Interested in a Career in Data Science?

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Guests: Kelly Chu, Rohan Dixit and Jas Singh
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Tong Zhang: So, hello and welcome to the Actuarial Institute Podcast. My name is Tong Zhang and I'm a student member of the Institute in addition to working at PwC as an actuarial analyst. So today I'm pleased to be joined by Jas Singh, the Senior Recruitment Consultant at SKL Actuarial Recruitment and Rohan Dixit Data Science Executive at Quantium, and Kelly Chu, UNSW student and she's also president of the University Actuarial Society. So, welcome everyone.

ALL: Yeah, thank you. Thank you. Yeah, great to be here.

Tong Zhang: Thanks guys. And for today's podcast, we are following a two-part approach. Well the first part will be targeting at younger actuaries or actuary students. And the second part will be focusing on actuaries with two or more years of professional experience. So, starting with our part one for our younger actuaries, our first question is to Kelly from a student perspective. What might be the concerns or challenges do you think actuarial students might face when considering a career in data science or data analytics?

Kelly Chu: I think definitely the biggest challenge that I've seen in talking to my peers would be definitely being aware of the opportunities available in the data analytics space, and also how it aligns and compliments with our actuarial degree. So, I think since our courses, they have a very strong focus on like traditional applications of actuarial to things such as insurance or finance. There's a sort of tunnel vision I've seen in my fellow students where they might just mainly look for these kinds of traditional roles, particularly since they might have an understanding that actuarial, it's more the more established field compared to the relatively newer but rapidly growing field of data. I've seen some of my peers hesitating to choose areas outside of the traditional areas since they want to get like "the most value out of their actuarial degree" by doing an actuarial job since they've gone through that whole struggle of trying to get all the exemptions during uni.

So, I think there's a bit of the sunk cost analysis, since they've spent three or four years studying so deeply about the insurance industry, learning complex financial maths, and stats and frameworks and so on. So, they seem to want to complete the journey and be a fully qualified working actuary and get the rewards that come with that. Yeah, so I guess that's one of the things that I've seen in my fellow students. Another thing would be the question of whether they have the appropriate expertise or knowledge required for data analytics. Since it's seems, it seemed to be a more technical or coding heavy field. So some students might feel they are not as strong in coding or in statistical knowledge and thus they might think they might not be fit for a career in data analytics.

Tong Zhang: Hmm, thanks Kelly. That's great insight. And just adding onto that, could you also share a little bit about what might be helpful for actuarial students to be

better prepared for entering the data analytics and overcome the challenge that you just mentioned?

Kelly Chu: Yeah, so definitely the two things that I've just mentioned, being aware the opportunities and also, getting that expertise or knowledge definitely comes with some effort from the student's part. So things such as getting some personal research or getting some firsthand experience. So, with personal research, I think speaking to professionals in the field personally, it helped me get a better understanding of what kind of work there is and also getting an idea of whether my interests or skillset aligns with what the professionals have experienced or what projects they've been on. A bit of a side plug but very relevant, are the university events such as those held by ASOC and our sponsor companies, many of which are in the data analytics field such as Quantium. So, these kinds of events, they're very accessible for students and it's the most accessible way to have these kind of insightful convos with practicing data analysts or actuaries.

So, I guess right off the top of my head, I can think of events such as the Actuarial Pathways event, which was held in collaboration with the Actuaries Institute, but we had some reps from all the different practice areas and then students got the opportunity to sit at alternating tables to engage in some insightful discussion with reps or people from that industry. So, the other thing is the industry mentoring program where you can get paired up with mentors in the industry you are interested in and then you can shadow them for a couple weeks to get some guidance into how to prepare to enter the industry.

Tong Zhang: Yeah, thanks Kelly for introducing us to such a good variety of resources such as university events, mentoring programs, or even taking courses to get credentials and case [study] competitions. And I'm pretty sure that's pretty helpful to our student [listeners]. Next question to Rohan. As a data practitioner and can you also provide insights into the difference between data analytics and actuarial science?

Rohan Dixit: Yeah, sure. To me, actuarial science is the application of data analytics to a specific set of problems. So, if you think of the skills required or, or used by a data analyst versus an actuary, like both of us are writing code to move data around or build statistical models to either understand how something works or how a system works or why something happened or to make a recommendation. Now that's exactly what actuaries do, right? And, and I'm maybe I'm not as familiar with what actuaries do within super, health and life as much, but I think it's very similar. So, they are using data because they need to understand what happened in the past and what might happen in the future and therefore, you know, make some recommendation for an insurance company or whatever, you know, problem they're trying to solve for. So, you know, to me there's a massive overlap and actuaries have basically been doing analytics for decades and this term data science and data analytics has just become a lot more prominent in, in kind of in society in the last 10 or so years. But I think it's just a massive overlap in actuarial science. So that's awesome for us because it means, you know, we're perfectly placed to be working in this field.

Tong Zhang: Mm-hmm. Yeah, that's great to hear about the common ground between, people who work in data analytics and as our actuarial professionals. I'm pretty sure the listeners are excited if they want to enter a new analytics era. And

our next question to Jas. With your recruiter hat, do you think is it possible to apply for DA [data analytical] or DS [data science] job without background in programming or without a specific data science degree or even taking coding courses?

Jas Singh: I think if you have a deep interest in analytics and data science, I think you're judged in the interview situation by how much keen interest you've shown in learning the programming codes. And that could be either taking university courses or the actuarial courses, as well as you know Coursera and other courses. It's certainly if you're not very strong in programming, but you have a nice subject matter expertise in general insurance life or health insurance, I think at the entry level or mid-level roles, companies might be more acceptable of you bringing in the expertise of the industry and helping you learn on the job, on the coding side of things. But outside that, in, in the broader media and FMCG, you need to have a core skillset set that you're bringing in. And that definitely revolves around the programming side of things. So, I'd encourage most young actuaries or even experienced actuaries to get into the programming world because that is the foundation of a career in data analytics, data science.

Tong Zhang: Mm-hmm. Thank you Jas. So just [to] summarise on what you just said. So, I think getting a credential or data science degree can be a great demonstration during the interview, about the interest or passion in entering to data analytics industry. And at the same time, I think more from an entry level role perspective, it will be more important to also show our industry expertise such as in general interest area and have some hands-on experience as well.

Jas Singh: Yeah, yeah. But you don't necessarily need a data science degree. Actuarial science degree is fine. As long as it's complimented with good technical hands-on, skill set and the programming side of things.

Tong Zhang: Yeah, that's really good. Thanks Jas. Before we switch to our second part, I want to ask this question to Rohan. What other suggestions or tips do you have for actuarial students who want to explore the DA [data analytics] or DS [data science] career options?

Rohan Dixit: I think the first thing is to be confident - that you have a great set of skills for a career in data science or data analytics, right? Like the actuarial degree, I did it. So I learned a lot of stats and maths and actually more critically, I learned how to apply that theory to problems. Now we learn in, in the degree you learn how to apply them to actuarial problems, but what you're learning is how to apply something abstract to something real. So you have a great set of skills for data science and data analytics. And so that, that would be, I guess the first thing. So just be confident. Don't feel like you, you know, you can't apply or you know, some, an engineer or com-sci person is better placed. That's not true. Like you are very well placed for a career in data science or data analytics.

The second thing I think is to try and understand, what the team you're applying for, what types of problems do they solve? Analytics and data science are not like regulated terms, right? Like anyone can label a job, "This is a data science role or a data analytics role." So, often you'll find that there's a data science role that really is more of a reporting role and they're just, you know, creating Tableau dashboards that get refreshed every week and that is the job. And that's not a bad job. You just need to decide if that is what you want out of an analytics career or a data science

career. So I would, you know, if you get the chance, try and research the types of problems that team solves. There are data science or analytics teams that solve problems that need predictive models, you know, writing code and moving data around at scale, and trying to come up with very commercial recommendations.

There are also teams that do what I said before, reporting or, you know, updating dashboards and stuff like that. It's all good. It all kind of depends on what you want to do. And I think the last thing is don't stress like the, the first job you get doesn't define your career. You know, you have lots of opportunities to try different roles in your career. So, I used to put, I was so stressed in uni when I was looking for a job, like everyone's singular goal in the last year of uni is trying to secure a job and it's super stressful and I can understand why. But you know, having now worked for 13 years, you know, the first job you get, isn't the last job you're going to get. And it, you know, your career can be whatever you want it to be. So just don't stress.

Tong Zhang: Yeah. Thanks Rohan. I like your idea about don't stress, especially when we're still looking for your <laugh> first job. Like the first job will never define your career and even just for the first role, even if it's not in a data analytics or data science career option, it can always give you a lot of transferable skills. Like you guys already mentioned, they're always common ground between data science and actuarial area. So yeah, I think be confident and appreciate our skillset is pretty important. So, thanks for the insight to us. And so just moving into the second part of our podcast, which targets actuaries with two or more years of professional experience. So again, Rohan and what interests you in data analytics or data science and what made you decide to pursue a career in those area rather than a traditional actuarial role?

Rohan Dixit: Yeah, I guess I didn't actually make a conscious decision to pursue a career in data science. I joined Quantium out of uni and at that time Quantium did actuarial work and they also did some data analytics and customer analytics work and I was very interested in doing my part three. So, I asked to join the insurance team within Quantium. So, I actually did traditional work for the first two or three years of my career, predominantly [doing] traditional actuarial work. So this is reserving and pricing in general insurance. So, that was most of my time was spent on that. And I love the work, I learned a lot from it. I'm super grateful for that experience because it taught me a bunch of core skills that actuaries with experience have that often other disciplines don't have. So, an example is, you know, we [actuaries] spend a lot of time reconciling data, right?

The, the first time you refresh any analysis, the first thing you do is can I reconcile historical data to what I had last time? And if it's different, I need to understand why before I proceed with the analysis. That is a very good habit that gets trained into actuaries that often doesn't get trained into other disciplines. And that, you know, I think gives us a competitive advantage in data science later because we have this, you know, kind of through training and habit, we have this kind of sixth sense, I guess of, of data quality and data checking and, and it's just ingrained into us, right? So, I'm very grateful that my career started there. I guess after a few years as Quantium grew, we got to do, I could see a lot of variety of work in other industries and that's the thing that drew me to those other industries.

So, it was less about not wanting to do actuarial and work and wanting to do data science. It was more, I just wanted variety in the types of problems I was solving and

the types of industries we were working in. And so, you know, working in retail for example, we are just exposed to other problems that you know, traditional actuarial roles are not exposed to. So an example is, you know, we have a team that's working on an algorithm to, to recommend how to stack a pallet. So, when we're loading a pallet into a truck to send to a grocery store, we send, you know, Coke bread, dishwashing liquid, you know, toilet paper, a whole bunch of stuff in one pallet and it's all stacked on one on top of each other and we wrap the pallet. And our team is working on an algorithm to say what's the best way to stack it.

Like if you put a packet of chips at the bottom and you know, 30 cans of Coke on top, it's going to crush the chips. So that's such a, an interesting non-linear, kind of non-traditional problem to solve. And it's those kinds of problems that really drew me to kind of I guess to those industries and because actuaries I guess, don't work in those industries traditionally and it's I guess we call it non actuarial work, but like I was describing before, it's the same sort of skills I use. I'm just using them in a different industry.

Tong Zhang: Thanks Rohan for sharing your experience. I guess, it's more about open to all the opportunities that are coming to us without being so conscious or like we mentioned before, too stressed about whether I should, which pathway we should go. And so next question for Jas. So from your perspective, how does a actuarial professional stand out from other candidates when entering the DA [data analytics] or DS [data science] industry? And what do you think other skills they might like?

Jas Singh: Yeah, good question. Look, I, think, actuaries first of all don't need to stress. That's the theme here about needing to stand out. You know they will stand out, if they meet certain criteria. The actuarial training is holistic. There's not many professions out there which are training, economic statistics, accounting, programming, actuarial science, contingent maths, pure maths. You know most professions are linear, they're trained in one or two things, they get good at. Actuaries tend to be good at actually seven or eight things and can actually excel in one or two things on top of these seven things. And so, they'll automatically stand out if they actually apply the basics of the training provided that they're very strong on the programming side of things cause that's the foundation like we've discussed before.

With that you know, if they've worked in the insurance industry for a year or two or consulting, if their communication skills, you know have been sharpened up as well, but dealing with a variety of stakeholders, they've been taught how to write effective emails, they've been taught how to question properly, how to verbally, articulate themselves. And this is how you really stand out in a profession which is dominated by such linear training. For example, people who have spent years doing PhDs till they're 30 - not taking anything away from them - but they have missed out on a lot of life learning and professional and business learning, which young actuaries bring. And this is how I think they stand out. What they lack, look, there's nothing particularly you can say, you know, the whole of the actuarial professional lacks. Where the individual might be lacking, who is not succeeding as much as the person next to them is probably application of their knowledge and confidence. You know, confidence takes you a long way and you are dealing with the unknown. You are defining the problems, before solving them. Quite often there is no precedence quite often you have to work from the basics and in a confidence in

your own ability and, and confidence in your own problem-solving ability is a key part of success.

Tong Zhang: Yeah, thank you Jas. I think highly resonate with what you just mentioned in terms of the soft skills that can be value, very value and sometimes can be taken [for] granted in terms of entering a new industry. I think in terms of being confident and then don't stress about entering into a particular era and just develop that soft skills which can be transferrable to everywhere in terms of dealing with unknown and uncertainties will be highly appreciated in regardless of the industry that we want to enter. So thanks so much. So next question for Kelly. Would you be interested in studying more to enter the data analytics or data science domain in the future?

Kelly Chu: Yeah, definitely. So I think out of all my courses, I've definitely enjoyed the data analytic courses a lot more. And I think from my placements as well, I've also enjoyed that kind of work a lot more than the traditional areas. So from these experiences, I think I've just developed a love for coding and that process of challenging myself to use the data to back my solution to a problem. So, I think from my courses last term, um, I think it was really fun to learn new coding languages, whether it was Python C or SAS, and then just applying it to solve all these different problems in different ways because each language is different from the other. But they all kind of parallel in the same way as well. So I think in that way it really keeps my mind engaged and I think I just really love a good challenge to find the optimal way to solve the problem. So, I think I would definitely be interested in studying more to enter the domain as a way of pushing myself intellectually, to keep my skills fresh and as Jas mentioned, like aligning my skills with industry. So in the future, I think definitely once I get up to it, fingers crossed, I'm hoping to do the data science applications module for my part three actuarial qualifications.

Tong Zhang: Thanks, Kelly. That sounds exciting. I'm pretty sure the skills that we develop in terms of problem solving, define or break down abstract problems that we already touch based in our university degree will kind of help us to apply those skills when even doing the courses in the data science domain. So thank you. And so, our next question to Jas, how do you see the demand of DA [data analytics] or DS [data science] professionals compared to actuaries in the future? Would you anticipate more actuaries pursuing a career in data?

Jas Singh: There's a few parts to this question. The actual actuarial roles are actually increasing. So, despite the focus on the analytics roles, the actual core need for traditional actuaries, is actually increasing, is what we are observing. The Institute Actuaries here is producing a lot more actuaries. And of course, some of them will be applying themselves elsewhere. I can see more and more actuaries as a percentage of the total group increasing and working in the analytics side of things. That's because the, the ocean of opportunities is much bigger. I mean, it's much bigger than insurance, so therefore there's, a lot more jobs and therefore, there'd be a lot more people going there. The good thing here is people have a choice. They can have an equally good career in the more traditional actuarial side, as well as I think as actuaries prove themselves more and more in the analytics, they are becoming more and more in demand. So, the actuary brand is getting more and more valued. So there's more and more opportunities opening up for young graduates in, in the pure analytics roles. So yeah, the answer is yes, but not because the traditional area is shrinking. They're both quite, quite good career[s].

Tong Zhang: Thank you so much, Jas. I think regardless the career path we choose eventually it's more about which part are we more interested in, which part are we more passionate about? And I think in terms of the demand of the data and analytics or data science, it might be targeting into a more variety of the industry compared to traditional actuaries area, which might be a key factor that is bring more interest to the actuarial professionals. So, thank you so much Jas. And Kelly, so, a question for you, after a couple of years, would you feel like you might be wanting to transitioning into the data science or data analytics area?

Kelly Chu: Yeah, I think definitely it's something that I would be very interested in doing just [be]cause my interests and strengths align pretty well with the data analytics field from what I've heard so far. So also, just wanted to point out from a student perspective how good the discussion has been so far in helping me learn more about the parallels between actuarial and data. So, I hope a lot of students listening to the podcast also feel much more confident and informed after hearing the great expertise from Rohan and Jas. I think from what Rohan said, it's very exciting how it's a rapidly growing field with applications that are so diverse and so relevant. So, it's definitely something that I want to be part of.

Being able to tackle problems such as climate change or to help a business improve operations with a data focus approach is something that really appeals to me and I would love to get exposure to this field.

So, I think that's also one of the reasons that motivated me to choose Finity for my grad role because there were a lot of opportunities to experience both that traditional and non-traditional areas of actuarial and that fast-paced project-based team set up really helps me to get that scope of work. So, I think from there, I think over the next couple years I want to try and experience which side I enjoy the most, but for the moment, at the moment, I'd like to live in the best of the both the worlds of actuarial and data analytics and experience as much as I can.

Tong Zhang:

Thank you, Kelly. I think it sounds exciting and great to be entering into a role where we don't give up our actuarial skillset, but at the same time get to get in touch based on a variety of the industry and finally decide on which way we want to go. Yeah, thank you Kelly. Jas, I guess a couple of speakers have already mentioned about this, and again, from your recruitment perspective, do you observe transferable skills from actuaries working in the traditional domain to data analytics, data science domain? I know you already mentioned something about our soft skills in terms of business communication. What else do you observe that you want to share with us?

Jas Singh: I mean there's a number of skillsets and I think people who worked in the traditional pathway, can carry quite a good amount of hard skillset with them as well. They've been mentored by, you know, senior actuaries whom, have shown them how to analyse numbers, how to really understand their granular messages coming out of the trends, how to apply a lot of common sense as opposed to believing in statistical noise, how to put that in a report which actually makes sense, how to look at the management's concerned and what business problems they're solving and how they're going to challenge you, because they are - nobody's going to believe you on the face value. And how do it stand that challenge and how do

actually make your point when you're challenged as opposed to just coming up with a cool idea and not having any legs to stand on.

I think that the hardness of the actuarial training, is massively valued out there and that's very transferrable. In addition to obviously the softer skills and the other things mentioned earlier about communication, et cetera. But having said that, the analytics world has a life of its own. It has its own ways, it has its own ethics and not so much work ethics rather and, ways of doing things. And it does actuaries do have to adopt and observe as to how the data scientists run their world and become part of it. So, that adaptability is also necessary when moving into data science world.

Tong Zhang: I guess the key message, is that actuaries is already good enough. Just be confident and appreciate the skillset in terms of problem solving, analysing complex problem and as long as adding into the soft skills part we already mentioned about adaptability, about when you change to a new role, how do you adapt to that uncertainty and how do you deal with that unknown issues. So, thanks Jas for the insights.

Jas Singh: Yeah, yeah, no, just a couple of things then. Not so much, the adaptability is super, super different to just having the soft skills. It's actually, because you are going to different world, you must go all out to try and understand it and even trying to have mentors who are non-actuaries or data scientists

and you must truly adopt to that world to get most out of it. And you know, just the language and the way they operate is different. So, that's really important in addition to everything else.

Tong Zhang: Yeah, I like your idea about finding someone who is already experiencing that and treat them as a mentor. And I think Kelly also mentioned from our part one as a student perspective, join a mentoring program, get in touch with the people who already have professional experience, can be pretty helpful in terms of leading them, provid[ing] some guidance.

Tong Zhang: Before we wrap up, I think our last question needs to [be from] Rohan. Um, do you have any advice for the actuarial professionals who are interested in changing career path or understanding more about the DA [data analytics] or DS [data science] industry? I know you probably already mentioned some of the points or do you have any ideas that you want to add as the last question?

Rohan Dixit: I think spend some time speaking to people in the industry and, you know, even better if they're ex actuaries or, um, doesn't, don't have to be, but really try and understand the different roles within analytics and data science. And I think I mentioned before, it's a really broad, broadly used term. So, you know, you should talk to a bunch of people, understand the different roles that are out there and this will help you understand whether it's a field you might want to go into, right? So, there's, the other thing I would say is there's no perfect industry or discipline, right? Like everyone has its pros and cons, so you just need to assess for yourself if the pros of moving into data science outweigh the cons and the pros will likely be a greater variety of work over your career compared to a traditional actuarial role.

And as a result, a broader set of skills that you will develop. And the, you know, an important pro for me is, is the growth in the industry is just massive, right? So it'll

continue growing for many years to come and that, you know, just adds to the variety, adds to the learning and the opportunity. So, the that's the kind of all the pros and the, the great stuff about the move. And there are some cons, like it's a less structured career path. You know, when I was a, it was really when I started my career, there was a really clear career path if I wanted to progress within the actuarial field, right? I start as an actuarial analyst, I then, you know, do my professional exams, I become an actuary, I get to make more decisions and eventually I might write some ILVR and FCR reports if I'm in the reserving space or I'll become a pricing actuary and get to decide how we price insurance policies.

This is all in general insurance. So, it's a very structured career path. You kind of know the skills you need to learn over your career. Whereas in data science, it's, it's like the wild west, like it's, it's not structured at all. You can have a great career just writing code most of your life or you can have a great career, being in a very kind of corporate role and not writing code but running teams that are doing data science. So, some people like the lack of structure, some people don't like the lack of structure, so work out what's best for you. And I also think it's harder to judge a role within data science. So, two, if two companies are advertising, you know, senior data scientist it's often, not the same thing. One might be running a team of data scientists or doing very complex work.

The other one might be you are doing reporting and the title just happens to be the same. Whereas in actuarial, if you see two ads for a, you know, short-tale pricing actuary, you generally know those jobs will need very similar skills. And so, you know, that, that makes it a bit harder, I suppose to, when you're moving around within the data science field to know what's a good role. And that's, again, some people

enjoy that the I guess chaos or uncertainty or sense of adventure that comes with it, but other people will not enjoy it. So, you know, again, there's no good or bad. I love my time in doing an actuarial role and I love my time doing data science role. So you just have to work out what's right for you. And if you're, if you are already in a role that's doing coding and you know, building stats models, then you know, you're probably really well placed to move into a, you know, a data science role. So just take the leap. It's, it's a fun industry to be in.

Tong Zhang: Yeah, I like your message about there is no perfect industry or perfect role. Every role has its pros and cons. And then I think the important thing is about understanding what the role is, what kind of skill that it requires, and how that aligns with the professionals past experience. So, thank you so much. And so, I think that's the end of our part one, part two section. So, I want to say thank you again to Jas, to Rohan and Kelly for joining me today in the Actuary's Institute Podcast. And thank you to our listeners. We hope we enjoy this discussion. And if you want to listen to more Institute of Actuaries Podcast, you can do that by visiting the podcast section of the Actuaries Digital or through all mainstream podcast apps. And you can also continue with the conversation with us on social media by tagging Actuaries Institute. We'd love to hear from you. So, speak to you guys next time.

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