

# Nicholas Tierney

LECTURER

Department of Econometrics and Business Statistics

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## Education

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### 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

## Software

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### brolgar

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

- 89 stars

*GitHub*

2019

### syn

A ZERO DEPENDENCY R PACKAGE THAT LISTS SYNONYMS AND ANTONYMS.

- 43 stars
- 4,205 downloads

*CRAN*

2018

### visdat

PRELIMINARY EXPLORATORY VISUALISATION OF DATA

- 356 stars
- 233,584 downloads

*CRAN*

2017

### naniar

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

- 533 stars
- 242,809 downloads

*CRAN*

2017

### mmcc

FAST AND TIDY METHODS FOR SUMMARISING MCMC CHAINS USING DATA.TABLE. EXTENDS BROOM

- 20 stars

*GitHub*

2016

### maxcovr

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

- 31 stars

*GitHub*

2016

### broomstick

CONVERT DECISION TREE OBJECTS INTO TIDY DATA FRAMES. EXTENDS BROOM

- 26 stars

*GitHub*

2016

## Employment

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### Lecturer

MONASH UNIVERSITY

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

*Melbourne, VIC, AUS*

2019 - Current

### Research Fellow

MONASH UNIVERSITY

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

*Melbourne, VIC, AUS*

2017 - 2019

# Grants

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## 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 Vialeniex, 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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## 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

# Published Articles

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## 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 MENSERSEN, 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 MENGERSEN, 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 MENGERSEN, KERRIE

*Wiley StatsRef: Statistics Reference Online*

2016

## Preprints

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### When to Impute? Imputation Before and During Cross-Validation

JAEGER, BYRON C. AND TIERNEY, NICHOLAS J. AND SIMON, NOAH R.

<http://arxiv.org/abs/2010.00718>

2020

### Expanding Tidy Data Principles to Facilitate Missing Data Exploration, Visualization and Assessment of Imputations

TIERNEY, NICHOLAS J. AND COOK, DIANNE H.

<http://arxiv.org/abs/1809.02264>

2020

### A Realistic Guide to Making Data Available Alongside Code to Improve Reproducibility

TIERNEY, NICHOLAS J. AND RAM, KARTHIK

<http://arxiv.org/abs/2002.11626>

2020

### A Simple Guide to S3 Methods

TIERNEY, NICHOLAS J.

<http://arxiv.org/abs/1608.07161>

2016

## Papers in Preparation

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### Brolgar: BRowse Over Longitudinal Data Graphically and Analytically in R

NICHOLAS J. TIERNEY, DIANNE COOK, TANIA PRVAN

*R Journal*

2020

### Current Practice in Football Research and Recommendations for Reporting Missingness

DAVID BORG, NICHOLAS J. TIERNEY, ROBBIE NGUYEN

*Science and Medicine in Football*

2020

## What We See in Rainbows: Do Different Colour Palettes Change Weather Maps Interpretation?

NICHOLAS J. TIERNEY, LAUREN KENNEDY, ADAM SPARKS

TBD

2021

## The Effect of Fire Frequency on Insectivorous Bats and their Habitat in the Monsoonal Woodlands of Cape York Peninsula, Australia.

JULIE BROKEN-BROW, NICHOLAS J. TIERNEY, SANDRA PENMAN, KYLE N. ARMSTRONG, AND LUKE K.-P. LEUNG

*Diversity and Distributions*

2021

## Presentations

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### 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

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

AUSTRALIA NATIONAL UNIVERSITY (INVITED SEMINAR)

*Canberra, ACT, Australia*

2019-11-15

### 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

Prior to 2019, I have delivered a keynote presentation in Seoul, South Korea, and invited seminars and talks in Australia, USA, Switzerland, France, Belgium, and England.

## Awards

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### ACEMS Impact and Engagement Award

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

*Australia*

2019

### EJC Pitman Prize (Runner Up)

THE STATISTICAL SOCIETY OF AUSTRALIA

*Melbourne, VIC, Australia*

2018

### Thesis nominated for University Doctoral Outstanding Thesis Award

PHD THESIS EXAMINATION

*Brisbane, QLD, Australia*

2017

### Vice-Chancellor's Performance Award

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

*Brisbane, QLD, Australia*

2015

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

SESSIONAL TEACHING AND REFLECTION SHOWCASE (STARS)

*Brisbane, QLD, Australia*

2015

## Service

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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

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### Lecturer

MONASH UNIVERSITY

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

Melbourne, VIC, Australia

2019 - 2020

### Teaching Assistant

QUEENSLAND UNIVERSITY OF TECHNOLOGY

- Tutor for course SEB113, an introductory course on statistics

Brisbane, QLD, Australia

2015

### Lab Content Creator

QUEENSLAND UNIVERSITY OF TECHNOLOGY

- Created award-winning practical lab content for course SEB113

Brisbane, QLD, Australia

2015

## Workshops

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### R Markdown for Scientists

RMD4SCI.NJTIERNEY.COM

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

Global

2018 -

### Building R Packages and using git and GitHub

ROPENSCI OZUNCONFERENCE

- Designed for absolute beginners
- Delivered 3 times, with Prof. Roger Peng, and Dr. Saras Windecker

Australia

2017 - 2019

### Software Carpentry Instructor Trainer

THE CARPENTRIES

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

Global

2018 - 2019

### Instructor

DATACAMP

- Developed online course on Handling Missing Data. Produced tutorials and instructional videos

Global

2018

### Missing Data Imputations

USER!2018

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

Brisbane, QLD, Australia

2018

### Reproducible Reporting Using RMarkdown and GitHub

ANGELTR R CONFERENCE

- Course teaching basics of Rmarkdown and GitHub

Anglet, France

2017

### Developing Bayesian Models for Ranking Academic Papers

BAYES ON THE BEACH

- Moderated discussion on Bayesian approaches to ranking papers to account for the number of years since publishing

Gold coast, QLD, Australia

2015