

A UROP perspective by Niamh Arthur

Summer 2022 (undertaken in the Department of Mathematics)

Niamh was a year 2 undergraduate at Imperial College London in 2021-2022: MSci Mathematics, Department of Mathematics

UROP title: Orphans from all-cause mortality in the US

Choosing to do a UROP came naturally to me: I was going into 2nd year after a covid-affected 1st year experience and did not feel ready to go into the world of corporate internships and their intensive application processes. I didn't even have a CV! However, I knew I had an interest in research. When I was 15 years old, I shadowed a PhD student in a biochemistry lab and enjoyed it. Since then, my academic path had changed; I am studying mathematics, and the lab environment isn't typically where a Maths PhD would end up. Having a chance to experience research in my preferred line of study was something I thought would be really useful in choosing where I might go after my degree ends.

Once I had found out about the scheme, I started to plan which academic/research staff I would like to approach. Importantly, I decided I wasn't going to do a UROP without funding (so I needed to find someone who would be willing to assist me with a bursary application), nor would I do one in an area I'm not interested in. I just didn't see any benefit in that. During November of my 2nd year, I attended an "Inspirational Lecture" - extra-curricular optional lectures held by the Maths department for undergraduate students - held by Oliver Ratmann who was the professor who would become my supervisor for this project. The research his team did was in epidemiology - something I follow a lot of on twitter.

I emailed him (amongst other members of staff in many departments) in January about doing a UROP with his team, and (after another student had dropped out of their UROP...so never give up!) I was offered a place. I began the application for funding as soon as I could, with the support of my supervisor. Knowing the dates of deadlines is really important throughout the UROP process - I'd recommend keeping on top of that. With the support of Oliver, I was successful in obtaining an EPSRC vacation bursary via the Imperial College UROP bursary scheme and that allowed us to confirm the dates of my research experience. This was all sorted by early April, so I had time to focus on my exams without worrying about the summer.

For my UROP, I wasn't required to do any specific preparation. Since the project lies within my interests, I was already taking (and paying attention to!) the optional modules that would have been beneficial for this project. After all my deadlines had finished, I met the team, started reading research papers that they had written, and tried to familiarise myself with their code.

Meeting the research group was daunting, but everyone was really nice and it actually wasn't anything to worry about. However, to begin with I felt quite out of place, with much less understanding than the rest of the team, and it was almost embarrassing? Despite that the experience has certainly increased my confidence, and I'd mostly credit that to the bi-weekly in-person group meetings. Having the opportunity to speak to people in different stages of a research career, with different backgrounds was really useful. They gave me lots of ideas and thinking points for my own future!

The work itself was tricky at points. My project was very independent, and while that wasn't an issue, it was quite a shift from the taught modules I had studied all year. I learnt to enjoy it

though! I taught myself various R packages, and produced interesting figures. Not only did I discover how I learn and work best, but also how statistical research works. Over half of my project was spent on the data collection stage - which one of the postdocs I met had said was expected. I never would have imagined that.

For a little while, the UROP put me off doing a PhD after my studies, but once I got into the routine of it, I really enjoyed the style of work I was doing, and I was invested in my research. I found myself smiling when telling others about it - which definitely wouldn't have happened if I wasn't enjoying it! I don't think the overall experience has made me want to change how I will spend the rest of my degree here. The modules I wanted to take before this project had connections with this UROP, and I haven't been put off. If anything it has reinforced that statistics and computational modules are where I want to focus my attention, and my confidence in those areas has vastly improved.

Next year I would like to try for an internship in industry, in some kind of data science role (not dissimilar to the line of work I was in this summer). The confidence I have gained throughout my UROP has readied me for that corporate world, and I'd like to try it to know whether it's a career prospect for me. That said, I would not at all be opposed to taking another UROP if the industry applications don't lead anywhere. I'm still undecided on doing further study after I get my masters, but this UROP has been a positive experience for me to look back on when the time for that decision comes.