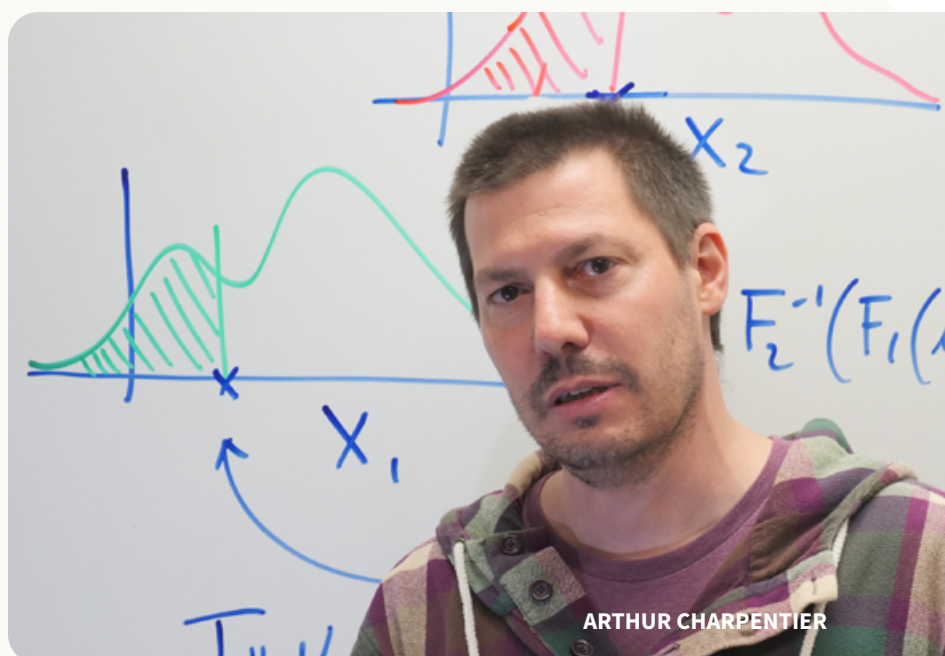BY **JENNIFER BAKER**

ACTUARIAL ETHICS
AND THE FUTURE OF THE PROFESSION

Arthur Charpentier, PhD, Fellow of the French Institute of Actuaries, is full professor at UQAM, Montreal, Canada.
He is also the former director of the Data Science for Actuaries program of the French Institute of Actuaries.
He spoke to Jennifer Baker about the future of the profession.

ARTHUR CHARPENTIER

How do you see the actuarial profession today?

I think it's been changing a lot. I've been teaching actuarial science for 20 years. I remember that when we started giving courses, students were willing to get into the data, because previously it was all written exams, which was very, very distinct from what we could be doing in companies. I remember students asking, can we see some data sets? Theoretical models are nice, but can we see exactly what's going on?

So we started to step into data science 20 years ago, and then I remember there was a shift towards regulation. Some aspects were a little difficult to formalise for mathematicians, but there was a clear concern from insurance companies that actuaries would have to be able to deal with all this new regulation, especially in Europe. Then there came the big buzz of artificial intelligence and actuaries went back to the original question of making models and predictions.

So there have been a lot of changes, and now, I think actuaries are involved in those discussions about AI. **>**

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There are a lot of important questions about proxy discrimination, because when you start to get more and more data, even if you don't observe something, it's still possible to capture sensitive information through proxies. We have more and more black box models, and we need to understand exactly what's going on before using them. There are a lot of very interesting challenges – and not only from my mathematical perspective, but also about what actuaries are paid to do and whether they're at the core of their job. Insurance is not AI. We have regulation regarding AI, but it's not well suited for insurance, and actuaries want to step in and address specific problems.

Focussing on data sets and the importance of data hygiene or the quality of the data. Where does that intersect with questions of bias?

When you're working as an actuary, you have data coming from both sides – from underwriters and from claims. You link them through the policy order number, or something like that, so you can make a study predicting losses, etc. Then we started to get additional data. We started to get data because the insurance company bought it. For household insurance, for instance, they could get satellite pictures or old data about flood events. Or when you have a car, it's possible to get a lot of additional information – about your credit scoring and stuff like that. So we have a lot of data, but we are not sure exactly if there could be biases. David Hand called those 'dark data'.

Telematic data can be used to detect some patterns, like how you drive and when, but from a legal perspective, if you experience an accident, it's difficult. At one point, I was working on satellite pictures for houses, and when you have black roofs or red roofs, it could be difficult to distinguish the contour of the house from its shadow. So we have a lot of biases everywhere. And unless you really get into the data, it's very difficult to say something objective.

The other point is, sometimes we don't know exactly why those data were collected and how they were collected. Think about credit scoring, Cathay O'Neil mentioned that in her book 'Weapons of Math Destruction'.

There are a lot of discussion in the US and the UK about that. Sometimes, we think that we find a good proxy of the risk, but it can be unreliable. What if we start discussing with a client afterwards and say, 'we are going to increase your premium because we noticed a pool in your garden in satellite pictures,' and the client says 'I don't have a pool.' Some external information can be wrong or flawed, and most of the time, clients have no way to correct it.

A final problem is what we call gamification. In sociology we say that when a measure becomes a target, then it's no longer a measure, that is Goodhart's law. Basically, if you know that something will be used against you for your premium, you're going to leverage that.

You mentioned the UK and the US, but in the EU, we have a different sort of regulatory framework, for example the GDPR. How big are the differences between the US, Canada, the UK and the EU? Is it more difficult in the EU to get trustworthy data? Or do these regulations actually make actuaries' lives easier? >

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I think it's a difficult question. So first of all, I'm a mathematician, so I try to work on fundamentals, with well-defined concepts. The other thing is, sometimes it's hard to follow. You mentioned GDPR, which is obviously helping policyholders to protect information, especially sensitive information. But then came the discussion about FIDA, the Financial Data Access regulation, which is about allowing the sharing of data between insurance companies and banks, and third parties. I really wonder how we can address privacy in that context, for example.

One thing I did observe in the US, is the big part played by data brokers. If you want to get a lot of data for someone, then it's possible to buy it. People don't do that in Europe, which I think is a very, very good thing. One consequence I see in North America is that it's impossible to get your insurance company to forget something. There's no right to be forgotten. So for example, if you got cancer a few years ago, and even if you recovered, it's still somewhere and it can be used against you. I think regulation is going in a good direction in Europe, but things can change very, very fast. There are a lot of lobbies in Europe.

In Europe everything is claimed to be done for the good of consumers. But sometimes being good for consumers in insurance is to go against the common good. It's not possible to say to policyholders 'it will be good for you' because usually if it's good for you, it will be bad for someone else. We have this problem in insurance, which is sort of a zero sum game. So we need very good regulation, and I don't really see that in Europe.

Regarding equality and diversity, where do we see that playing out in the practice of actuaries in the actuarial workplace?

Well, actually, it's everywhere. I mean, in the 'handbook of discrimination', by Kasper Lippert-Rasmussen, there's one chapter dedicated to insurance. I think the very sentence is, 'insurance is complicated, and it's complicated because at the core of insurance, you have discrimination.' Actuaries are paid to discriminate. But it's only to make a discrimination with respect to the risk. So if you claim that someone taking more risks should pay a higher premium, it sounds fair. The thing is, sometimes it's complicated because you are more a more risky policyholder, but it's not a decision or a choice you made. So I think there are a lot of issues regarding **>**
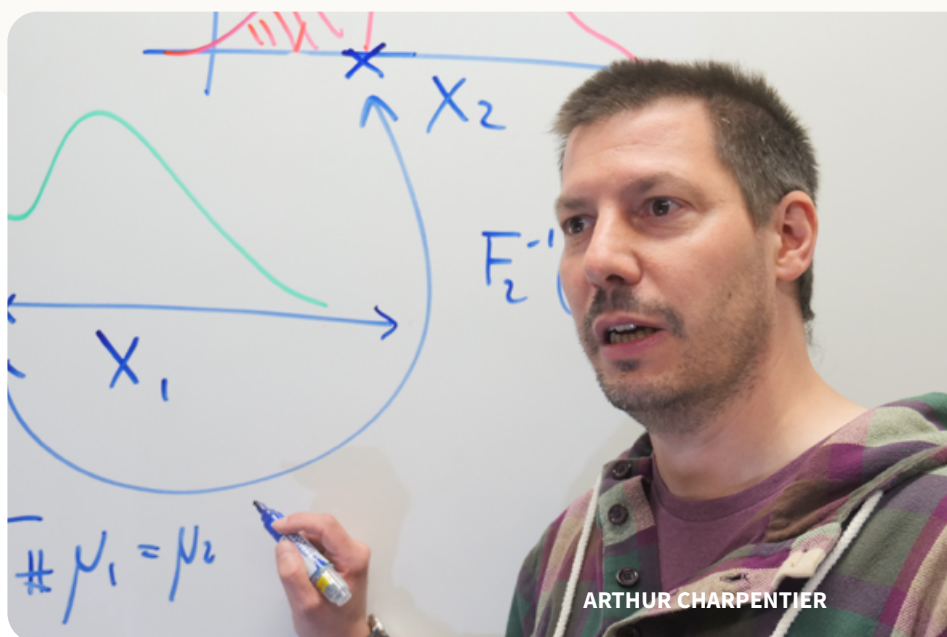
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actuarial fairness. In fact, the term 'actuarial fairness' has been introduced by economists – it's about efficiency and accuracy, not ethics.

It's about having a premium which is proportional to the risk. And the problem is that some people are more risky, but it's not a choice that they make. But the frontier is very difficult to assess. For example, if someone is willing to do extreme sports, it's a choice. So it's legitimate and fair to ask for a higher premium. But if someone has hearing disabilities and it makes his life difficult, should we charge him more? It's not something that that person desires, so it's very difficult to say what could be seen as fair and unfair. And then on top of that, you get regulation. And obviously, if regulation says you cannot discriminate based on gender? Well, you have to respect it, even if you observe in your data that there's a difference. For example, you observe that women live longer, you might want to take that into account to calculate pensions. We need to find a decent way to address this problem.

Finally, one of the biggest risks that we see facing us is climate change. What is the role of Actuaries or the insurance industry when it comes to helping to plan and mitigate some of these risks?

Yeah, climate change is clearly a very important topic. It has a little bit to do with fairness. For example, when we talk about flooding in insurance, we know almost exactly where the risky areas are, so insurers don't want to sell insurance in those areas. That is a reminder of an old problem that was observed in the US, which was 'redlining'. Now we have exactly the same problem, sometimes called bluelining, which is having areas where we don't want to sell insurance, because of a risk. What was observed in the US is that actually we again target poor communities and minorities. So all those problems are connected.

But I think the problem of talking about insurance and climate change is that insurance typically comes into play only after a problem has occurred, footing the bill for the damages. And I think if we keep doing that, it's not going to work.

I think actuaries should step in at the beginning of the problem – for example to lobby to avoid building houses in already risky areas, or at least warn that it would be risky. In California, a lot of insurance companies moved away because of the wildfires. And when you try to understand why the company moved, one of the problems is that most of the software used by companies to forecast risks are black box models.

I think in some way, actuaries are the 'canaries in the coalmine.' I think actuaries should be more involved. We should get actuaries working more deeply in the writing of IPCC reports. There should be actuaries involved everywhere just to help make wise decisions.

I also want to add that I think actuaries need to communicate more, and must be more pedagogical. We need to explain to the people that insurance is somehow a zero sum game. Basically, insurance is the contribution of the many to the misfortunes of the few. We collect premiums, and then we repay people having losses. So it's essentially about how we collect the money and how we share it afterwards. Insurance companies don't create money. It's a welfare and fairness problem. <