



# Rex Parsons

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## 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

### Senior Research Assistant

Nov 2020–Present

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

*Brisbane, Australia*

Several roles on continual basis for a range of projects where I mostly 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*

- Immunoassay and algorithm development for SARS-CoV-2 Serology rapid diagnostic test.
- Redesigned the algorithm development workflow which improved generalisability and significantly reduced the time required to optimise.
- 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 using shiny and direct odbc for up-to-date analytics on KPIs.
- Streamlining monthly reporting processes for marketing and services given using R.
- Data acquisition, cleaning and statistical analysis for clinician-led research projects.
- Clinical prediction model development for In-Vitro-Fertilisation treatment success.

### Project Coordinator

Mar 2018–Jun 2019

*UnitingCare Medical Imaging*

*Brisbane, Australia*

- Occupational lung disease and radiology research.
- Questionnaire development with Qualtrics.
- Data analysis and visualisations.
- Grant applications and project reports to project funders.

### Research Assistant

Jan 2016–Mar 2018

*Ellume*

*Brisbane, Australia*

- Immunoassay development for influenza virus and Group A streptococcus rapid diagnostic test.
- Worked in a multidisciplinary team to rapidly iterate and develop medical diagnostic devices.

## Technical Skills

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

**Competent:** Python, SQL, Machine Learning, Git & GitHub, Object-Oriented Programming

## Statistical Software Development

predictNMB

pkgdown site

- An R package that allows the user to perform Monte Carlo 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

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

## Selected Papers

1. **Parsons R, RD Blythe, SM Cramb, SM McPhail** **JAMIA (2023)**  
*Integrating economic considerations into cutpoint selection may help align clinical decision support towards value-based healthcare*
2. **R Parsons, RD Blythe, SM Cramb, SM McPhail** **Gerontology (2022)**  
*Inpatient Fall Prediction Models: A Scoping Review.*
3. **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.*
4. **LVM de Assis, L Harder, José Thalles Lacerda, R Parsons, [5 authors], H Oster** **eLife (2022)**  
*Rewiring of liver diurnal transcriptome rhythms by triiodothyronine (T3) supplementation.*
5. **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.*
6. **R Parsons, K Newbigin, D Deller, R Edwards, R McBean** **Respirology (2019)**  
*Stonemasons with silicosis: Preliminary findings and a warning message from Australia.*

## Funding and Awards

1. Student travel prize winner at the International Conference on Health Policy Statistics. (2023)
2. SuperHERO award winner for outstanding engagement/collaboration. (2021)
3. AWS Activate Winner of the Queensland AI Hub Medical Datathon and \$25,000 AWS credit (2020)  
Solution: A deep learning approach to rapid assessment and triage of Chest-X-rays.
4. Digital Health CRC Industry Scholarship Recipient: \$45,000 p.a. for four years during PhD studies. (2020)