

# 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

QUEENSLAND UNIVERSITY OF TECHNOLOGY (QUT)

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

Brisbane, Australia

2021 (ongoing)

### Graduate Statistician (Gstat) Accreditation

STATISTICAL SOCIETY OF AUSTRALIA

2021 (ongoing)

### Master of Biostatistics

UNIVERSITY OF QUEENSLAND (UQ)

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

Virtual

2018-2020

### Bachelor of Music with Distinction

QUEENSLAND UNIVERSITY OF TECHNOLOGY (QUT)

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

Brisbane, Australia

2015-2017

### Queensland Certificate of Education

INDOOROOPILLY STATE HIGH SCHOOL

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

Brisbane, Australia

2010-2014

## Employment

### Instructor/presenter of High Performance Computing (HPC) training

DEPARTMENT OF HEALTH, WESTERN AUSTRALIA (DOHWA)

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

Virtual

November 2023

### Supervisor (casual)

ENVIRONMENTAL PROTECTION AUTHORITY (EPA) VICTORIA

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

Virtual  
May 2023 - August 2023

### Research assistant (part-time)

DEPARTMENT OF HEALTH, WESTERN AUSTRALIA (DOHWA)

- Consulting on bayesian modelling

Virtual  
November 2022 (ongoing)

### Instructor/presenter of Bayesian training

DEPARTMENT OF HEALTH, WESTERN AUSTRALIA (DOHWA)

- Three days of intensive training on Bayesian spatial temporal analysis

Perth, Australia  
November 2022

### Internship (full-time)

DEPARTMENT OF HEALTH, WESTERN AUSTRALIA (DOHWA)

- 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

Virtual  
August - November 2022

### Research assistant (part-time)

QUEENSLAND UNIVERSITY OF TECHNOLOGY (QUT)

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

Brisbane, Australia  
October 2021 - March 2022

### Tutor (casual)

QUEENSLAND UNIVERSITY OF TECHNOLOGY (QUT)

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

Brisbane, Australia  
September - November 2021

### Marker (casual)

UNIVERSITY OF QUEENSLAND (UQ)

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

Virtual  
July 2021 - October 2022

## Professional service

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### UN Datathon

UNITED NATIONS

Brisbane, Australia  
November 2023

### Co-chair of Bayesian Research and Applications group (BRAG)

QUEENSLAND UNIVERSITY OF TECHNOLOGY (QUT)

- Organiser of fortnightly internal talks on Bayesian research

Brisbane, Australia  
June 2022 - December 2023

### Volunteer

GOOD DATA INSTITUTE (GDI)

Virtual  
March - June 2023

### Organiser and host

STANCONNECT 2022: STAN THROUGH SPACE AND TIME

- 10 speakers from 8 countries
- Over 100 virtual attendees

Virtual  
July - November 2022

### Master's Thesis

CANCER COUNCIL QUEENSLAND

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

Virtual  
March - October 2020

## Selected research presentations

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### Contributed session (planned)

AUSTRALIAN STATISTICAL CONFERENCE

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

Virtual  
December 2023

## Short talk

EARLY CAREER RESEARCHER CANCER EPIDEMIOLOGY CONFERENCE

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

Virtual  
November 2023

## Invited session

64TH INTERNATIONAL STATISTICAL INSTITUTE WORLD STATISTICS CONGRESS

- Title: A solution for Sparsity and Instability: Introducing a Two-Stage Bayesian Method of Small Area Estimation for Proportions

Ottawa, Canada  
July 2023

## Invited talk

EPIDEMIOLOGY IN GOVERNMENT (EIG) SPECIAL INTEREST GROUP (SIG) MEETING

- Title: Mapping Cancer: The Australian Cancer Atlas

Virtual  
December 2022

## Short talk

SPARSE SYMPOSIUM

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

Virtual  
November 2022

## Short talk

SECOND EARLY CAREER RESEARCHER CANCER EPIDEMIOLOGY CONFERENCE

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

Virtual  
November 2022

## Poster presentation

INTERNATIONAL SOCIETY OF BAYESIAN ANALYSIS (ISBA) WORLD MEETING

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

Montreal, Canada  
June 2022

## Poster presentation

THE BAYESIAN YOUNG STATISTICIANS MEETING

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

Montreal, Canada  
June 2022

## Short talk

QANZIAM CONFERENCE

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

QUT, Brisbane, Australia  
June 2022

## Contributed talk

SMALL AREA ESTIMATION, SURVEYS AND DATA SCIENCE

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

Virtual  
May 2022

## Short talk

ACEMS FINAL RETREAT

- Title: Modelling cancer risk factors in Australia

Moreton Island, Australia  
November 2021

## Selected publications

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

J HOGG, J CAMERON, S CRAMB, P BAADE, K MENGENSEN

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

### Published 2023 - *International Journal of Health Geographics*

J HOGG, J CAMERON, S CRAMB, P BAADE, K MENGENSEN

- 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

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### Best Oral Presentation Award

THIRD EARLY CAREER RESEARCHER CANCER EPIDEMIOLOGY CONFERENCE

November 2023

### First place in Hackathon

GOOD DATA INSTITUTE (GDI)

- Hackathon with BioGrow (NZ NFP)

June 2023

### 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 COLLABORATION OF AUSTRALIA

December 2020

## Professional memberships

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Statistical Society of Australia (SSA)

International Society of Bayesian Analysis (ISBA)

Centre for Data Science (CDS)

Health Equity Research with Outcomes (HERO)

## Software

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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: Ggplot2, Canva, Lucidchart

Core R packages: tidyverse, shiny, Rmarkdown