

# Matthew Knowles

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## EDUCATION

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### University of Sheffield

Sheffield, UK

*MSc, Statistics with Medical Applications*

*September 2022 – Present*

- Studying part time while working at OPEN Health
- Modules in time series, bayesian statistics, medical statistics, and economic modelling
- Dissertation: Parametric and Non-Parametric Methods for the Survival Analysis of Pancreatic Cancer

### University of York

York, UK

*MMath (Hons), Mathematics, Grade: 2:1*

*October 2018 – June 2022*

- Specialised in Statistics and Financial Mathematics in year 4. Focused on Pure Mathematics and Statistics in years 1-3
- Key modules included financial maths, portfolio theory, and bayesian statistics.
- Third year project: On Differential Equations in in-host Viral Pathology (70%)
- Final year project: Statistical Methods for Resetting Score Targets in Limited-Overs Cricket (72%)
- Recived full colours for representing the university at cricket

## EXPERIENCE

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### Statistician

June 2022 – Present

*OPEN Health Evidence and Access*

*London, UK*

- Worked on building and maintaining in-house R packages for survival analysis
- Performed and reported on the survival analyses of four clinical trials for submissions to health technology assessment agencies
- Performed a network meta analysis in multiple myeloma
- Gave two internal talks about network meta analysis methodologies
- Developed a Shiny app to interface with a discrete event simulation
- Developed an analytics pipeline in VBA and Python from Excel to PowerBI to enable senior consultants to easily track their revenue
- Wrote statistical analysis plans for trial analyses and network meta analyses

### Research Intern (Mathematical Finance)

July 2021 – September 2021

*Department of Mathematics, University of York*

*York, UK*

- EPSRC-Funded research internship
- Working on algorithms for finding convex envelopes of a given set of functions
- Review current and past literature to identify possible improvements
- Implementing algorithms using Python and looking for improvements in efficiency.

### Research Intern (Bioinformatics)

July 2020 – September 2020

*Department of Biology, University of York*

*York, UK*

- Developed a pipeline in Python for using the Burrows-Wheeler-Aligner and SAMTools to collect, sequence, align and call the peaks of ChIP-Seq data
- Created an R pipeline to apply machine learning libraries to the acquired data
- Identified transcription factors for further study into breast cancer treatment

### Research Intern (Particle Physics)

July 2017 – August 2017

*School of Physics and Astronomy, University of Birmingham*

*Birmingham, UK*

- Nuffield Foundation summer research placement
- Using Python to visualise HiSPARC Cosmic ray data through Matplotlib
- Applying statistical methods to the data to locate stars which are potential sources of cosmic radiation
- Presented results at the 6<sup>th</sup> annual HiSPARC conference at the University of Bath

## PROJECTS

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### Parametric and Non-Parametric Methods for Survival Analysis

June 2023 – Present

- Collected publications on Pancreatic Cancer trials
- Digitised published Kaplan-Meier curves
- Developed an R package to standardise the survival analysis functions and extracting results for the thesis

### Statistical Methods for Resetting Score Targets in Limited-Overs Cricket

October 2021 - April 2022

- Wrote python scripts to clean large amounts of match data
- Performed exploratory data-analysis using R
- Built and trained a neural network to predict cricket scores
- Built an R package for reproducible results

### Differential Equations in Viral Pathology

September 2020 - March 2021

- 3<sup>rd</sup> year group project, looking at deterministic vs stochastic differential equations, achieved 70%
- Wrote a Python program to graph the evolution of an infection in a host's cells
- Organised, chaired, and took minutes at group meetings.

## SKILLS

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**Programming Languages:** R, Python, C/C++, Stan

**Developer Tools:** Git, Vim, VS Code, Rstudio Server, Rstudio Desktop

**Communicative Languages:** English, Norwegian

**Presenting:** Experienced at creating and giving talks/presentations in both Beamer and PowerPoint

**Other:** Excel, VBA, PowerBI, RShiny, Tidyverse, R package development, L<sup>A</sup>T<sub>E</sub>X

## CLINICAL TRIALS

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**CLL13 (NCT02950051)** A Phase 3 trial in chronic lymphocytic leukemia

**ZUMA2 (NCT02601313)** A Phase 2 trial in relapsed/refractory mantle-cell lymphoma

**CM9ER (NCT03141177)** A Phase 3 trial in advanced/metastatic renal cell carcinoma

## PROFESSIONAL MEMBERSHIPS

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Associate Member, Institute for Mathematics and its Applications

Royal Statistical Society