



# Rex Parsons

rex.parsons@hdr.qut.edu.au

rwparsons.github.io/

 GitHub: RWPParsons  LinkedIn: rexwp

## Education

### Queensland University of Technology (QUT)

*Biostatistics PhD*

2020–Present  
(Anticipated completion: late 2023)

Thesis: High dimensional data for predicting inpatient falls.

Supervisors: Dr Susanna Cramb, Prof Steven McPhail and Dr Ahmad Abdel-hafez

### University of Newcastle

2019–2020

*Medical Statistics MMedStat 6.88/7 GPA*

### University of Queensland

2015–2017

*Biomedical Science BSc and Honours (Neuroscience)*

Thesis: The Role of Melatonin on Hippocampal Rhythmicity.

Supervisors: Dr Oliver Rawashdeh and Dr Prasad Chunduri.

## Employment

### Data Scientist

Jun 2022–Present

*Health Policy Analysis*

*Sydney, Australia*

- Shiny and R package development.
- Statistical analyses using large linked datasets, and spatial and temporal data.

### Senior Research Assistant

Nov 2020–Present

*QUT (Centre for Data Science and Australian Centre for Health Services Innovation)*

*Brisbane, Australia*

Several roles on a near-continual basis for a range of projects where I performed statistical analyses.

For each appointment, supervisor's name and brief description of work:

- Nicole White; (1) Risk factors associated with COVID-19 with the COVID Critical Research Group.
- Nicole White; (2) Interrupted time series analysis and risk model implementation projects at large hospital network.
- Nicole White; (3) Meta-research on registered clinical prediction model studies.
- Gentry White; Development of (DSSP), an R package for fitting Bayesian spatial models by direct sampling.
- Susanna Cramb; Spatial data analysis and visualisations of access to care with R, presented as a shiny app.
- Sanjeewa Kularatna; Health economic evaluation of policy change by the Department of Veteran Affairs.

### Research & Development Scientist

Mar 2020–Aug 2020

*Ellume*

*Brisbane, Australia*

- Redesigned the algorithm development workflow to improve performance and reduce time for optimisation.
- Algorithm developed was used for FDA application for serological diagnostic and was the best performing diagnostic test approved by FDA at the time of approval.

### Healthcare Data Analyst

Jun 2019–Mar 2020

*City Fertility*

*Brisbane, Australia*

- Dashboard development (shiny) with direct odbc for up-to-date analytics on KPIs.
- Streamlined monthly reporting processes for marketing team using R.
- Data extraction, cleaning and statistical analysis for clinician-led research projects and prediction model development.

### Project Coordinator

Mar 2018–Jun 2019

*UnitingCare Medical Imaging*

*Brisbane, Australia*

- Occupational lung disease and radiology research (data collection and analyses).
- Questionnaire development with Qualtrics.
- Preparation of grant applications and project reports to for funders.

### Research Assistant

Jan 2016–Mar 2018

*Ellume*

*Brisbane, Australia*

- Worked in a multidisciplinary team to develop immunoassays for diagnostic medical devices.

## Technical Skills

**Proficient:** R, Shiny, Data Analysis and Visualisation, Statistical Modelling, OOP and Functional Programming

**Competent:** Python, SQL, Machine Learning, Git & GitHub

## Statistical Software Development

predictNMB

CRAN and rOpenSci March 2023

- An R package that allows the user to perform simulations to estimate the cost-effectiveness of using a prediction model to assign a healthcare intervention.
- Can be used to determine whether or when a clinical prediction model or clinical decision support system may be worthwhile before development or implementation.

DSSP

CRAN June 2022

- An R package that allows users to fit Bayesian spatial models with direct sampling (*fast*).
- Draws samples from the direct sampling spatial prior model which is 100-1000 times faster than MCMC.

simMetric

CRAN January 2022

- An R package that provides functions to calculate useful metrics (and their Monte Carlo standard errors) for the assessment of statistical methods in simulation studies.
- This allows for easy integration with other simulation study frameworks and the tidyverse-style workflow.

circacompare

CRAN February 2021

- An R package that allows users to analyse circadian datasets using nonlinear regression models.
- Documented with a vignette; also available as a shiny app and in python.

## Teaching

Queensland University of Technology

Brisbane, Australia

- PUB358: Digital Health Perspectives (Guest Lecturer) Semester 1, 2023
- PUN108: Clinical Informatics for Intelligent Healthcare (Guest Lecturer) Semester 2, 2021
- SEB113: Quantitative Methods in Science (Sessional Tutor) Semester 2, 2021
- MXN500: Statistical Data Analysis (Sessional Tutor) Semester 1, 2021

## Selected Papers

1. *RD Blythe, R Parsons, AG Barnett, SM McPhail, NM White* **J Clin Epi (2023)**  
*Vital signs-based deterioration prediction model assumptions can lead to losses in prediction performance.*
2. *R Parsons, RD Blythe, AG Barnett, SM Cramb, SM McPhail* **JOSS (2023)**  
*predictNMB: An R package to estimate if or when a clinical prediction model is worthwhile.*
3. *R Parsons, RD Blythe, SM Cramb, SM McPhail* **JAMIA (2023)**  
*Integrating economic considerations into cutpoint selection may help align clinical decision support towards value-based healthcare*
4. *R Parsons, RD Blythe, SM Cramb, SM McPhail* **Gerontology (2022)**  
*Inpatient Fall Prediction Models: A Scoping Review.*
5. *R Blythe, Parsons R, NM White, D Cook, SM McPhail* **BMJ Qual Saf (2022)**  
*A scoping review of real-time automated clinical deterioration alerts and evidence of impacts on hospitalised patient outcomes.*
6. *R Parsons, R Parsons, N Garner, H Oster, O Rawashdeh* **Bioinformatics (2020)**  
*CircaCompare: a method to estimate and statistically support differences in mesor, amplitude and phase, between circadian rhythms.*

## Funding and Awards

1. Venables Award runner-up for predictNMB R package development. (2023)
2. Student travel prize winner at the International Conference on Health Policy Statistics. (2023)
3. SuperHERO award winner for outstanding engagement/collaboration. (2021)
4. Queensland AI Hub Medical Datathon winning team. (2020)
5. Digital Health CRC Industry Scholarship Recipient: \$45,000 p.a. for four years during PhD studies. (2020)