



# Rex Parsons

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## Education

<b>Queensland University of Technology (QUT)</b> <i>Biostatistics PhD</i> Thesis: High dimensional data for predicting inpatient falls. Supervisors: Dr Susanna Cramb, Prof Steven McPhail and Dr Ahmad Abdel-hafez	<b>2020–Present</b> (Anticipated completion: late 2023)
<b>University of Newcastle</b> <i>Medical Statistics MMedStat 6.88/7 GPA</i>	<b>2019–2020</b>
<b>University of Queensland</b> <i>Biomedical Science BSc and Honours (Neuroscience)</i> Thesis: The Role of Melatonin on Hippocampal Rhythmicity. Supervisors: Dr Oliver Rawashdeh and Dr Prasad Chunduri.	<b>2015–2017</b>

## Employment

<b>Senior Research Assistant</b> <i>QUT (Centre for Data Science and Australian Centre for Health Services Innovation)</i> 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: <ul style="list-style-type: none"><li>– Nicole White; (1) Risk factors associated with COVID-19 with the COVID Critical Research Group.</li><li>– Nicole White; (2) Interrupted time series analysis and risk model implementation projects at large hospital network.</li><li>– Nicole White; (3) Meta-research on registered clinical prediction model studies.</li><li>– Gentry White; Development of (DSSP), an R package for fitting Bayesian spatial models by direct sampling.</li><li>– Susanna Cramb; Spatial data analysis and visualisations of access to care with R, presented as a shiny app.</li><li>– Sanjeewa Kularatna; Health economic evaluation of policy change by the Department of Veteran Affairs.</li></ul>	<b>Nov 2020–Present</b> <i>Brisbane, Australia</i>
<b>Research &amp; Development Scientist</b> <i>Ellume</i> <ul style="list-style-type: none"><li>– Immunoassay and algorithm development for SARS-CoV-2 Serology rapid diagnostic test.</li><li>– Redesigned the algorithm development workflow which improved generalisability and significantly reduced the time required to optimise.</li><li>– 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.</li></ul>	<b>Mar 2020–Aug 2020</b> <i>Brisbane, Australia</i>
<b>Healthcare Data Analyst</b> <i>City Fertility</i> <ul style="list-style-type: none"><li>– Dashboard development using shiny and direct odbc for up-to-date analytics on KPIs.</li><li>– Streamlining monthly reporting processes for marketing and services given using R.</li><li>– Data acquisition, cleaning and statistical analysis for clinician-led research projects.</li><li>– Clinical prediction model development for In-Vitro-Fertilisation treatment success.</li></ul>	<b>Jun 2019–Mar 2020</b> <i>Brisbane, Australia</i>
<b>Project Coordinator</b> <i>UnitingCare Medical Imaging</i> <ul style="list-style-type: none"><li>– Occupational lung disease and radiology research.</li><li>– Questionnaire development with Qualtrics.</li><li>– Data analysis and visualisations.</li><li>– Grant applications and project reports to project funders.</li></ul>	<b>Mar 2018–Jun 2019</b> <i>Brisbane, Australia</i>
<b>Research Assistant</b> <i>Ellume</i> <ul style="list-style-type: none"><li>– Immunoassay development for influenza virus and Group A streptococcus rapid diagnostic test.</li><li>– Worked in a multidisciplinary team to rapidly iterate and develop medical diagnostic devices.</li></ul>	<b>Jan 2016–Mar 2018</b> <i>Brisbane, Australia</i>

## 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

CRAN and 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. RD Blythe, **Parsons R**, Barnett AG, SM McPhail, NM White **J Clin Epi (2023)**  
*Vital signs-based deterioration prediction model assumptions can lead to losses in prediction performance.*
2. **Parsons R**, RD Blythe, Barnett AG, SM Cramb, SM McPhail **JOSS (2023)**  
*predictNMB: An R package to estimate if or when a clinical prediction model is worthwhile.*
3. **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.*
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. 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)