

Career Profile: Dominic Thorrrington MIMA

Job Title: Research degree student, London School of Hygiene & Tropical Medicine.

Number of years in current position: 2 years.

Qualifications:

MSc Modern Epidemiology, BSc Mathematics.

What stimulated your interest in maths, and when?

It's difficult to choose one particular point in time but I certainly enjoyed mathematics more than the other subjects at school. My teacher was incredibly helpful in encouraging me to study the subject at a more advanced level after GCSE and to consider the further applications of the tools we acquired in the classroom. My teachers at A-level were equally encouraging. One additional source of inspiration was the book *Zero: the biography of a dangerous idea* by Charles Seife – I bought this at the National Air and Space Museum in Washington DC and loved it. This was my first real taste of mathematics outside of textbooks. My collection of mathematics/popular science books has since expanded somewhat.

What influenced your career choice?

Curiosity – after being introduced to mathematical epidemiology during my degree I wanted to continue exploring it with an optional research project in my final year. After that I still wanted to understand the methods and applications more, so I studied further at postgraduate level. At that point I felt equipped with the tools to go for the final piece of the jigsaw – a PhD in the subject – before then embarking on a career exploring this field. But it all started with unanswered questions and curiosity.

Could you briefly describe the organisation you work for?

The London School of Hygiene and Tropical Medicine is a university specialising in postgraduate study and research in health. Students come to study from all over the world and from a huge variety of academic backgrounds. I study in the Centre for the Mathematical Modelling of Infectious Diseases with a group of mathematicians, physicists, statisticians, economists and others. Our focus is on modelling infectious disease outbreaks and understanding the possible impact of various potential control programmes.

Could you explain what you do on an average day at work?

At the moment my focus is on my modelling work – I'm simulating influenza epidemics in a population of school children and looking to understand what heterogeneous vaccination uptake would mean for the new influenza vaccination programme being rolled-out over the coming years. This involves running scripts written in R to simulate the epidemics, produce charts and create CSVs that need analysing at a later date. Other than that, I have a few contributions to papers to finalise. I also get to teach on our Basic Maths course each year, helping students from non-mathematical backgrounds get up-to-speed with the basics they'll need for the statistics courses in their MSc programmes.

What do you like most about your job?

Variety – plenty of research with a bit of teaching. In the future the balance will be addressed to include more teaching on our mathematical and statistics courses, but I've got plenty of thoroughly interesting research to conduct here too. I also get to work with people who use their mathematical knowledge to shape public health programmes in England and elsewhere so it's a front seat to seeing the incredible impact of mathematics on our lives.



Which skills do you consider to be essential for your current job?

I believe that graduating PhD students tend to only realise how to study for a PhD once the thesis has been submitted, but in an attempt to break from tradition I would prioritise time-management, critical thinking and creativity in approaching problems. A PhD topic can be incredibly expansive and this could become overwhelming if you don't focus on your core questions and core issues, so the ability to ask the right questions is key.

How did you get your current job and what were the steps you took from graduation?

After graduating I won a stipend to study for an MSc in Modern Epidemiology which allowed me to explore the applications of mathematics in healthcare and public health. This was essential for my eventual application to the PhD programme at my current institution, but prior to that I worked as an analyst in different NHS commissioning roles. I wanted a little bit of work experience under my belt before returning to academia. Throughout that period I kept my interest in mathematics alive by reading popular science books in the field and attending lectures at different London institutions.

How do you use your degree in your current job?

Various aspects of the work covered in my degree are essential for everyday tasks. For example, when teaching the foundations of mathematical modelling to keen MSc students I start from precisely where my lecturer started on an Applied Mathematics module in introducing the basic model and associated theory. When running simulations of infectious disease epidemics with statistical packages I'm using the skills acquired during both my BSc and MSc courses in both coding scripts and analysing outputs. The real fun comes when I explain to friends and family why a mathematics degree is used to study infectious diseases.

Is IMA membership encouraged by your company?

My supervisor (Dr Ken Eames FIMA) encouraged me to apply.

Does IMA membership help you in your career?

Time will tell but I'd like to think that it shows a dedication to promoting the applications of mathematics in different settings.

Do you have CMath, CMathTeach or CSci?

No. I'm tempted to say 'not yet', we'll see.

Is there any advice you may have for other individuals considering your career path?

Well if people are already considering it then that's one battle already won – we need great mathematical minds out there in industry but we also need them back in research to further our understanding of issues, working to solve complex problems and developing the tools required to achieve these goals.

The biggest attraction for me is that alongside the chance to satisfy my curiosity with research I get to teach others about my field and directly influence their career paths. The next crop of academics are being taught the skills necessary by their supervisors and professors, so I hope to continue that in the future.

What are your future career plans?

The next logical step is to undertake post-doc research. I hope to remain in my field of vaccination and public health and to continue both developing and using mathematical models of infectious diseases.

I am very keen to be involved in lecturing and tutoring, as well as eventually supervising PhD students too.