclusive leadership. This report noted that of the CEO's of the ASX200 companies, 77% had an Anglo-Celtic background; 18% had a

European background; and only10 CEO's (5%) had non-European background. None had an indigenous background. I have referenced this article a couple of times when speaking to members recently, as I suspect the leaders in the industries where actuaries typically work would be of similar profile.

Institute focus on diversity

We have established a Diversity and Inclusion Working Group for the Institute and it held its first meeting in September. There are male and female members who come from a range of different backgrounds, locations, practice areas and cultural heritages. Organisations in Australia have a focus on the diversity within their organisations and it is relevant for us to reflect this within the Institute and our membership. As a recruiter, I can confirm that companies do focus on being given diverse shortlists when looking to recruit, so it is important we ensure our membership can offer a diversity of talent, perspective and experience.

At Council's Strategy Day in September we spent time thinking about what our profession and the Institute might look like in the future. Projected views and commentary about the future were collected from Councillors and other key leaders in the profession. This information was used to help us build an expected future state of the profession, which we will be able to use for future planning. I was somewhat (positively) surprised that diversity emerged as an important topic for discussion when thinking about what the profession would look like in the future. There was a clear recognition that we needed to reflect this in our Strategy

Language becomes reality

During this year, it has become clear to me that the language we use about ourselves is vital in the way our profession is perceived. This is something which David Morrison touched on in his CPD presentations when he defined culture as "the stories we tell about ourselves". I think we are inclined to trap ourselves in boxes by the use of words such as "traditional" actuaries and the "wider fields" or "non traditional" fields. How can we convince anyone we are experts if we say this is a non traditional field for actuaries? If this is the way we think about ourselves then it is how others will see us too – as a profession which works in a narrow range of fields with occasional entrepreneurs who "break out". In fact, fewer than 50% of our members work in life or general insurance, and of those, many work in business roles well outside technical actuarial jobs. It is important to celebrate the achievements of people who work in different areas, but they should not be seen as unusual. They should be seen more as another demonstration of the flexibility and effectiveness of the strong skill set we have.

A further use of the importance of terminology was brought to my attention by actuaries in Hobart who questioned why we insist on referring to actuaries being experts in "superannuation", rather than the much broader industry of retirement incomes/wealth management. A good point!

There are certainly many opportunities in the broader industry as the focus on income in retirement, long term health care and all the aspects of financial and health management become important to an increasing number of the population.

I would be interested to hear how you think we can change the way in which we think and talk about our profession and the way in which we promote ourselves externally. Please feel free to **post a comment below**.

Jobs for Actuaries – past, present and future

By Elayne Grace

Reading time: 5 mins

A recent survey by the Actuaries Institute asked members about their education, employers and job functions (past and present), and where they expect and hope to be in 10 years' time. Deputy CEO of the Institute Elayne Grace reports on the findings.

This employment survey was an initiative set in motion by the Institute's Council this year. It aims to gather insights into the actuarial job function, job market and views of qualified actuaries on their own career paths and job prospects. I would like to thank those who took the time to complete the survey - your responses have provided useful insights into the current and future direction of the profession.

The survey was undertaken by 777 respondents; 501 males, 276 females. Fellows made up 58.6% of respondents, Students made up 24%, and the rest were Accredited (2%), Associate (14%) and Retired (1.5%) members.

Encouragingly, 80% of Students and Associates indicated that they planned to complete the Fellowship program. However, of those who did not plan to, their reasons included being time poor, being more interested in data analytics and machine learning courses, not seeing Fellowship as necessary or relevant to their current role and career path, and/or their employer not sponsoring them to do so

"We need to encourage and teach entrepreneurship and innovation. We have some great examples of actuaries e.g. Adam Driussi on Data Analytics; John Trowbridge and Geoff Atkins starting GI consultancy way back; the first energy actuaries etc" - survey respondent

Actuarial roles, 10 years on

The survey asked participants who they worked for, and in what practice area and function, both now, and 10 years ago.

The comparative findings were most stark in the actuarial function question. Those normally working in valuation/ reserving saw a drop from 32% 10 years ago, to only 24% now. The pricing function saw a rise from 18% to 22% and data analytics rose from 6% to 9%.

Actuaries are still mostly working in corporate and consultancy roles. Corporate roles saw a slight jump in numbers while consultancy roles dropped 9% from 10 years ago to 24%.

The number of actuaries working in superannuation fell from 12% 10 years ago, to 9% now. The general insurance function rose from 33% to 36% while life insurers stayed the same (29%). Government, self-employed, not-for-profit, paid directorships have all increased by 1% with Fintech popping up from zero 10 years ago, to 1% of members working in this area now.

"Actuaries don't have to stay in the traditionally finance, actuarial or risk areas. Actuaries are trained to bring together various elements and see the impact of them together. The skillset is applicable to many other seemingly non-financial areas" - survey respondent

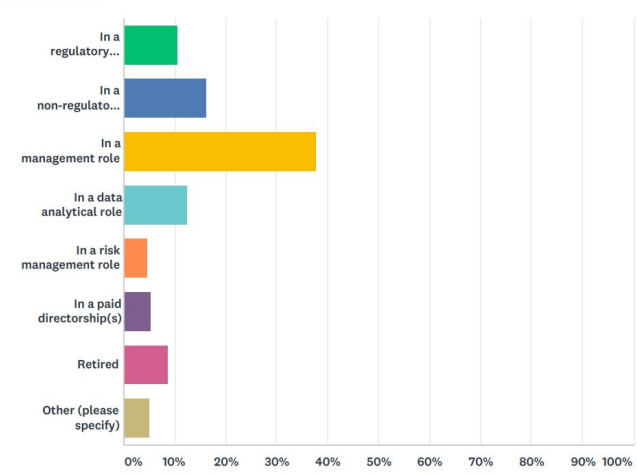
The APRA Connection

The majority of members surveyed (71%) said that less than 50% of their role involved APRA regulatory consideration with a quarter of members saying their roles involved no considerations at all.

4% of respondents said their job involved 100% APRA regulatory considerations and an additional a quarter of members surveyed said their job involved more than 50% of APRA regulatory considerations.

In the next 10 years, only 10.5% expect to be in a regulatory actuarial role and 16% in a non- regulatory actuarial role. 38% respondents expect to be in a management role and 12% in a data analytical role.

In the next 10 years, other respondents said they expected to be:

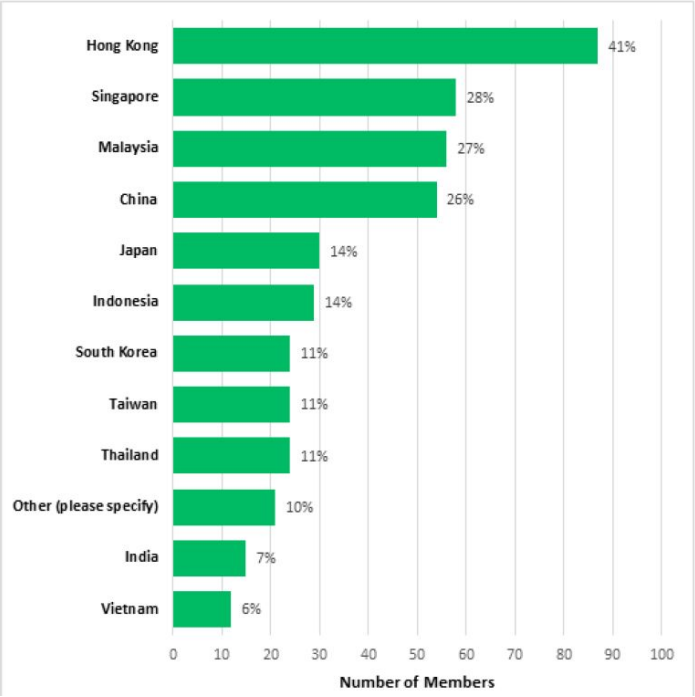


"Let's celebrate those with actuarial skills who are forging a different path and inspire young with the value of the skills learnt rather than the letters earned (FIAA)" - survey respondent

Where in the world?

Members who have worked outside Australia mostly worked in Asia (27%) and Europe (24%). Hong Kong was the most common Asia base (41%), followed by Singapore, Malaysia, China, Japan and Indonesia.

If you selected Asia, where in Asia have you worked?



When asked where they would like to work, members said Europe (55%), Asia (47%) and the Americas (40%). Within Asia, members were by far most interested in working in Hong Kong, followed closely by China, Japan, then Singapore, South Korea, Taiwan and Malaysia.

The actuarial degree VS the road not taken

An overwhelming majority of respondents (65%) said they would still choose an actuarial career if they were a new, young graduate today, or recommend it to their kids or young people. Although 16% said they would not, 18% had mixed comments

And yet with 68% having completed a university actuarial degree and 18% a maths degree, it was interesting to see that although 21% said that "with the benefit of hindsight" they wished they'd studied a maths degree, only 47% of respondents said the same for an actuarial degree. 5% said they would have preferred to study computer science.

"The course needs a focus on machine learning, advancements in data science, real application as opposed to just theory" - survey respondent

Only 39% of respondents said they had additional qualifications – 88 respondents held a CERA qualification, 29 held an Australian Institute of Company Directors (AICD) qualification, 21 held a CFA, 16 had completed a PHD, nine held an MBA, and four held a Data Analytics qualification.

The job market

Only 35% of respondents said they had found it hard to get a job in their preferred field and judging by their comments, this was largely in the graduate market. A lack of experience when starting out, competition and a lack of positions in the graduate market were all cited as reasons why.

"I have found as I've progressed through my career, especially in the Australian market, roles become more specialised. As an Actuary with 18 years' post qualification experience, it is difficult to find opportunities with employers outside my current area of expertise. I find this is a limitation in the marketplace where, as senior actuaries, we have other skills, commercial acumen, experience working with external clients etc that are transferable and equally important. The technical know-how is something we are adept at picking up quickly" - survey respondent

When asked whether they see their current area of work growing or contracting over the next five years, 45% saw growth and 15% saw contractions, while 35% said they expected their area of work to stay the same. Interestingly 57% of people said they had or would like to work part time in the next ten years.

Growth areas

Data Analytics was overwhelmingly the largest expected growth area (70%) followed by Risk Management (14%), Health (5%) and Banking (4%).

These results are consistent with the Institute's modelling of future scenarios for the profession. Data Analytics is a major focus in the Institute's Strategic Plan and the Data Analytics Working Group has worked hard to establish the popular Data Analytics Seminar (coming up again this year on 11 October) and resources like regular data columns on *Actuaries Digital* as well as the LinkedIn community.

"Actuaries tend to think of themselves and their discipline as "technical". But where they most add value (in my own experience) is in the combination of deeper insight and ability to integrate multiple disciplines so as to come up with more profound and actionable insights than other professionals and many managerial players. However, there seem to be (not surprisingly) just a handful of actuaries who are both prepared to and capable of taking on this role. But those few individuals become key exemplars of the profession and it's influence on industry.

Guy Thorburn, the Australian Government Actuary, won the employment survey competition to receive an iPad - congratulations Guy!

"Having just changed roles, I'm seeing lots of areas in which actuaries are able to make a unique contribution," said Guy.

"I hardly needed any incentive to complete the survey, but to win such a great prize is icing on the cake. I'm looking forward to putting it to good use.

"The world of work is changing and new opportunities are emerging for actuaries to apply our skills. It great to see that the Institute is keeping one step ahead in this changing environment."

ANZIIF Partnerships – Creating a globally recognised standard for risk professionals

By Danielle Di Sano

Reading time: 2 mins

Danielle Di Sano reports on new partnerships between overseas risk associations and the Australian and New Zealand Institute of Insurance and Finance (ANZIIF) that aim to promote risk management as a profession and create a globally recognised standard for risk management professionals.

In last few years, the Australian and New Zealand Institute of Insurance and Finance (ANZIIF) has been developing relationships with risk management associations covering other regions. In late 2016, a partnership was announced between ANZIIF and the Pan-Asia Risk and Insurance Management Association (PARIMA). More recently, a partnership has also been announced between ANZIFF and the Federation of European Risk Management Associations (FERMA).

These partnerships have resulted in the provision of a professional designation and ongoing professional education being offered to risk professionals across these regions. ANZIIF will provide PARIMA and FERMA with materials and content for the risk management certification and develop examinations, with PARIMA and FERMA being responsible for the approval of candidates wishing to undertake the certification, making this a global collaboration. Examinations are already in place for risk professionals in the Pan-Asia region. The first set of examinations for risk professionals in Europe commence in September 2017.

The driver behind establishing these partnerships has been to promote the recognition of risk management as a profession and creating a globally recognised standard for risk management professionals. ANZIFF's CEO Prue Willsford recognises that "those who work as risk professionals are increasingly becoming more prolific in the value they contribute to companies; however, they can still be seen as being risk managers as opposed to working in a profession. By establishing mutually recognised standards and designations across regions it assists in validating their credentials and capabilities as professionals and in turn raising their profile."

The ANZIIF / PARIMA partnership has been in place for almost a year now. Despite it still being in its infancy, some progress towards achieving ANZIIF's goals for the profession are already visible.

"It is already clear that there is a desire for risk practitioners in the region to have their experience and capabilities recognised, and to be promoted as working in a profession" says Prue Willsford.

"The study materials and assessment process has been well received and it is through this partnership that the opportunity came about to partner with FERMA to create an aligned standard between Asia and Europe, which is a significant step in creating a truly globally recognised standard for Risk Professionals."

More information on ANZIIF membership and education is available from anziif.com

Scratching the surface of economic transition in China

By Henry Zhang

Reading time: 2 mins

Since the Life Insurance and Wealth Management Sub-committee put together the first instalment of their China Series in March this year, Henry has had the opportunity to experience Chinese culture first-hand, by spending a week there in June.

One of the most shocking things for me, was how quickly the country is evolving each day. The whole economy is now moving towards the 'Internet of things,' supported by advanced infrastructure and a sophisticated logistic system. The Internet of Things is a buzzword and phrase that describes the interconnections of electronic devices via the internet.

The picture below illustrates this system. A man has set up a random pop-up cart selling grilled potato, the signs says 'Internet + grilled potato' and below are two QR codes for mobile payment linking to *Wechat* (instant messaging app) and *Alibaba* (online shopping platform). This epitomises the wide use of mobile and internet and how they have penetrated the lives of the general public. Everyone is using their phones as a primary tool to carry out every day tasks, using simple apps such as *Wechat* to connect at any time.

I'd like to share a few important observations after having a series of meetings and discussions with regulators and fund managers.

First, particularly for entrepreneurs, the country has begun wealth accumulation from two things:

1. transitioning their focus to the next generation who embrace technology and adopt new things; and
2. giving back to society through education and nurturing young talent.

Second, consumer behaviour is reshaping significantly. This is reflected through two lenses:

1. People born in the 80s and 90s have become the main audience. Most of them grew up under the *One Child* policy and their culture differs from their parents who are traditionally very keen on saving. This generation are keen on spending a lot of money on adopting new technology and the *Internet of Things* into their consumption behaviour. For example, they tend to order food instead of cooking, travel a lot more and appreciate brand value for high-end products.
2. Further from the *Internet of Things* and massive population density, the sharing economy is very well developed. A good example is bike sharing. As I walked the streets, there were colourful bikes everywhere. They are so convenient and again a simple QR code can enable you to rent a bike.

A bike sharing parking centre in Shanghai

As many of you might be aware, a massive deleverage within the financial system is underway. The regulator is now seriously committed to squeezing out the leverage through the wealth management product which acts like a shadow banking system, as the first step. With economists and researchers, it seems that after this type of leverage is contained, the leverage at corporate level will be more manageable given they are more transparent and RMB dominated. However, we will have to wait and see.

The final highlight is a significant economic transition. During the trip, we visited a company called KDX located approximately three hours away from Shanghai. The company has mastered so many advanced technologies, such as naked eye 3D display, carbon fibre and optoelectronic materials. It is a typical example of a transition from low-end production to high-end technology empowered manufacturing, which is what China is currently going through.

Of course, some uncertainties remain such as whether President Xi will fully consolidate the power later this year, will the debt issue be contained and geopolitics risk is always present.

Personally, I would encourage everyone to experience the changing environment in person if you have a chance.

You can read the first instalment our China Series here.

The ADI 2007-11 Table in Practice

By Graham Kelly

Reading time: 6 mins

After attending last month's Insights Session on Australian Disability Income Table, Graham Kelly provides a comprehensive overview of the session that covered implementation, key learnings, strengths and cautions.

The ADI 2007-11 disability income table was released in May 2015. It was the first new industry wide table targeted at Australian disability income business for over 20 years and the first ever to be wholly derived from Australian experience. The life industry has since been implementing the new table. It is providing new understanding of individual disability income business claims experience, profitability and reserving. A very timely and well attended Insights Session was held on 31 August, sharing learnings from practitioners about implementing the table and strengths and cautions when using the table.

The session was divided into three parts:

- Briallen Cummings (KPMG), who led the development of the table, gave an introduction;
- Emily Galer (AMP) and Mari-Lize Hill (Comminsure) led the detailed implementation in their companies, and talked about key practical learnings from the implementation journey;
- Wallace Lee (Munich Re), made some observations about strengths and cautions when using the table. Munich Re developed its own disability income table for Australian business, prior to the availability of the ADI 2007-11 table.

View the session Presentation, Video and Audio.

Introduction - Briallen Cummings

Briallen talked first about key principles underlying the table's development. A generalized linear model was used to provide insights as part of the development, a first for a standard table in the Australian life industry. A very significant judgment overlay was applied to the findings. Everything in the table had to be supportable by general reasoning based on likely influences of claims experience. Nothing was included "just because it was in the data even though we can't think of why". This judgment based approach has subsequently been vindicated from data received after release of the table. Another key principle was that the table must be "easy to use, understand and adjust". This is very important and may seem obvious. However, there is significant judgment in making the trade-off between (a) more granular representation of the experience versus (b) the additional complexity arising from each additional feature introduced into the table. Briallen indicated the judgments made rely to some extent on the mix of business within the industry. For blocks of business with very different mix from the industry, for example all white collar or all blue collar, companies need to be aware the table may not be as effective as a base for representing the experience.

Briallen also gave the results of a survey of industry progress in implementing the table. Fourteen companies responded, of which ten had completed implementation, two were in progress and two had not implemented. The average elapsed time to implement was 5 months, and the average FTE requirement 13 months. Averages are potentially misleading, as there were very large variations between companies. Most of the factors in the table were adopted during implementations, with companies' own experience generally being allowed for as overlays to the table, rather than more granular adjustment.

Implementation and key learnings - Emily Galer and Mari-Lize Hill

The experiences of Emily and Mari-Lize in implementing the table had many more commonalities than differences. Emily talked initially about the importance of scoping and allowing for all aspects of implementation “end-to-end”. Key “end-to end” components are:

- Amending projection models and data inputs.
- Amending the experience analysis software, process and data.
- Performing the detailed fitting, based on the company’s own experience.
- Analyzing and understanding results.
- Stake-holder management.

She stressed that these components are neither independent nor fully sequential. Learnings and constraints in one will affect the others. Mari-Lize’s experience was similar.

The effort required in amendment of projection models and data inputs is significant. The high level structure of the table, based on an initial scan, is not too complex. However, this is deceptive because implementing in detailed models requires understanding the table to very high degree of detail. For example the synchronization of timing of application of the factors with how the model treats cash flow timing – such as middle or end of month – can make quite a difference to final results. Data may not be available to implement exactly as intended by the table, resulting in a compromise which must be agreed by relevant stakeholders. Time must be allowed for both testing and understanding the results. The latter is very likely to be iterative - changes to the model will likely be required as a result of the process of seeking to understand and analyze the results. The first iteration is unlikely to be the last.

The changes to experience analysis software, process and data must have appropriate consistency with changes to the models and their input data. If this is not in place, there will be an unnecessary and false discontinuity between the past (actual experience) and the future (projected experience), with inaccurate results from the model even if the model itself is “fully correct”. One particular challenge is that, whereas the projection models typically only require a data set at a single current point in time, experience analysis requires data going back for a number of years. Further compromises or approximations may be required.

Fitting is the process of deriving the adjustments to the table so that the final assumptions are appropriate for the company, having regard to its experience. This is perhaps the more interesting or “fun” task. One issue discussed was credibility - disability income business has more product choices and rating factors than other life products, resulting in many areas where individual companies do not have credible data. For this, the approach of “follow the industry shape” was most common. Group business was also mentioned – the table is based solely on individual business data and is designed for individual business. Nevertheless group business often “piggy backs” off the individual business information infrastructure. It was noted that in some cases the table had been applied in relation to terminations for group business, without policy duration as a rating factor and with some calibration to relevant observed experience.

Because implementation of the table can have a significant impact on reported financial results and on views of profitability, stakeholder management to senior executive levels and the broader business is important. One key challenge requiring management is to resist the temptation to report results too early. The implementation of the table is new and more complex than most assumption changes, so more time must be allowed than normal in the project timetable for testing, analysis and understand the results . As is often the case with something new and complex, this process often leads to discovery of issues which must be fixed.

Strengths and cautions - Wallace Lee

The final speaker, Wallace Lee, spoke initially of how most of the shapes and features of the ADI 2007-11 table are consistent with Munich Re’s table. This, effectively independent, validation is not normally available for a standard table and should be seen as a strength of the table.

Wallace then talked about four "cautions", when using the ADI table:

- It is not necessarily applicable to all blocks of individual disability income business. Wallace felt it did apply to most individual disability income business, but had seen some portfolios where not all the table’s rating factors applied.
- Treatment of ancillary benefits in company data: the table has been constructed on the basis that all payments classified as “ancillary” have not been included in the primary benefit analysis. Each company has its own way of processing and recording these benefits in its data. Wallace stated that the Munich Re table adopted a different approach, whereby all payments in respect of time periods after the end of the waiting period were incorporated in the primary analysis. This had led to relatively higher incidence, but also higher early claim duration terminations, than in the ADI table. There is no “correct” answer to this, with main conclusion being that companies need to consider this in applying the table.
- Classification of benefits as accident or sickness: Wallace noted that this classification is a key foundation of the table, but there is no industry standard on it. He had noted that there is significant variation in the proportions between companies, mostly driven from how they are classifying claims with muscular-skeletal causes. This provides a further reason for companies not to adopt the table shape without validation against company’s own data.
- Variation in the effect of experience drivers over the course of a claim: Wallace talked first about how criteria can be either convergent (decrease in effect as claim duration increases), divergent (increase in effect as the claim duration increases)

or flat (effect is relatively uniform over the course of claim). Examples of these within the table are waiting period, occupation and cause of claim (all convergent), benefit period (divergent) and age shape, benefit type and smoker status (all flat). Wallace expressed the view, borne out from his analyses at Munich Re, that no criteria are truly flat. This view, particularly related to age shape, means that the table is less "accurate" than if it used a method which recognizes how age shape varies over course of a claim. He acknowledged this increases complexity, so is part of the trade-off described in Briallen's introduction.

There were quite a number of questions of the speakers, especially for the practical implementation component. This indicated the session was useful and appreciated by those attending.

Reflections on the AASB17 Implementation Taskforce's Member Insights Session

By Trang Duncanson

Reading time: 3 mins

Trang Duncanson reports on the AASB17 Implementation Taskforce's Member Insights Session last week.

I attended the Insights session at the Actuaries Institute on Tuesday 5 Sept 2017, to hear about what members should expect from this Taskforce in terms of guidance over the next year.

I should disclose that I am on this Taskforce, but in this article, I am reporting as an observer (albeit a little more informed about the Taskforce) with the many others who filled the room to capacity on this afternoon.

(L-R) Grant Robinson and Ian Laughlin seated as David Rush Director, Actuarial, Insurance and Superannuation at KPMG Australia presents his update

Session summary

Grant Robinson, Senior Actuary on AMP's IFRS 17 project

The discussion was led by the various technical stream leads of the Taskforce (six in total), outlining the top five or so priorities over the next 6-12 months. The presentation pack from the Taskforce covers this in detail but I would just like to cover off some of my key takeaways from the session.

View the session Video and Audio.

Actuaries are critical to assisting companies with interpreting and implementing this standard, notwithstanding the fact that it is an accounting standard and is the ultimate accountability of the accounting teams.

The level of judgement involved in many aspects of the new standard involves deep understanding of the insurance products we sell and the risks the company is exposed to in providing that service to its customers. There will be a lot more work leading up to transition for actuaries, but also ongoing.

These areas include:

- Risk adjustment (RA), particularly for life insurers, where this is a new requirement for financial statement reporting. New

methodologies and ongoing processes for assessment will need to be introduced. It is conceivable that Boards and Executive Management will ask how this RA will interact with existing regulatory capital, and economic capital measures.

- Aggregation and contract boundary assessments – every company will need to run the ruler over both its contracts, including reinsurance contracts, to determine the contract boundary. There will be data and modelling implications coming out of this, some of which will not be insignificant.

Brendan Counsell, partner in Ernst & Young's actuarial practice

Many insurers are in the process of considering the impacts on their operations and business. Notwithstanding the technical aspects of the standard that the members will have to work through, there are demands on us to be able to step back to consider the strategic impacts (on product design, reinsurance and risk mitigation design etc) that are actually of more interest to our stakeholders. This is quite a challenge for actuaries - to balance the unknowns (and our often embedded training to be absorbed within the detail) with the commercial and strategic advice that our stakeholders are waiting for. This is a fantastic time for insurance actuaries to develop and really show what we can do.

Diversity and leadership reflections

I am on the Institute's newly established Diversity and Inclusion Working Group. We are about to meet this month, our first meeting, and I am really looking forward to it. The AASB17 Implementation Taskforce consists of so many volunteers behind the scenes, who are interested in learning and contributing to this significant change for insurers in Australia. We are so appreciative of this volunteer base. However, I wonder if you'd noticed anything about this presenter group from a diversity perspective (there were seven male presenters), I don't think there is any malicious intent at all - I know all of them, all outstanding professionals. We also know many others of high calibre across the membership. I sit on this taskforce, but I did not notice this until I was standing from the floor observing this from the back. So I think this is unconscious bias in action. This is a challenge for the Institute, which we are tackling, to make sure there is a diverse voice (being encouraged) that is heard, and to ensure we are leveraging and developing our talent consciously i.e. we have to be consciously asking ourselves 'if not, why not'?

Let me close off to thank the leads of these technical workstreams, and the large number of volunteers behind them. It is not a small task in front of us, as this also requires a complex web of third party interactions (local and overseas).

But we are keen to forge ahead rather than sit by the sidelines, and refine over time as more information comes out. And the Taskforce is committed to regularly updating the membership.

Bringing Analytics to Life

By Basem Morris

Reading time: 5 mins

Basem Morris reports on the intersection of predictive analytics and behavioural science to reveal some fascinating insights.

Human life is astonishingly complex. A lot of data being collected these days is attempting to capture an element of human behaviour, and most models being built are trying to predict some aspect of human behaviour. But what if we were able to, not only predict, but actually *influence* human behaviour? This all becomes possible at the point where predictive analytics and behavioural science intersect.

Behavioural Nudges

Nudge theory was made famous by American economist Richard Thaler in his 2008 best seller titled 'Nudge'. When behaviour change is the objective, "Nudge theory argues that positive reinforcement and indirect suggestions can be more effective than direct instruction, legislation and enforcement."

"This is me, planting an idea in your mind. I say, 'don't think about elephants'. What are you thinking about?"

Here are some examples of behavioural nudges:

- People are generally averse to change. So what happens if we set the optimal choice as the default option? E.g. Set double-sided printing as the default setting on the office printer to save paper.
- Since most of us have a tendency to conform to social norms, if I tell you that everyone else is doing it, will that increase your likelihood of doing it too?
- We dislike finishing in last place. So what happens if you compare my behaviour to that of my peers and show me that I rank below the average in a particular area (e.g. my fitness)? Will that influence my behaviour?
- If you walk into a supermarket to buy baby formula and you see a sign saying, 'Maximum 6 tins per customer', would you be nudged to buy 2 instead of 1? This is an effective technique known as 'anchoring'.

One of the first applications of nudge theory came out of the UK, where the government ordinarily sends out reminder letters to people who are late in paying their taxes. The UK government's behavioural insights team took a randomly selected group of non-payers and added an extra sentence to their reminder letter.

"9 out of 10 people in <your town> pay their tax on time."

By simply adding this one line for the randomly selected group, tax compliance rates increased by 23% and saved the government £190m. Take a minute to think about the implications of this. By merely changing your words and tweaking the way you interact with your customers, you could make your organisation millions of dollars. In fact, many governments around the world have been quick to adopt behavioural nudges. The US and UK governments are leading the way and closer to home, the NSW government has a number of behavioural insights units, working on issues like domestic violence and child support.

The Intersection of Predictive Analytics & Behavioural Science

Predictive analytics alone can be a powerful tool; and an understanding of behavioural science is also powerful, even if adopted in isolation. But when predictive analytics and behavioural nudges work together, they accomplish more than they could by themselves.

Predictive analytics helps predict an outcome, while behavioural science helps influence the outcome.

Predictive analytics can produce some valuable insights, but it is often unclear what to do about these insights.

This is where predictive modelling is enhanced by the addition of behavioural science, as it allows you to operationalise your insights, convert insight into action, and bring your analytics to life.

Analytics professionals often focus on HOW to build an accurate model, whereas the main focus should always be on WHY the model is being built – to solve a real-life problem. Constant recognition of your ultimate goal is vital. A model alone is insufficient. Coupling analytics with behavioural science forces

you to keep the ultimate goal of your analytics in mind – a real-life impact.

Equally, predictive analytics enhances the application of behavioural science, as it allows you to analytically identify segments of the population to nudge, as well as statistically measure the impact of nudges.

Therefore, behavioural science and an understanding of human behaviour are essential tools for any analytics professional, and vice versa.

Nudging New Mexico – A Real-Life Example

In the US, more than 1/8 of all unemployment benefits are paid to people who are not eligible for benefits due to dishonest claims. The government of the state of New Mexico wanted to tackle this problem and Deloitte was engaged to help. Can claimants be "nudged" to be more honest?

In New Mexico, the process of claiming unemployment benefits is all done online. Initially there is an online application process where claimants report that they have lost their job. From that point on, claimants log on weekly to report the progress of their job search. If certain criteria are met, the unemployment benefits are automatically deposited into the claimant's bank account. Generally, people find it easier to be dishonest to a computer screen than to another person, face to face.

The first step was to identify the key areas in the application process where inaccurate information is usually given. These were:

- *The reason for unemployment*: During the initial application process, applicants are asked for the reason they lost their job. Only people who report that they were laid off through no fault of their own are eligible for benefits.
- *Reporting weekly earnings*: Any weekly income that you report will be deducted from your unemployment benefits.
- *Work search requirements*: Applicants are asked to report on their weekly work search activity. To be eligible for benefits, you need to report that you have performed at least two pieces of work search activity (e.g. apply for a job, attend an interview, etc.)

Now that those areas are identified, what do we do about it? Traditionally, the government would throw resources at the problem to investigate would-be fraudsters. But what if we used predictive analytics to identify potential fraudsters and then tried "nudging" them, in real time, to do the right thing.

Here's how it worked in practice:

I lost my job and I log on to the website to complete the initial application process. I am asked whether I was fired or laid off. The truth is I was fired, but I think it was extremely unfair! So I choose, 'laid off'. At this point, the predictive models in the background flag me as an applicant with a relatively high probability of fraud. Immediately, a pop up appears on my screen showing a letter addressed to my previous boss asking him to verify that I was laid off, rather than terminated. This proved to be quite an effective nudge.

I've been unemployed for a few weeks now and I log on every week to report my weekly activity. This week, when asked about my weekly earnings, I think to myself, 'Well, I did do a few shifts at McDonalds but I earnt nothing, just pocket money. Plus I'm sure everyone else is working part time and not reporting it. Once I get a full time job, I'll report it.' I choose 'No income'. All of a sudden, a pop up appears on my screen, which I have not seen before on any of the previous weeks, saying, "99 out of 100 people in <your county> report their earnings accurately. If you worked last week, please ensure you report these earnings". This proved to be one of the most persuasive nudges.

For the weekly work search requirements, claimants were asked to commit to a detailed work search plan for the coming week – which channel will they use to search for jobs? How many phone calls will they make? How many jobs will they apply for? It turns out that if people commit to a detailed plan, they are more likely to follow through with it.

As a result of these and other nudges, claimants were half as likely to commit fraud, twice more likely to report new earnings accurately and 20% more likely to find work in the next few months. And this project saved the government of New Mexico millions.

Imagine what the application of analytics, coupled with behavioural science, can do for your organisation.

Stats, nothing but stats

By Jennifer Lang

Reading time: 2 mins

Jennifer Lang, author of the blog Actuarial Eye, writes about her recent experiments with the 'Census table builder' - a data tool that includes a map visualisation function.

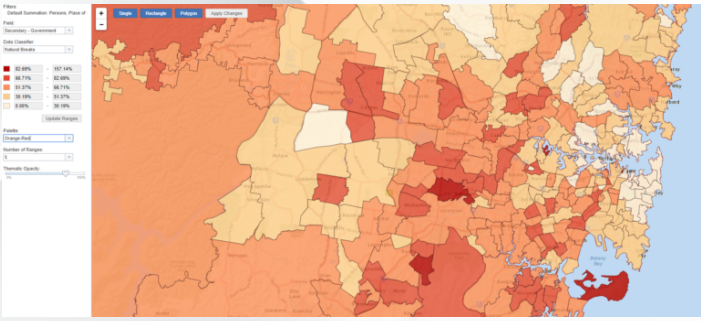
When I'm looking for inspiration for a post, I occasionally wander through the ABS website. If you've never tried it – have a look! It's amazing what you can find there.

So the *Actuaries Digital* Editorial team asked me when I was going to post about the Census. Sadly the ABS' official release date of 27 June almost exactly coincided with my busiest period at work (our company has a 30 June year end), so I still haven't had a chance to really play around with 2016 data.

In the meantime, I've been playing with a tool that has been around for a while, but I hadn't seen before – Census table builder. It even has a map visualisation function, which is very easy to use.

Government high schools

In line with my previous interest in private and government schools, I've made a map of proportion of children who went to government high schools in 2011 (2016 data isn't fully available yet). You can (for free) pick up all sorts of different statistics about the population, and look at absolute values as well as proportional values, by a variety of different geographical categorisations.

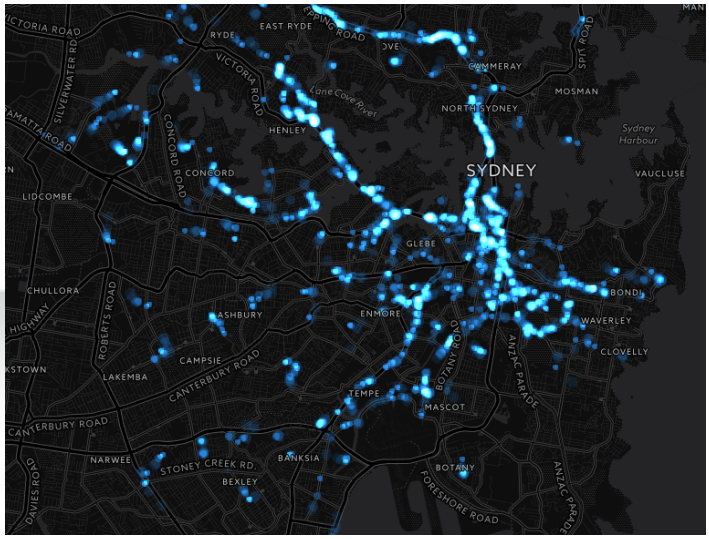


Source: ABS Census 2011

Playing with the very cool map views there led me to a few other cool map views I've come across lately.

Bike lanes in Sydney

The University of NSW has been analysing cycling data from people who use Rider log app. The graph below shows the bikes in Sydney at 7pm (on average). It does show the effectiveness of the bike paths – they are so obvious in the map, with cycling deserts also quite obvious. And if you look closely, you can see people riding around Centennial Park, over and over.



Source: City Futures Research Centre

And Uber has just released (at Uber Movement) statistics of Sydney travel times, showing travel times at different times and dates, and enabling a whole lot of different ways to analyse them.

Uber movement data for Sydney

This graph shows the average travel time from my work to Kirribilli during the weekday evening peak. Interesting thing for me was that the places that are within 5 minutes of my work included a small part of the eastern suburbs – apparently the Cross City Tunnel does work in some situations.

What interesting data visualisations have you come across lately? Feel free to comment below.

I share the indignation of many of my friends and colleagues at the completely useless Postal Survey into Gay Marriage. HILDA, the most comprehensive longitudinal survey of Australians, reveals that 67% of women and 59% of men agree that homosexual couples should have the same marriage, parenting and employment rights as heterosexual couples. So a survey (**if** properly conducted to sample all Australians) is unlikely to result in a no outcome.

Unlike most, though, I'm also indignant for the ABS. In an environment when the ABS continues to have big funding cuts every year, surely there was a a better way the ABS could use $122m. In the age of big data, the ABS could be a national treasure. But not if it is distracted running a vote that is a "survey" purely for political reasons and not its core business.

Read the original article on Actuarial Eye here.

Leadership Training in the HEC Paris MBA

By Milton Lim

Reading time: 3 mins

What's next after Part III exams? After qualifying as a Fellow in 2015, Milton Lim decided to explore the wider opportunities and insights available from the international business world with the double degree program at HEC Paris MBA and the London School of Economics MSc in Analytics / Data Science.

Previously, I reported on an Insights event "Jumping the Crevasse from Technical to Leadership", but why not have the best of both worlds with deep technical skills and broad management skills for a versatile and interesting career?

So I decided to enrol in a double master's degree program with the HEC Paris MBA (Master of Business Administration) and the LSE (London School of Economics) MSc in Analytics / Data Science.

Since starting at HEC Paris in January 2017, what have I learnt so far?

Highlights of the MBA experience

As the only Australian in my class of 100 students from 35 nationalities, I was immersed into the most culturally diverse group of colourful characters I had ever met from every walk of life imaginable. Every week, we had a celebration from a different culture showcasing food, wine and fashion from all around the world.

On the battlefield

An unique highlight of the MBA experience at HEC Paris was the compulsory 2 day leadership bootcamp at Ecoles de Saint-Cyr Coëtquidan, the French Military Academy founded by Napoleon Bonaparte in 1808. With a 5.00am wakeup call, we were grouped into teams of 12 to complete various challenges such as building a X-bridge with logs and ropes to cross a river, crossing a lake on a makeshift raft and coordinating a rescue effort for a simulated crisis.

We also had to confront our personal fear of heights to walk across tight-ropes and fly down ziplines. As I chatted with Andrea Masini, the Associate Dean of our MBA program, he revealed to me that "y*ou will feel the same paralysing fear while walking across a tightrope, as when you're faced with a tough business decision – you just have to push yourself to do what you feel is right in your heart."*

"After all, the motto of HEC Paris is "apprendre à oser" - learn to dare"

From my experiences of playing the leadership role in volatile, uncertain, complex and ambiguous situations, I realised that leadership is not necessarily about knowing all the answers, but asking your team the right questions.

In the classroom

We learnt many valuable lessons on interpersonal, motivation, persuasion and influencing skills with fun simulation exercises on negotiation, conflict resolution and group decision making. We played a live simulation of the OPEQ oil cartel based on the economic principles of game theory, by colluding to restrict supply and sustain artificially high oil prices, hence maximising group profits. However, we learned that the human element is never entirely predictable, as the strong incentive to cheat by cutting prices for personal gain ultimately degenerated into an all-out price war.

One interesting finding from goal setting theory asserts that: "*Specific and difficult goals motivate performance*". For example, a study of a company's truck drivers who transported timber logs found that the drivers were not loading up their trucks to full capacity, hence wasting time and fuel. When the company changed their instruction to the drivers from "do your best" to "load up your trucks to 94% capacity", their efficiency improved drastically. Since goals that are too vague or too easy fail to motivate, this can be a useful reminder when setting goals for yourself and for others, as specific and difficult goals are intrinsically motivating according to the research.

Work hard, play hard

Another highlight of the MBA calendar was the MBA Tournament (Olympics for the MBA world), where 1,700 MBA students from 20 business schools all across Europe (e.g. Oxford, Cambridge, London Business School, INSEAD, IE Madrid, ESADE Barcelona) came to compete in 25 sporting competitions, during which I participated in the track & field and swimming events. Our class hosted the three day event on our massive campus at HEC Paris with a forest, lake and chateau. The friendly, but intense rivalries and incredible atmosphere of team spirit and camaraderie was the perfect opportunity to build networks and share experiences with other MBA programs.

On weekends we had time to explore much of France outside of Paris, such as:

- Skiing in the French Alps.
- Surfing the waves at Biarritz.
- Rocking climbing and bouldering in the Fontainebleau Forest.
- Visting the island fortress of Mont Saint-Michel.
- Touring the 20km of underground Champagne cellars.
- Wine tasting at Château Margaux and Château Haut Brion (Bordeaux Premier Grand Cru).
- Beautiful quiet island of Corsica, birthplace of Napoleon Bonaparte.

In addition, some classmates invited us to their hometown and acted as a local tour guide for the more exotic, less travelled parts of Europe:

- Watching the Eurovision Song Contest finals in Kiev, Ukraine and visiting the still-radioactive site of the Chernobyl nuclear reactor.
- Playing a bit of poker at the Casino Royale in Podgorica, Montenegro.
- Juggling with 5,000 fellow jugglers at the European Juggling Convention in Lublin, Poland.

- Watching a Coldplay concert in Gothenburg, Sweden.

My next adventure at the London School of Economics starts in September 2017 for one year to explore the business implications of data analytics, machine learning and artificial intelligence, as I believe that "the best way to predict the future is to invent it."

Pooled pensions possible at last

By Anthony Asher

Reading time: 4 mins

Anthony Asher, Associate Professor at the School of Risk and Actuarial Studies at UNSW, writes about the sort of pension product that he would like to see developed now that SIS regulations have been modified to allow development of more flexible products.

On 1 July 2017, the SIS regulations were amended to allow for "innovative income streams", which allow funds to pool longevity risk with investment freedom – i.e. variable annuities without guarantees. At last, almost 25 years after the original SIS Act, superannuation funds can now develop pension products that address members' real needs. This article outlines the product I would like someone to develop for my retirement (and which I think would meet the needs of most people).

To start, I'll assume that neither I, nor my wife, will ever qualify for the Age Pension. This is partly because the current Age Pension income and asset test rules make it relatively unlikely, but also, I think they should be adapted to ensure it remains unlikely. This means that the design I am suggesting applies mainly to the wealthiest 20% of retirees - those with retirement assets well over $1 million. I also think however that it would be very useful to the least affluent – those below the current Full Age Pension asset test floor of around $250,000 for singles and around $380,000 for couples. (These amounts apply to homeowners, renters are allowed another c.$200,000.) Pensioners not subject to the asset test could increase their regular spending by about 20% by buying an annuity rather than keeping all their assets for a rainy day.

I also say that I do not want to have to manage financial assets during retirement. I will keep some cash and unit trusts as a small buffer, but I want a pooled pension that pays an income that is intended to remain roughly constant for the remainder of our lives (with a reduction of 30% on the first death). I am happy to accept systematic longevity risk (i.e. mortality improves faster than expected) and some investment risk, which will mean payments will vary.

The product thus far described can be relatively easy to design and administer. In the USA, the TIAA CREF (their Unisuper) has offered them for 70 years. All it requires is:

1. A mechanism for mortality pooling: the balances of those who die need to be distributed in some way to those who survive. Testing that the formula is fair and works in all circumstances is a great actuarial exercise. Getting it so that deviations from experience have equal impact at all ages and durations is a bit of a challenge, but not impossible.
2. A mechanism for translating the profits and losses into a change in payment to the member. My strong preference is for the differences between the initial mortality and investment assumptions to emerge over time. If mortality trends lower than expected after allowing for improvements, the payments should slowly reduce from what is expected. I expect my expenditure to decline as I age and would not be too unhappy if a reduced income hurried the process. (Unlike the US, the evidence is that Australians do not seem to face increasing out of pocket medical costs with age and aged care is so subsidised that it is always affordable.) I do not want some company, on the advice of their actuary, to decide that the future has changed and that they should capitalise

changes to assumptions so that my income can again be more or less level. This leads to unnecessarily greater volatility.

A big question is how I can trust the company that issues the annuity not to find some way to dial up their revenue once we reach our dotage? The less discretion the better. They must also guarantee their charges (inflation adjustments are OK) and the contract may not allow them to create reserves with my money. Profit shares that are affected by changing inflation or asset mixes are also not wanted.

How to choose investments is more of a problem. The cash flow to come from a life annuity is approximately the reciprocal of one's life expectancy plus two thirds of the interest rate. For the 30 years' expectancy of an upper-middle class couple, that gives 3% plus two thirds of the expected return. Investment in risk free real interest will therefore yield about 4% of the capital. In comparison, a share portfolio would yield over 5% in dividends and franking credits – with potential for growth over the long term. On my calculations, dividends reduced by about 30% in the early nineties and again in the GFC but quickly recovered. Thus, in the current market you are very likely to be better off in equities if the current dividend levels persist. Dividends can fall by 20% before you begin to suffer, which I think is a fair risk to take.

A pooled annuity starting at 6% of capital could be funded largely by dividends in earlier years. There is therefore some sense in an investment strategy that gradually shifts assets into lower risk investments (including guaranteed annuities) as pensioners get older. There is however a problem if the share market is low for a decade or more (which is not unlikely on a historical basis). This is because annuities do require increasing amounts to be disinvested.

There are smoothing solutions that do not involve arbitrary reserves. Australians companies could look at the with-profit annuities available in the UK and South Africa[1]. The record of the former is more realistic given the latter if one has a more pessimistic view of future share returns. Even the Prudential, with its high profit targets has given a (slightly) positive real return over the last ten years with average annual returns of 7% (nominal) for policies started in the early nineties. Some of the new products have no discretions, but do rely on dynamic hedging – which creates something of a systemic risk.

I would prefer to see funds develop innovative capital instruments that match annuity type cash flows from providers and users of capital. The point is that there are many users of capital that would prefer to repay over a period of time. Home mortgages provide the obvious example, but many other borrowers (think infrastructure such as toll roads especially) might prefer to pay over a period. In most cases, these payments could be indexed to inflation. The ideal would be salary inflation – see my paper on Salary Linked Mortgages in the 2011 AAJ.

The author is Convener of the Retirement Income Working Group. The rest of the group may not agree with the opinions expressed in this article. We are, however, currently thinking about potential standards for innovative income streams. All opinions will be considered: let us know yours.

[1] As a start: http://justsa.co.za/media/1064/web-product-brochure-just-lifetime-income-investment-driven-sygnia-final.pdf

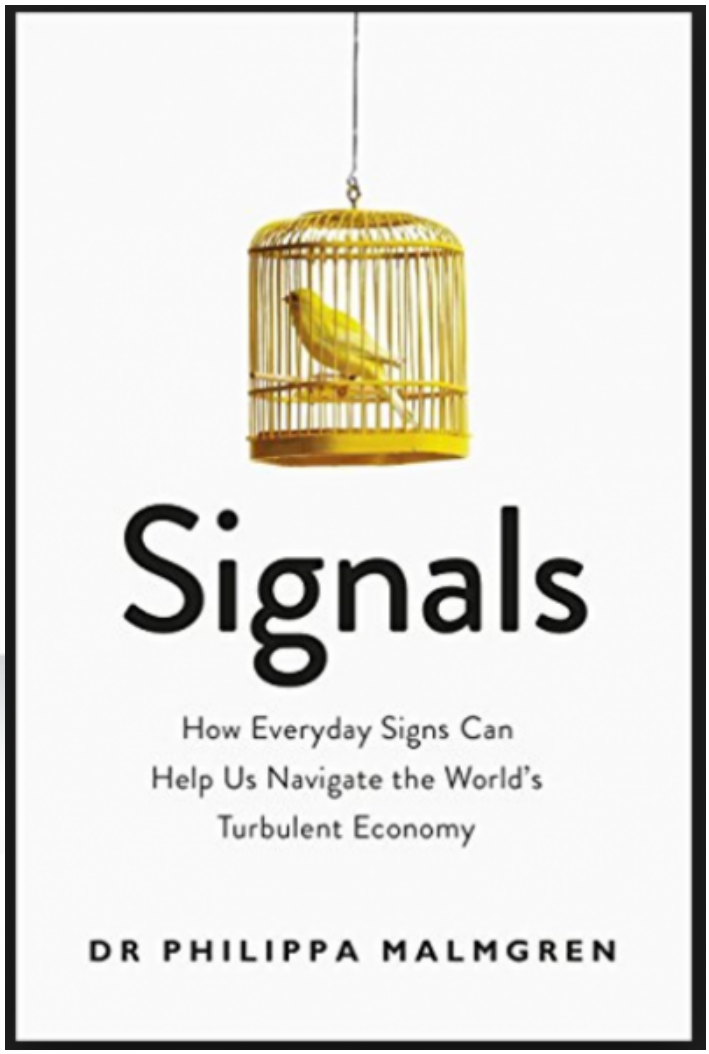
CEO's Column - Signals: how everyday signs can help us navigate the world's turbulent economy*

By David Bell

Reading time: 4 mins

Actuaries Institute CEO David Bell discusses the place of simple, real-life economic signals, versus complex mathematical models in understanding the present and future economy.

'It is a very sad thing that nowadays there is so little useless information' - Oscar Wilde



Being of the generation that actually admits to listening to ABC Radio National, I was fascinated by Tom Switzer's recent interview on Sunday Extra (30 July) with economist and author Dr Philippa Malgrem.

Malgrem, an economic advisor to President George W Bush, was talking about her new book *Signals*,* whose full title I have provided in the heading to this article; I have copied Oscar Wilde's quote from her as well.

Malgrem's essential thesis is that every day signals which people receive and pick-up in their interaction with the real economy, are often a much better guide to what's happening in the economy, rather than complex mathematical models which attempt to predict the future.

On the face of it this might be heretical to the actuarial profession. I think otherwise – complex models always need to be balanced with a dose of common sense and their applicability to real world situations. Actuaries of course do this, understanding the dangers of compounding errors with unrealistic assumptions and unlikely scenarios.

Malgrem's term for an over reliance on models is going through life blind in one eye and that we should trust our instincts when it comes to simple signals. And horror of horrors, she says that it is often artists and creative people who feel the 'zeitgeist'[1] without realising it – it's better to pay more attention to them than bankers and financial experts who dominate the business media.

Let's look at some of her examples:

- **The incredibly shrinking chocolate bar.**

Early signs of gathering inflation can sometimes be signalled through something as relatively mundane as the number of squares in a chocolate bar. In 2010, Cadbury in the UK announced that it was removing two squares of chocolate from its Dairy Milk bar, but keeping the price the same. This so-called 'shrinkflation' has become widespread and has manifested itself in other foodstuffs (and in other products and services) like breakfast cereal, tuna, soft drinks, and coffee.

- **(Nude) cover of Vogue.**

Malgrem's signature example is the June 2009 cover of British Vogue magazine. One of the world's leading supermodels Natalia Vodianova (I must admit I've never heard of her), who was apparently, atypically, not thin like most models (not an 'underweight waif' in the author's language) was featured. The importance of this event (signalling-wise) was that the fashion industry had lost its old customer base – young people who were now stretched to the limit on their credit cards. The appearance of Ms Vodianova sent a message that the industry was unsure of what its customer base was, and was taking a punt that her appearance would appeal to wider spectrum of readers. In Malgrem's words, *'It went back to the human form, unclothed, and started to design for a customer who could be anyone from a beautiful young supermodel to a mother of three, knowing full well that both ends of the spectrum were still cash constrained.'* (Malgrem, Signals, p.1)

- **The dog that didn't bark.**

Sometimes silence sends a signal. Malgrem cites her neighbour's dog that stopped barking because their contracted builders didn't show up to complete the renovations during the 2007 financial crisis. She draws the wider conclusion that while this is a small example of a signal, 'the history of wars, nations states and families are all driven by economic events.' (Malgrem, Signals, p. 15).

The bigger picture

As an aside, in the radio interview, Malgrem talked about the importance of China, and how it is rapidly evolving as an economic power. She makes these interesting observations. Because China has experienced high rates of wage inflation – wages have gone up fivefold in three years – it is now pricing itself out of the market for some manufacturing. She evidences the fact that Apple is now shifting iPhone manufacturing from China back to the US, where it is cheaper (who would have thought).

China has always taken the long view and is now compensating by making investments in infrastructure world-wide (e.g. the Panama Canal) so that it can build a trading network, with China at its centre which, in turn, will allow it to take a more prominent role in global affairs. The recently announced Belt and Road initiative – a massive infrastructure investment in Eurasia - is clear evidence of this push. Interestingly, Malgrem cites Mexico, with its wages at 40% lower than China, as the 'new China'.

So What ....

So back to Malgrem's contention about the value of instinct versus expert. It can be easily argued that she has found interesting examples to fit her theory and has fallen into the trap of espousing pop economics. Alternatively, we can accept that there is at least an element of truth in her thesis. Brexit and the election of President Donald Trump are real life examples of where the elites, media and polling experts got it wrong and where, in hindsight, the opinions and views of everyday people were overlooked in an anti-establishment backlash.

What does this mean for actuaries, and for that matter any business professional? I think at least two things. Apply healthy scepticism to financial and mathematical models and look at what you have produced through the lens of real world events and circumstances. Look at the big picture and understand the intersection of macro-economic forces (and where applicable every day events) and world events to put your work into context.

* Dr Philippa Malgrem, *Signals: How Everyday Signs Can Help us Navigate the World's Turbulent Economy*, Weidenfeld & Nicolson, London, 2016.

[1] I had to look it up too –'zeitgeist' - noun - the defining spirit or mood of a particular period of history as shown by the ideas and beliefs of the time.

A note to members please…

There is an increasing incidence of members accepting invitations to events, lunches and Insights sessions and not turning up, or letting Institute staff know they cannot make it.

Of course, we all understand there are times when work and personal circumstances mean you cannot make functions. I would be grateful that if that happens to you, **please let us know as soon as possible** so we can free up your place for someone else (quite often functions are oversubscribed). We can also remove your name tag so that your colleagues don't register you as a non-attender!

For our part, we always follow-up with members who can't make functions to see if there was something more we could have done to help you attend.

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