James Hogg

PhD Student

School of Mathematical Sciences, Queensland University of Technology

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I am a statistician currently studying for a PhD in the School of Mathematical Sciences at the Queensland University of Technology (QUT). Focused on generating small area level estimates of cancer risk factors for the globally recognized Australian Cancer Atlas, my research is driven by a passion for making research more accessible, as well as a commitment to utilizing Bayesian inference and spatial modeling to enhance the field of cancer research. My teaching experience, together with the awards I've received for presentations and invited talks, attest to my proficiency in conveying complex statistical ideas to a wide audience. With my dedication to advancing the field of cancer research and a deep-seated enthusiasm for exploring the potential of Bayesian inference and spatial modeling, I am poised to make a significant contribution to either academic or industry roles.

Research interests

R, tidyverse, Stan
Spatio/hierarchical modelling
Bayesian inference
Spatial variation in cancer outcomes
Visualisations/mapping

Education and qualifications

Doctor of Philosophy, Statistics

Brisbane, Australia

Queensland University of Technology (QUT) *2021 (ongoing)*

- Full-time equivalent
- PhD funded by the internationally-awarded Australian Cancer Atlas

Graduate Statistician (Gstat) Accreditation

Statistical Society of Australia *2021 (ongoing)*

Master of Biostatistics

Virtual

University of Queensland (UQ) *2018-2020*

- Provided by the Biostatistics Colloboration of Australia
- GPA: 7.0
- Dean's Commendation for Academic Excellence (2018 & 2019)
- Thesis complete at Cancer Council Queensland

Bachelor of Music with Distinction

Brisbane, Australia

Queensland University of Technology (QUT) *2015-2017*

- Minor in statistics (4 units)
- GPA: 6.5
- Dean's Award for Excellence (all 6 semesters)

Queensland Certificate of Education

Brisbane, Australia

Indooroopilly State High School *2010-2014*

- Overall Position (OP): 1
- Best All Rounder Award 2014
- Parents and Citizens' Music Award 2014

Employment

Instructor/presentor of High Performance Computing (HPC) training

Virtual

Department of Health, Western Australia (DoHWA) *November 2023*

- Two-hour intensive training on the use of QUTs HPC for Bayesian modelling
- Created detailed manual and R scripts for future reference

Supervisor (casual) *Virtual*

Environmental Protection Authority (EPA) Victoria *May 2023 - August 2023*

- Supervisory of QUT research assistant
- QUT and EPA colloboration to create a R Shiny app to visualise spatial data

Research assistant (part-time) *Virtual*

Department of Health, Western Australia (DoHWA) *November 2022 (ongoing)*

- Consulting on bayesian modelling

Instructor/presentor of Bayesian training *Perth, Australia*

Department of Health, Western Australia (DoHWA) *November 2022*

- Three days of intensive training on Bayesian spatial temporal analysis

Internship (full-time) *Virtual*

Department of Health, Western Australia (DoHWA) *August - November 2022*

- Project: Bayesian modelling
- Supervisors: Dr Susanna Cramb, Dr Alex Xiao
- Recommended spatio-temporal models for a wide range of health data
- Provided lengthy and detailed reports giving the details of spatio-temporal models
- Created detailed and large R code scrips to run a variety of models
- Created training materials for 3-days of intensive Bayesian spatio-temporal course

Research assistant (part-time) *Brisbane, Australia*

Queensland University of Technology (QUT) *October 2021 - March 2022*

- Project: Modifiable areal unit problem (MAUP) in disease mapping
- Co-investigators: Dr Susanna Cramb, Ass. Prof. Helen Thompson

Tutor (casual) *Brisbane, Australia*

Queensland University of Technology (QUT) *September - November 2021*

- Course title: Quantitative Skills for Health Scientists (LQB286)

Marker (casual) *Virtual*

University of Queensland (UQ) *July 2021 - October 2022*

- Course title: Categorical Data and Generalised Linear Models (STAT7608)
- Course title: Regression Modelling 2 (STAT7619)
- Course title: Applied Regression Analyses (PUBH7631)

Professional service

UN Datathon *Brisbane, Australia*

United Nations *November 2023*

Co-chair of Bayesian Research and Applications group (BRAG) *Brisbane, Australia*

Queensland University of Technology (QUT) *June 2022 (ongoing)*

- Organiser of fortnightly internal talks on Bayesian research

Volunteer *Virtual*

Good Data Institute (GDI) *March - June 2023*

Organiser and host *Virtual*

StanConnect 2022: Stan through space and time *July - November 2022*

- 10 speakers from 8 countries
- Over 100 virtual attendees

Master's Thesis *Virtual*

Cancer Council Queensland *March - October 2020*

- Title: "Influence of individual- and area-level socioeconomic factors on breast cancer stage at diagnosis: A multilevel approach"

Selected research presentations

Contributed session (planned) *Virtual*

Australian Statistical Conference *December 2023*

- Title: Solutions to sparsity in small area level survey statistics: Mapping the prevalence of cancer risk factors in Australia

Short talk *Virtual*

Early Career Researcher Cancer Epidemiology Conference *November 2023*

- Title: Mapping the prevalence of cancer risk factors at the small area level in Australia

Invited session *Ottawa, Canada*

64th International Statistical Institute World Statistics Congress *July 2023*

- Title: Advances in small area estimation for severely sparse data

Invited talk *Virtual*

Epidemiology in Government (EIG) Special Interest Group (SIG) meeting *December 2022*

- Title: Mapping Cancer: The Australian Cancer Atlas

Short talk *Virtual*

SPARSE Symposium *November 2022*

- Title: Risk factors and the Australian Cancer Atlas: the trepidation of instability and sparsity in small area estimation

Short talk *Virtual*

Second Early Career Researcher Cancer Epidemiology Conference *November 2022*

- Title: Risk factors and the Australian Cancer Atlas: the trepidation of instability and sparsity in small area estimation

Poster presentation *Montreal, Canada*

International Society of Bayesian Analysis (ISBA) World Meeting *June 2022*

- Title: Introducing a Bayesian two-stage logistic-normal model for small area estimation of proportions

Poster presentation *Montreal, Canada*

The Bayesian Young Statisticians Meeting *June 2022*

- Title: Introducing a Bayesian two-stage logistic-normal model for small area estimation of proportions

Short talk *QUT, Brisbane, Australia*

QANZIAM Conference *June 2022*

- Title: Searching for stability in Bayesian small area estimation of proportions

Contributed talk *Virtual*

Small Area Estimation, Surveys and Data Science *May 2022*

- Title: Searching for stability: Introducing a method of small area estimation for proportions using severely sparse data

Short talk *Moreton Island, Australia*

ACEMS Final Retreat *November 2021*

- Title: Modelling cancer risk factors in Australia

Selected publications

arXiv preprint (2023) - under review at the *International Statistical Review*

J Hogg, J Cameron, S Cramb, P Baade, K Mengersen

- A Two-stage Bayesian Small Area Estimation Method for Proportions

arXiv preprint (2023) - accepted in the *International Journal of Health Geographics*

J Hogg, J Cameron, S Cramb, P Baade, K Mengersen

- Mapping the prevalence of cancer risk factors at the small area level in Australia

***Spatial and Spatio-temporal Epidemiology* (submitted)**

J Hogg, K Staples, A Davis, S Cramb, C Patterson, L Kirkland, M Gourley, J Xiao, W Sun

- Improving the spatial and temporal resolution of burden of disease measures with Bayesian models

Awards

Best Oral Presentation Award

Third Early Career Researcher Cancer Epidemiology Conference *November 2023*

First place in Hackathon

Good Data Institute (GDI) *June 2023*

- Hackathon with BioGrow (NZ NFP)

2023 SuperHERO

Health Equity Research with Outcomes *April 2023*

Best Oral Presentation Award

Second Early Career Researcher Cancer Epidemiology Conference *November 2022*

Honourable Mention for Best Student Presentation

QANZIAM Conference *June 2022*

QUT Centre for Data Science and Cancer Council QLD Scholarship

Doctor of Philosophy, Statistics *April 2021*

- $30,000 p.a. for 3.5 years during PhD studies.

Star Graduate

Biostatistics Colloboration of Australia *December 2020*

Professional memberships

Statistical Society of Australia (SSA)
International Society of Bayesian Analysis (ISBA)
Centre for Data Science (CDS)
Health Equity Research with Outcomes (HERO)

Software

Statistical: R, Python, Stata
Writing: MS Office suite, Latex, Endnote, Mendeley
Terminal: Git Bash, Unix
Bayesian computation: Stan, nimble, WinBUGS, JAGS, pymc
Productivity: Sunsama, Zoom
Visualisation: Gggplot2, Canva, Lucidchart
Core R packages: tidyverse, shiny, Rmarkdown