# Rex Parsons

Brisbane, QLD, Australia
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GitHub: RWParsons LinkedIn: rexwp

## Education

**Queensland University of Technology (QUT)** **2020–Present**
*Biostatistics PhD* **(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` **rOpenSci March 2023**
- 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)**