Actuaries Institute Podcast
Driven by Data: In conversation with Rob Daly

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Guest: Robert Daly
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Meg Yang: **Hello, and welcome to the Driven by Data podcast. My name is Meg Yang and I'm a member of the Actuaries Institutes Young Data Analytics Working Group. Joining me today on the podcast is Rob Daly. Rob is currently the Managing Director of Insurance at Westpac. Prior to joining Westpac, Rob worked on the Institute's data strategy and worked closely with the Institute's Data Analytics Practice Committee to help educate post-qualified actuaries about data analytics, including establishing the course at Macquarie University. Welcome, Rob.**

Rob Daly: Thanks Meg. It's great to be here. Thank you.

Meg Yang: **Good. Shall we start with a brief introduction about yourself?**

Rob Daly: Yep. It's always interesting talking about yourself. Some unusual things in my career are that I actually started studying actuarial while working and straight out of school. So I started when I was, I think just turned 18 so, that's unusual, particularly for many actuaries nowadays to do quite a few years in university first. It was the norm back then. That was a long time ago. That was in 1987.

Meg Yang: **So, you didn't attend Uni?**

Rob Daly: No, I didn't attend Uni.

Meg Yang: **Right.**

Rob Daly: It was interesting in Dublin at the time, that was just beginning to change. This pioneer Professor Philip Boland started doing an evening course for actuaries who were studying, which I did do. Then a couple years later, he started a university program and the career education pathway for actuaries changed in Ireland ever since. It's very different nowadays, but back in 1987, that was the way it was done. So it was quite interesting working and studying at the same time.

Meg Yang: **Yeah. It must be pretty stressful back then, but you'd obviously nailed it.**

Rob Daly: I remember a period when we were typing new premium rates into the computer to have them ready for a new product launch, while still trying to study for exams at the same time. So it was a very different approach. We didn't have laptops though, we had desktop computers.

Meg Yang: **Well, that's the start of computing.**

Rob Daly: So since then I've done, I'm obviously qualified as an actuary worked in Dublin. I mentioned in, for a company called Abbey Life, I then worked for Munich Re in London and then arrived in Australia in 1995 in Melbourne to work on the demutualization of Colonial Mutual and that's quite interesting because I ended up working at CommInsure quite a few years later, so that sort of went full cycle, but I did lots of consulting work around financial reporting and risk management. They were the two key things I did. .

Rob Daly: I then worked as the Chief Actuary at TAL and then worked as the Chief Risk Officer at CommInsure. But a really interesting thing I did a few years ago was I took 12 months off to do a Master of Economic Analysis at University of Sydney and that was great. I hadn't been to university earlier, so it was great to get to university eventually. I remember when I was leaving CommInsure, people were saying “you're returning to university?” and I kept pointing out to them that I wasn't returning. I was going.

Meg Yang: **You made it up in the end.**

Rob Daly: But that was a lot of fun and we're talking about data in this podcast. So what was really interesting was how economics had evolved over the years and that data was always important to economics, but is absolutely central to the study. Now, both if you're doing macro or micro and some of the study of the techniques were really interesting and one of the recent Nobel Prize winners in Economics is a person called I think it's Paul Angrist (Correction it’s Joshua Angrist) who did some phenomenal work and bringing forward data analysis for economic questions. So, that was a really interesting learning.

Meg Yang: **Oh, definitely sounds very interesting and you picked economics. So, I'm just curious what motivated you to learn more about analytical techniques and to work on the Actuaries Institutes data analytics strategy and education components?**

Rob Daly: I think the first one is straightforward. It's a good question. The data analysis is what actuaries do. It's kind of the heart of our work.

Meg Yang: **Absolutely.**

Rob Daly: If you think back to the very early actuaries in the UK, this is like 250 years ago. They were people who put together a mortality table for the first time so that they could make projections or estimates of claim payouts for their customers. Analysis is at the heart of that work and it always has been. I like Maths and doing anything that involves analysis, I really enjoy. In my current role is really important, people keep me away from doing it, but there's a natural tendency that if you give me a data set, I want to do stuff with it and analyse it. I think the tools we have nowadays to do that are just amazingly good compared to even ten years ago.

Meg Yang: **Yeah. It changes really fast. Yeah.**

Rob Daly: Very much so. In terms of working for the Actuaries Institute, so I finished up at CommInsure at the start of 2019 [Actually 2020] and Elayne Grace, CEO at the Actuaries Institute phoned me very quickly and said, we need someone to look at this for a couple of days a week. Are you interested? And I was very interested. The activities slowed down a little bit because of COVID. But other than that, I thought it was a really important thing to do. And the motivation there is we were targeting, not actuaries who were still going through the exams, because the universities and the syllabus have changed to give a lot more data analysis and modern techniques into those syllabuses, which I think is really good. But we were conscious of all those actuaries who had trained in the past and just weren't familiar with the new techniques and weren't familiar with all the advances in the last ten years and trying to improve knowledge among that group we thought was really important to do.

Meg Yang: **Yeah, I guess most actuaries thought, once you're qualified as a Fellow, you don't have to study for another day. You don't have to see another exam again, but hearing what you said, I think it makes total sense and I think that's a really good course that you have worked on. You probably join at a really good time as well to contribute to the strategy and education. Just thinking about from your point of view, how do you think actuaries can lead the change to a data driven strategy within a business?**

Rob Daly: I think in many companies, the CEO will probably look at the actuaries and expect that they'll know a lot about this. They'll also look at the IT, the head of IT as well to see whether they know about it. But I think the expectation is if it's statistical and lots of maths and numerate, the actuary should be across it. It's not a great look for the profession if some actuaries might respond and say, I don't really know about machine learning or I'm not familiar with this new technique, because if you think of a CEO they're then going to go, well, who will I ask about it? So they'll look for a data scientist or a consultant or someone else who can fill that in for them.

Rob Daly: So I think it's really important at all levels that we do know about these techniques. You may not be an expert in Random Forest, for example but I think you need to know what Random Forest is and how it could be used. And there's probably four or five sort of key areas or questions you need to know the answer to like what's the difference between statistical inference and machine learning?

Meg Yang: **Yeah, absolutely. So, I guess hearing that, I feel like maybe what you mean is potentially it's more leadership driven. Like when leadership think about let's transform business to be more data driven, they should be and potentially they'll be looking at actuaries, is that right?**

Rob Daly: And I don't think it's just leaders, the regulators are asking the same question, both APRA and ASIC, so that they're expecting companies to have a data driven approach to their business.

Meg Yang: **Yeah. So I guess actuaries can be a pivotal role in that change.**

Rob Daly: I'd say more than I said they should be. Cause it is our skills.

Meg Yang: **It is our skill set. That's correct. It's potentially just sharpening our skills with the latest techniques, isn't it?**

Rob Daly: I think so.

Meg Yang: **Where are the skill gaps then you see in the actuary profession for actuaries to be more competitive? for example, compared with data scientists or economists.**

Rob Daly: One of the gaps is we overuse Excel, in that we're not

Meg Yang: **Excel?**

Rob Daly: Yeah. Excel. We're not code driven. In other words, actuaries tend to solve problems in spreadsheets and tend to do it very well. But if you've coded, coding's quicker, more robust and more reliable. So, that's one interesting gap. We need to convert ourselves from Excel users to code users. Not as hard as it sounds so once you've gone down a path you'll never go back. I think the other point though, is you do need to understand the modern techniques, but also what's good and bad about them. I think with a lot of machine learning, it will tell you what seems to drive the outcome, but it doesn't give you much clarity and cause and effect and it doesn't give you a way of putting a bound about what are the most significant elements and what are least significant.

Rob Daly: You can sort of get an ordering, but you don't get a level of magnitude which you can get for more traditional statistical techniques.

Rob Daly: The other thing with big data, which always occurs to me is you need big data to do big data. If you've got 10,000 records, you should not be using machine learning. It just won't give you a sensible result. If you have 10 million, it's perfect.

Meg Yang: **That's true.**

Rob Daly: And even though data is important, pick the right tool for the right question and the right data set.

Meg Yang: **Yeah. I think that's a really good point. You can't build a really difficult or complex model on just a small set of data. Isn't it?**

Rob Daly: I agree, but I think the other thing is to know what's possible. So last year before I did the work with the institute, I did do a short online course on Natural Language Processing and that was because I had done with a consultant looking at complaints at CommInsure looking for common themes and words. I'm sure many companies have done that activity, but then it was really interesting to study Natural Language Processing and to know how you actually go about doing that, which is really, really interesting.

Meg Yang: **Yeah, absolutely. I've recently been seeing some of the material from the Data Analytics (DA) Applications course, and that's certainly fascinating. It's now in the curriculum for people to learn about the, for example, Natural Language Processing and many other techniques. The next question is on a completely different note. Do you think actuaries are well trained and equipped to become business leaders?**

Rob Daly: I think so. Not everyone wants to be a business leader and not every actuary does either. So I think you need to be motivated and want to go down that path. I think being numerate and analytical are really important skills to being a business leader, but then many others, one, you need to have really good people skills. You also need to be a really good listener. and if you want to be a senior leader, you have to listen to the customer. As much as to the internal people in the company. You need a strategic view. You need to look at beyond sort of the narrow confines of your company, but think about how the whole industry or the whole marketplace operates. But I think these are all things that actuaries who want to can, can probably turn them on to and we're all capable.

Rob Daly: Are we well trained for it? I don't think any profession trains to be a business leader. So I don't think accountants do it. I don't think lawyers do it either. So I think equally, actuaries don't specifically train in that direction, but not as should they really. There's other ways of getting that training, you could do, for example, an MBA or there's many sort of non-university paths you can go down to get that additional knowledge you need.

Rob Daly: And particularly if you're an actuary who is going into a people leadership role for the first time, you need to get the training on how to be a people leader and hopefully your employer has that training available and anyone who's made that step, being a people leader requires you to spend your day very differently than being someone who just does the work. So, I think being aware that you will have more to learn if you want to go down the leadership path is really important and make sure you seek it out.

Meg Yang: **Yeah, absolutely. You kind of covered my next question, which is about the key advice for people who want to pursue that management path, which is great and by the sound of it, you are saying there's no full tool set that's ready to give to actuaries to become a business leader. It's more like you have to be proactive and know your skill gaps to pursue the path that you want to, either become more, I guess, technical and then you need to learn the analytical skills or become a business leader. Then you need the leadership skills. Isn't it?**

Rob Daly: I'll probably add one thing to that is you need a good commercial mindset. You need to know how to run a business. And I fear my education in that was wanting, because I'd have loved to have worked in a pub maybe when I was going to universities, see a small business or work in a family shop or a family restaurant. I thought, that'd be such a great rounding on learning how to run a business. So unfortunately. I didn't get a chance do any of that learning, but there was a skill set of that sort of commerciality and how to talk to a customer, run a business, but also make a profit.

Meg Yang: **Interesting. So where do you think you've gained your commercial experience and leadership skills? Do you think that just came with experience?**

Rob Daly: I think working in a consultancy, particular smaller consultancy helped because you understood there was a business you had to run. There weren't distant shareholders who would take up the slack if you lost some money in a particular year. In consultancy, if you don't break even in a year, well partners end up paying the difference. So that helped. I think it also helped that particularly my mum was a very keen budgeter, so she had little books. This is before spreadsheets, of course, but she had little books where she recorded ins and outs and knowing a budget and knowing how to be careful with how you spend resources is also very important.

Meg Yang: **Yeah. Oh, that's interesting. You've got your mini case study, I guess when you were younger. Do you think it's necessary for business leaders to understand the technical details when it comes to making decisions based on machine learning techniques? And what are the potential implications on ethics?**

Rob Daly: Yeah. They're almost two separate questions. I want to split them up a little bit. I'm not sure you need to know exactly how we'll go back to the Random Forest questions. I'm not sure you need to know exactly how that technique works, but I think a leader would want to know what are it's strengths and what are it's weaknesses and when can it be a false guide. And I think that's important for people to know, otherwise if your team doesn't explain that to you, you'll end up making a poor decision. I think, yeah, ethics are important.

Rob Daly: A friend of mine bought me the book by Kathy O'Neil called 'Weapons of Maths Destruction', which is a wonderful set of case studies where models can really fail people. And one of the examples she picked is in the US, there's various scores you need to get to get into university and she described how those scores were set in a fairly ad-hoc basis. This is how scores getting into university, scores to rate different universities. And there's certain quite an ad-hoc basis and there's no feedback loop.

Rob Daly: So, a university can become a well-rated university by just knowing the rules of the game, but not being a particularly good university and she pointed out how that drove really strange behaviors by different universities, which is kind of a cost to society as a whole because universities apply resources to things that aren't directed at producing better graduates. They're trying to gain rules engines to achieve it and the whole thing fails.

Rob Daly: But her point is once that gets locked into a system and there's a model behind it, it's very hard to pull it out of the system and to move to something more rational. So I think that's part of the ethics. If you really make decisions based on models alone, you lose the fact that models change over time and you need feedback loops to realize when they're not working anymore.

Meg Yang: **That's a very interesting point. I feel like part of our learning is about the actuarial control cycle, which is essentially the feedback loop that people need to review the models, review the issues along the way to make sure that it's solving the right problems.**

Rob Daly: And to remember a model is just what it says it is. It's a model, it's not the real world. I think the economics training idea was really helpful in that front as well because we all know economic models do not model the real world, but you need something to make a decision on. How else is the RBA supposed to set interest rate policy if they don't have a model?

Meg Yang: **That's true and just out of curiosity, how do you make a decision as an economist then on top of the models?**

Rob Daly: One of the key things with economics is you do need to have a view of how the world works.

Rob Daly: So, you have a set of assumptions about how people handle different decisions and then the model helps you sort of accumulate that up to represent society as a whole, in particular, public policy questions. So I think that helps guide economists in making their decisions, but economists are very good at doing studies to prove other economists were wrong.

Rob Daly: So, there's a constant degree of feedback loop and people pointing out why an established practice actually doesn't tell a whole story and I think that degree of inspection within the industries not, well, I don't think economists are industries, but that self-inspection within the profession is really important and you will get applauded by producing a paper that proves an economic truth is not true.

Meg Yang: **Yeah. That's really interesting to see the debates and discussions like those. So, come back to data analytics and actuaries, where do you see our profession is heading in the space of data analytics? Or in other words, what new opportunities are coming up for us?**

Rob Daly: I think we as a profession are slow to work out where things are heading, but we're then quite good at being fast followers and I think you saw that with risk management where we were, I think, slow to realise what risk management was about, but the profession really has done a lot of fast following in that area and is now respected as risk managers. I think it's the same with data analytics. It's the core of what we do, but we have been slow in picking up the most recent innovations.

Rob Daly: I think we are good at fast following and I think we should just seize that opportunity and run ahead of the profession and for some actuaries and actuarial firms, Quantium is just one to name, but there's many others who have done that extraordinarily well. So I'm quite optimistic that we will do well in the space of data analytics and we'll also add to the space. So we'll make it a better field and we make companies make better decisions with our involvement in it. So I think we will improve the public output, by us working in the area. So I'm quite optimistic about it. And I think we'll definitely be there. I don't think we'll be left behind because I think we're too smart to let that happen.

Meg Yang: **Thanks very much, Rob. Unfortunately, that's all we have time for today. It was a pleasure to have you on the podcast.**

Rob Daly: Thanks Meg. I really enjoyed being on it.

Meg Yang: **Listeners. We hope you enjoy this discussion.**

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