



Article from

The Actuary

April/May 2016

Volume 13

Issue 2



Q&A

THE POWER OF PREDICTIVE ANALYTICS

Q&A WITH JOHN HOUSTON, ADVANCED ANALYTICS AND PREDICTIVE MODELING PRACTICE LEADER AT DELOITTE

Q: How did your professional experience lead you to a nontraditional career?

A: My experience as an employee benefits underwriter and then as part of Aetna's actuarial rotation program exposed me to a wide range of business issues. I came to see the value in making predictions at a more granular level and also came to appreciate the power of new data sources. My time spent as chief actuary at a mid-sized privately held company taught me about growing a business and was a great way to transition into consulting. I was fortunate to join Deloitte Consulting LLP almost 20 years ago, at a time when we were starting a practice focused on predictive analytics.

Today I lead Deloitte's Advanced Analytics and Predictive Modeling practice and am part of a community of more than 500 data scientists at Deloitte. We help clients in a wide range of industries solve their most complex problems. This typically involves pulling together integrated teams that include strategy and technology specialists, along with data scientists, to collaborate with our clients. While building predictive models is a core skill of the practice I lead, we work with clients from business case development all the way to technical implementation and change management. Lately there has been tremendous client interest in building internal data science teams.



“ It is important to stay connected to what is generating value today, while simultaneously driving new approaches for future impact.”

© JONATHAN KANNAR

John Houston is a principal at Deloitte Consulting LLP and leads the Advanced Analytics and Predictive Modeling service area in the Human Capital practice.

jhouston@deloitte.com



done in the property and casualty (P&C) division using neural networks. I wanted to see how well these techniques would predict future medical claims at the member level. I found a way to get the support needed from the P&C team to build a test model. It was fascinating to see how the model could pull out relationships and signals that traditional actuarial approaches would not have found. After that, I was hooked.

Q: What kinds of problems are you solving using data analytics? How are these different from the issues you would address in the role of a more traditional actuary?

A: The kinds of problems we solve vary widely by industry. In the

insurance industry, for example, there is a natural link between traditional actuarial work and the types of underwriting and claims predictive models we typically build. These models cannot be deployed effectively without considering the current pricing and reserving. However, a difference is the level of granularity and timing, because predictive models tend to be at the customer or claimant level and vary over time based on available data. Another difference is that traditional actuarial work tends to focus on the exposure, while predictive models often will bring to bear behavioral and environmental factors.

Outside of the insurance industry the problems can vary widely, but there are some common themes. Whether the issue is focused on customers, employees or the supply chain, there tends to be an element of finding how to help clients focus their limited resources in the right places at the right time.

Q: What skills positioned you for work in predictive analytics?

A: I think curiosity and creativity are important skills—they definitely helped me get started in predictive analytics. Having an understanding of various types of algorithms and software tools is table stakes today. The ability to find a unique data source, or to frame a complex problem in a new way, is also a differentiator.

Q: How are you using predictive analytics in your job?

A: Although predictive analytics is just one of many approaches, it is certainly one of the more prevalent techniques we use. While each industry in which we work has unique data, regulations and challenges, there are many commonalities. For example, most customer analytics problems involve some form of predicting likely to buy, next best offer, retention or customer lifetime value. Many supply chain analytics problems involve predicting demand and failure rates of parts. Workforce analytics has similarities to both customer and supply chain analytics in terms of employee retention and workforce planning modeling.

Q: How did you learn the tools and techniques of modeling? What sparked your interest in this area?

A: I originally became interested in predictive modeling when I was doing an actuarial rotation in Aetna's managed care product management unit. We were tasked with understanding how people were using new network-based health products and had gotten access to very detailed claims data. I had attended an internal actuarial conference and heard about some cutting-edge work that was being

Q: What skills do you think actuaries bring to analytics that other professionals may not bring to the role?

A: Actuaries generally have a very good sense of risk and how factors compound over time. The ability to look backward and forward in an uncertain and changing environment is a key, transferable skill actuaries develop. Many problems outside of the insurance industry can be solved using actuarial concepts. It always amazes me when we come across a problem that is a classic survival model or is conceptually similar to asset and liability matching.

Q: How do you see the role of predictive analytics in health care changing in the next five to 10 years? Where will actuaries fit into the equation?

A: I think the advancement of biotechnology and individualized medicine will happen faster than many people realize. These advancements will create incredible new data sources that will fuel even more powerful predictive models. As a result, the need for new financing, population wellness management and risk models will increase. This is a need that actuaries are well positioned to develop.

Q: What advice do you have for people who may be interested in positions in predictive analytics?

A: It is likely that the skills and qualities necessary to be effective in your job 10 years from now don't even exist yet. So make sure you are adaptable and well-rounded. Communication skills are essential and will never go out of style. Technical proficiency is important, but be realistic about where you have deep skills and where you know just enough to be dangerous. As data science tools and techniques proliferate and become even more sophisticated, it will take teams of people collaborating to find the best solutions.

Q: What is the most challenging aspect of your work?

A: For me, the human behavioral aspect and organizational adoption of new models present a degree of challenge. The data and tools are changing so quickly that most companies and ecosystems struggle to adapt. This causes a widening

gap between the art of the possible and the reality of the practical. Often the simple model that is easy to explain will drive more value than a sophisticated model that is more challenging to interpret and implement.

Q: What is something many actuaries may not know about the predictive analytics field?

A: The vast majority of the business community still has not adopted even basic predictive models. Large sophisticated companies that you would expect to be optimized with hundreds of examples of predictive models still make the majority of their day-to-day decisions through tribal wisdom and gut instinct. They may have pockets of sophistication in marketing, supply chain or finance, but very few organizations have been able to systemically drive value across all areas with predictive analytics. This presents tremendous opportunities for both actuaries and data scientists.

Q: What are some of your best professional memories/experiences as an actuary that may inspire others to explore different actuarial paths?

A: I still get excited to see the results of a new model. It's always amazing to watch a team make complex data come to life. The real reward goes beyond actuarial and data science. Seeing business leaders realize they now can answer key questions and drive value in new ways is always memorable.

Q: How did you segue into a nontraditional role after starting your career in a traditional actuarial role?

A: My career path was definitely not planned. I was very fortunate to work with some incredible minds and mentors. While I started down a traditional actuarial path, I was always trying out roles or jobs that were on the fringes of traditional work. When advising new hires, I urge them to be open to new opportunities but also be patient. Predictive analytics, data science, big data and now cognitive computing have all generated buzz, but they still need time to realize their full potential. It is important to stay connected to what is generating value today, while simultaneously driving new approaches for future impact. ■