

# Nicholas Tierney

RESEARCH SOFTWARE ENGINEER

Telethon Kids Institute

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## Education

### Ph.D. Statistics

QUEENSLAND UNIVERSITY OF TECHNOLOGY

- Thesis Title: "Statistical Approaches to Revealing Structure in Complex Health Data"
- Primary Supervisor: Professor Kerrie Mengersen

Brisbane, QLD, Australia

2013 - 2018

### Bachelor of Psychological Science (Honours)

UNIVERSITY OF QUEENSLAND

- Thesis Title: "How sharp is sharp? The effect of monocular texture on enhancing sharpness"
- Primary Supervisor: Dr. Philip Grove

Brisbane, QLD, Australia

2008 - 2012

## Employment

### Research Software Engineer

TELETHON KIDS INSTITUTE

- Maintained {greta} and develop statistical software, develop and maintain COVID-19 modelling for Australian Government

Perth, WA, Aus

2021 - Current

### Lecturer

MONASH UNIVERSITY

- Taught ETC1010, developed assessment and lectures on introduction to data analysis

Melbourne, VIC, AUS

2019 - 2020

### Research Fellow

MONASH UNIVERSITY

- Created {visdat} and {naniar} packages to explore data

Melbourne, VIC, AUS

2017 - 2019

## Published Articles

### Missing Data: Current Practice in Football Research and Recommendations for Improvement

DAVID N. BORG AND ROBERT NGUYEN AND NICHOLAS J. TIERNEY

Science and Medicine in Football

2021

### Comment On: Moving Sport and Exercise Science Forward: A Call for the Adoption of More Transparent Research Practices

BORG, DAVID N. AND BON, JOSHUA J. AND SAINANI, KRISTIN L. AND BAGULEY, BRENTON J. AND TIERNEY, NICHOLAS J. AND DROVANDI, CHRISTOPHER

Sports Medicine

2020

### A Bayesian Spatiotemporal Statistical Analysis of Out-of-Hospital Cardiac Arrests

PELUSO, STEFANO AND MIRA, ANTONIETTA AND RUE, HÅVARD AND TIERNEY, NICHOLAS J. AND BENVENUTI, CLAUDIO AND CIANELLA, ROBERTO AND CAPUTO, MARIA LUCE AND AURICCHIO, ANGELO

Biometrical Journal

2020

### An Introduction to Software Tools, Data, and Services for Geospatial Analysis of Stroke Services

PADGHAM, MARK AND BOEING, GEOFF AND COOLEY, DAVID AND TIERNEY, NICHOLAS J. AND SUMNER, MICHAEL AND PHAN, THANH G. AND BEARE, RICHARD

Frontiers in Neurology

2019

### Evaluating Health Facility Access using Bayesian Spatial Models and Location Analysis Methods

TIERNEY, NICHOLAS J. AND MIRA, ANTONIETTA AND REINHOLD, H. JOST AND ARBIA, GIUSEPPE AND CLIFFORD, SAMUEL AND AURICCHIO, ANGELO AND MOCCETTI, TIZIANO AND PELUSO, STEFANO AND MENGENSEN, KERRIE L.

PLOS ONE

2019

### Novel Relocation Methods for Automatic External Defibrillator Improve Out-of-Hospital Cardiac Arrest Coverage under Limited Resources

TIERNEY, NICHOLAS J. AND REINHOLD, H. JOST AND MIRA, ANTONIETTA AND WEISER, MARTIN AND BURKART, ROMAN AND BENVENUTI, CLAUDIO AND AURICCHIO, ANGELO

Resuscitation

2018

## Visdat: Visualising Whole Data Frames

TIERNEY, NICHOLAS J.

*The Journal of Open Source  
Software*  
2017

## Visualisation and Statistical Modelling Techniques for the Management of Inventory Stock Levels

SWEATMAN, WINSTON L., AND MCGREE, JAMES AND CARSTENS, C. JACOBIE AND FOSTER, KYLIE J. AND LIU, SHEN AND  
TIERNEY, NICHOLAS J. AND TREDENICK, ELOISE AND ZAITOUNY, AYHAM

*ANZIAM*

2016

## Using Decision Trees to Understand Structure in Missing Data

TIERNEY, NICHOLAS J. AND HARDEN, FIONA A. AND HARDEN, MAURICE J.

*BMJ Open*  
2015

## Book Chapters

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### Bayesian Modelling to Assist Inference on Health Outcomes in Occupational Health Surveillance

TIERNEY, NICHOLAS J. AND CLIFFORD, SAMUEL AND DROVANDI, CHRISTOPHER C. AND MENGENSEN, KERRIE L.

*Case Studies in Applied Bayesian  
Data Science*  
2020

### Statistical Methods for Hospital Monitoring

MORTON, ANTHONY AND WHITBY, MICHAEL AND TIERNEY, NICHOLAS J. AND SIBANDA, NOKUTHABA AND MENGENSEN, KERRIE

*Wiley StatsRef: Statistics Reference  
Online*  
2016

## Grants

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### R Consortium

CONTINUING TO IMPROVE R'S ABILITY TO VISUALISE AND EXPLORE MISSING VALUES

- Develop and improve methods for exploring missing data in R
- Funding amount: \$5,000 USD

*Global*  
2022

### Spark/Spectrum

CONTINUING TO IMPROVE R'S ABILITY TO VISUALISE AND EXPLORE MISSING VALUES

- Funding amount:
- Funding amount:

*Australia*  
2022

### R Consortium

A UNIFIED PLATFORM FOR MISSING VALUES METHODS AND WORKFLOWS

- Developed CRAN Task view and platform for sharing missing data methods
- Funding amount: \$20,000 USD
- Co-investigators: Josse, Julie, Nathalie Vialenxi, Imke Mayer

*Global*  
2018-2019

### ACEMS International Mobility Programme

MCMC DIAGNOSTICS & RESEARCH IMPACT

- Visited Johns Hopkins University and UC Berkeley to discuss MCMC diagnostics and research impact
- Funding amount: \$10,000 AU

*Australia - USA*  
2019

### Government Scholarship

AUSTRALIAN POSTGRADUATE AWARD

- Funding amount: \$98,000

*Brisbane, QLD, Australia*  
2013-2017

### Industry Scholarship

INDUSTRY DOCTORAL TRAINING CENTRE TOP UP

- Funding amount: \$40,000

*Brisbane, QLD, Australia*  
2013-2017

## Invited Academic

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### Prof. Kerrie Mengersen

QUEENSLAND UNIVERSITY OF TECHNOLOGY

- Visited to present invited talk on using {greta} for scalable statistical computing

*Brisbane, Australia*  
2021

### Dr. Karthik Ram

BERKELEY INSTITUTE OF DATA SCIENCE (BIDS)

- Visited annually for 1-3 weeks
- Develop best practices for publishing data sources
- Identify current technology issues in modern data science

*Berkeley, CA, USA*  
2018 - 2020

## Prof. Roger Peng

JOHNS HOPKINS BLOOMBERG SCHOOL OF PUBLIC HEALTH

- Collaborate on understanding and measuring MCMC convergence.
- Develop MCMC diagnostics

Baltimore, MD, USA

2019

## Prof. Antonietta Mira and Professor Angelo Auricchio

INTER-DISCIPLINARY INSTITUTE OF DATA SCIENCE AT UNIVERSITÀ DELLA SVIZZERA ITALIANA (USI)

- Develop methods for optimal placement of Automatic Electronic Defibrillators (AEDs) in Switzerland

Lugano, Ticino, Switzerland

2016 - 2017

## Software

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### conmat

CREATE CONTACT MATRICES FROM POPULATION DATA

- 11 stars

GitHub

2021

### yahtsee

PROVIDE TOOLS AROUND FITTING HIERARCHICAL TIME SERIES MODELS FOR DATA COMMONLY FOUND IN MALARIA.

- 2 stars

GitHub

2021

### brolgar

TOOLS TO BROWSE OVER LONGITUDINAL DATA GRAPHICALLY AND ANALYTICALLY. EXTENDS GGPLOT2, TSIBBLE, AND FEASTS

- 106 stars
- 14,301 downloads

GitHub

2019

### visdat

PRELIMINARY EXPLORATORY VISUALISATION OF DATA

- 440 stars
- 1,312,014 downloads

CRAN

2017

### naniar

TIDY DATA STRUCTURES, SUMMARIES, AND VISUALISATIONS FOR MISSING DATA. EXTENDS GGPLOT2 AND DPLYR.

- 630 stars
- 1,276,862 downloads

CRAN

2017

### maxcovr

TOOLS FOR LOCATION ANALYSIS AND SOLVING THE MAXIMAL COVERAGE LOCATION PROBLEM USING C++

- 41 stars

GitHub

2016

## Presentations

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### Recognising Research Software in Academia

UNSW (INVITED SEMINAR)

Online

2021-10-29

### Tangling is Easy but Untangling is Hard. Some Advice on Exploratory Data Analysis for Longitudinal Data

JOINT STATISTICAL MEETINGS (INVITED TALK)

Online

2021-08-09

### The Use of Colour in Graphics: A Journey Through the Body & Mind to the Screen

MONASH DATA FLUENCY (INVITED SEMINAR)

Online

2020-06-26

### Data! Data! Data!

UNIVERSITY OF WASHINGTON (INVITED SEMINAR)

Seattle, WA, USA

2020-02-14

### Making Better Spaghetti

RSTUDIO::CONF2020 (INVITED SPEAKER)

San Francisco, CA, USA

2020-01-29

### Exploring and Understanding the Individual Experience from Longitudinal Data, or...How to Make Better Spaghetti (Plots)

OZVIS 2019 (KEYNOTE SPEAKER)

Brisbane, QLD, Australia

2019-11-21

### Are We There Yet? Testing the Effectiveness of Graphics as MCMC Diagnostics

JOHNS HOPKINS BLOOMBERG SCHOOL OF PUBLIC HEALTH (INVITED SEMINAR)

Baltimore, MD, USA

2019-01-09

### Empowering People with Community, Software, and Peer Review

RUCK: R USERS CONFERENCE KOREA (KEYNOTE SPEAKER)

Seoul, South Korea

2018-10-23

## Awards

### ACEMS Impact and Engagement Award

Australia

FOR ACTIVELY TRANSLATING RESEARCH FINDINGS TO APPLICATIONS, USE, AND UPTAKE OUTSIDE OF ACADEMIA (\$1,000)

2019

### EJC Pitman Prize (Runner Up)

Melbourne, VIC, Australia

THE STATISTICAL SOCIETY OF AUSTRALIA

2018

### Thesis nominated for University Doctoral Outstanding Thesis Award

Brisbane, QLD, Australia

PHD THESIS EXAMINATION

2017

### Vice-Chancellor's Performance Award

Brisbane, QLD, Australia

INNOVATION IN TEACHING IN SEB113 (\$7,500)

2015

### First Place for talk: "The Joy of Stats"

Brisbane, QLD, Australia

SESSIONAL TEACHING AND REFLECTION SHOWCASE (STARS)

2015

## Service

I am an active member of the statistics and open source software communities. I recently joined the R Journal as an Associate Editor, served on the organising committee of UseR! 2018 in Brisbane, and was the founding and principal organiser of the annual rOpenSci Ozunconference, from 2016 - 2018, and assistant organiser in 2019. I have been the organising chair of two university research groups, the Non-Uniform Monash Business Analytics Team (NUMBAT) group at Monash, and the Bayesian Research and Applications Group (BRAG) at Queensland University of Technology. I have been a member of the Statistical Society of Australia since 2013, serving as young statistician representative of Queensland, and assistant chair of biostatistics (2013-2016), and a general committee member of the Victoria branch (2017 - 2019).

## Teaching

### Lecturer

Melbourne, VIC, Australia

MONASH UNIVERSITY

2019 - 2020

- Developed assessment and lectures for ETC1010, introduction to data analysis

### Teaching Assistant

Brisbane, QLD, Australia

QUEENSLAND UNIVERSITY OF TECHNOLOGY

2015

- Tutor for course SEB113, an introductory course on statistics

### Lab Content Creator

Brisbane, QLD, Australia

QUEENSLAND UNIVERSITY OF TECHNOLOGY

2015

- Created award-winning practical lab content for course SEB113

## Workshops

### An introduction to Bayesian modelling using greta

Global

SSA

2021

- Teaching fundamental Bayesian statistics aimed at scientists needs

### R Markdown for Scientists

Global

RMD4SCI.NJTIERNEY.COM

2018 -

- Focussing on scientists needs (workflow, citations, references)
- Delivered 6 times in Melbourne, Canberra, and Seattle

### Software Carpentry Instructor Trainer

Global

THE CARPENTRIES

2018 - 2019

- Teaching best practices on how to teach software coding to other instructors

### Missing Data Imputations

Brisbane, QLD, Australia

USER!2018

2018

- Joint course with Prof. Julie Josse, covering visualising, exploring, and imputing missing data.

## Reproducible Reporting Using RMarkdown and GitHub

ANGELTR R CONFERENCE

*Anglet, France*

2017

- Course teaching basics of Rmarkdown and GitHub