



Rex Parsons

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Education

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

Employment

Senior Research Assistant <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">– 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.	Nov 2020–Present <i>Brisbane, Australia</i>
Research & Development Scientist <i>Ellume</i> <ul style="list-style-type: none">– 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.	Mar 2020–Aug 2020 <i>Brisbane, Australia</i>
Healthcare Data Analyst <i>City Fertility</i> <ul style="list-style-type: none">– 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.	Jun 2019–Mar 2020 <i>Brisbane, Australia</i>
Project Coordinator <i>UnitingCare Medical Imaging</i> <ul style="list-style-type: none">– Occupational lung disease and radiology research.– Questionnaire development with Qualtrics.– Data analysis and visualisations.– Grant applications and project reports to project funders.	Mar 2018–Jun 2019 <i>Brisbane, Australia</i>
Research Assistant <i>Ellume</i> <ul style="list-style-type: none">– 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.	Jan 2016–Mar 2018 <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

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)

Grants

1. **Emergency Medicine Foundation** **\$37,667 (2022)**
(Associate Investigator) *Applications of a novel neurosurgical service accessibility index to improve emergency care of people sustaining a road trauma-related traumatic brain injury in Queensland.*
2. **ACARP and DNRME** **\$315,770 (2019)**
A Clinical, Radiological and Occupational Review of Coal Mine Dust Lung Disease in Queensland.

Outreach and community involvement

- Statistics Society of Australia - QLD Branch Council member & student representative. **2022–Present**
- Conference chair and organising committee member of SSA and NZSA ECSS Miniconference. **2022**
- Peer facilitator for Peers & Pizza: a regular HDR mental health and wellbeing event. **2020–2022**
- Member of AusHSI HDR working group. **2020–2022**
- Student representative on AusHSI management committee. **2020–2022**

Published 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. O Durunna, JA Carroll, [4 authors], **Parsons R**, G Manafiazar, HA Lardner **Front Genet (2023)**
Phenotypic and genetic parameters of circadian rhythms from core body temperature profiles and their relationships with beef steers' production efficiency profiles during successive winter feeding periods
5. J-F Harmsen, M van Weeghel, **Parsons R**, [7 authors], P Schrauwen **Cell Rep (2022)**
Divergent remodeling of the skeletal muscle metabolome over 24h between young, healthy men and older, metabolically compromised men.
6. S Cramb, A Rolley, CR Gibbs, **Parsons R**, C Hayden, A Woodley, K Vallmuur, J Warren **QUT ePrints (2022)**
Injury Treatment and Rehabilitation Accessibility Queensland Index (iTRAQI) Pilot for Moderate-to-Severe Traumatic Brain Injury: Technical report.
7. **R Parsons**, RD Blythe, SM Cramb, SM McPhail **Gerontology (2022)**
Inpatient Fall Prediction Models: A Scoping Review.
8. 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.
9. 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.
10. **R Parsons**, SM Cramb, SM McPhail **BMJ Open (2021)**
Clinical prediction models for hospital falls: a scoping review protocol.
11. Bassi GL, [8 authors], **R Parsons**, [20 authors], Fraser JF **Crit Care Explor (2021)**
Assessment of 28-Day In-Hospital Mortality in Mechanically Ventilated Patients With Coronavirus Disease 2019: An International Cohort Study.
12. GH Goh, PJ Mark, D Blache, D Binks, **R Parsons**, O Rawashdeh, SK Maloney **J Therm Biol (2021)**
Diet-altered body temperature rhythms are associated with altered rhythms of clock gene expression in peripheral tissues in vivo.
13. **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.
14. **R Parsons**, K Newbiggin, D Deller, R Edwards, R McBean **Respirology (2019)**
Stonemasons with silicosis: Preliminary findings and a warning message from Australia.
15. C Haran, R McBean, **R Parsons**, D Wong **J Med Imaging Radiat Oncol (2019)**
Five-year trends of bone scan and prostate-specific membrane antigen positron emission tomography utilization in prostate cancer: A retrospective review in a private centre.
16. **Wesley Dust Disease Research Centre.** **ACARP (2019)**
A Clinical, Radiological and Occupational Review of Coal Mine Dust Lung Disease in Queensland.
17. O Rawashdeh, **R Parsons**, E Maronde **Neural Plast (2018)**
Clocking in time to gate memory processes: The circadian clock is part of the ins and outs of memory.

Conferences

1. **R Medicine (Virtual)** **1-hour Demo (2023)**
predictNMB: An R Package To Estimate if or When a Clinical Prediction Model Is Worthwhile.
2. **International Conference on Health Policy Statistics (Scottsdale (AZ), USA)** **Poster (2023)**
Integrating economic considerations into clinical decision support systems to facilitate value-based care.
3. **SAFETY (Adelaide, Australia)** **Speaker (2022)**
Development and validation of inpatient fall prediction models using digital hospital systems.

4. **Digital Health Summit (Sydney, Australia)** **Poster (2022)**
predictNMB: An R package to estimate whether or when developing your prediction model is worthwhile.
5. **Impact Makers (Brisbane, Australia)** **Speaker (2021)**
Inpatient fall prediction models: a scoping review.
6. **Pacific Society for Reproductive Medicine (Pattaya, Thailand)** **Poster (2019)**
A machine learning approach to embryo selection in the context of In Vitro Fertilisation (IVF).
7. **Australasian Chronobiology Society (Brisbane, Australia)** **Speaker (2018)**
A method to statistically validate observed differences between circadian rhythms.