

Nicholas Tierney

RESEARCH SOFTWARE ENGINEER

The Kids Research Institute Australia

✉ nicholas.tierney@gmail.com | 🏠 njtierney.com | 📺 [njtierney](https://www.youtube.com/njtierney)

Education

Ph.D. Statistics

QUEENSLAND UNIVERSITY OF TECHNOLOGY

Brisbane, QLD, Australia

2013 - 2018

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

Bachelor of Psychological Science (Honours)

UNIVERSITY OF QUEENSLAND

Brisbane, QLD, Australia

2008 - 2012

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

Employment

Research Software Engineer

TELETHON KIDS INSTITUTE

Perth, WA, Aus

2021 - Current

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

Lecturer

MONASH UNIVERSITY

Melbourne, VIC, AUS

2019 - 2020

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

Research Fellow

MONASH UNIVERSITY

Melbourne, VIC, AUS

2017 - 2019

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

Published Articles

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

N TIERNEY AND D COOK

Journal of Statistical Software

2023

A Journey from Wild to Textbook Data to Reproducibly Refresh the Wages Data from the National Longitudinal Survey of Youth Database

D AMALIAH AND D COOK AND E TANAKA AND K HYDE AND N TIERNEY

Journal of Statistics and Data Science Education

2022

The R Journal: Brolgar: An R Package to BRowse Over Longitudinal Data Graphically and Analytically in R

TIERNEY, NICHOLAS AND COOK, DIANNE AND PRVAN, TANIA

The R Journal

2022

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

Common-Sense Approaches to Sharing Tabular Data Alongside Publication

NICHOLAS J. TIERNEY AND KARTHIK RAM

Patterns

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

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.

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

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 Mengersen, Kerrie L.

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

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

2016

Using Decision Trees to Understand Structure in Missing Data

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

BMJ Open

2015

Grants

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

EXTENDING AND COMPARING METHODS FOR PROJECTING SOCIAL CONTACT MATRICES

- Develop new methods and software for infectious disease modelling
- 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 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

R Consortium

ENABLING GEOSPATIAL WORKFLOW MANAGEMENT WITH {TARGETS}

- Develop new methods and software for extending geospatial data processing with the targets software
- Funding amount: \$15,000 USD
- Co-investigators: Eric Scott

Global

2024-2025

Invited Academic

Prof. Michael Plank

UNIVERSITY OF CANTERBURY

- Visited to present invited talk on using {conmat} for infectious disease modelling

Christchurch, New Zealand

2022

Prof. Thomas Lumley

UNIVERSITY OF AUCKLAND

- Visited to present invited talk on using {conmat} for infectious disease modelling

Auckland, New Zealand

2022

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

geotargets

TARGETS' EXTENSIONS FOR GEOGRAPHIC SPATIAL FORMATS

- 72 stars

CRAN

2024

conmat

CREATE CONTACT MATRICES FROM POPULATION DATA

- 19 stars

GitHub

2021

yahtsee

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

- 2 stars

GitHub

2021

brlgar

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

- 109 stars
- 22,176 downloads

GitHub

2019

visdat

PRELIMINARY EXPLORATORY VISUALISATION OF DATA

- 452 stars
- 1,612,510 downloads

CRAN

2017

naniar

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

- 657 stars
- 1,607,948 downloads

CRAN

2017

maxcovr

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

- 44 stars

GitHub

2016

Presentations

Extending and Comparing Methods for Projecting Social Contact Matrices

SPARK SPECTRUM ANNUAL MEETING (LIGHTNING TALK)

Cape Schanck, Australia

2023-02-15

Extendable Projection of Contact Matrices

UNIVERSITY OF AUCKLAND (INVITED SPEAKER)

Auckland, New Zealand

2022-09-14

The Future of NA Data

RSTUDIOCONF::2022 (LIGHTNING TALK)

Online

2022-07-28

Reflections One Year into Working as a Research Software Engineer

USER! (SPEAKER)

Online

2022-06-23

Greta: Scalable Statistical Computing

QUT (INVITED SPEAKER)

Brisbane, QLD, Australia

2021-12-22

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

Find the Best Locations for Facilities using 'maxcovr'

USER! 2018 (SPEAKER)

Brisbane, QLD, Australia

2018-07-13

Awards

Publication Excellence Award (Journal)

FOR A TOP-RANKED ORIGINAL JOURNAL ARTICLE (PUBLISHED IN 2023) BY CNCI

Perth, WA, Australia

2024

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

I am an active member of the statistics and open source software communities. I have been an Associate Editor for the R Journal since 2021, served on the organising committee of UseR! in 2018, and was founding and principal organiser of the annual rOpenSci Ozunconference, from 2016 - 2018. 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 served with the Statistical Society of Australia since 2013, as young statistician representative of Queensland, assistant chair of biostatistics (2013-2016), and co-founded the section "Statistical Computing and Visualisation" with Di Cook in 2021. I manage the adjudication of the annual student software award provided by this section.

Teaching

Lecturer

MONASH UNIVERSITY

Melbourne, VIC, Australia

2019 - 2020

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

Teaching Assistant

QUEENSLAND UNIVERSITY OF TECHNOLOGY

Brisbane, QLD, Australia

2015

- Tutor for course SEB113, an introductory course on statistics

Lab Content Creator

QUEENSLAND UNIVERSITY OF TECHNOLOGY

Brisbane, QLD, Australia

2015

- Created award-winning practical lab content for course SEB113

Workshops

An introduction to Bayesian modelling using greta

SSA

Global

2021 -

- Teaching fundamental Bayesian statistics aimed at scientists needs

R Markdown for Scientists

RMD4SCI.NJTIERNEY.COM

Global

2018 -

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

Software Carpentry Instructor Trainer

THE CARPENTRIES

Global

2018 - 2019

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

Missing Data Imputations

USER!2018

Brisbane, QLD, Australia

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

Quarto for Scientists

QUARTO.NJTIERNEY.COM

Global

2024-

- Focussing on scientists needs (workflow, citations, references)
- Delivered 2 times in Hobart and online