



# Rex Parsons

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rwparsons.github.io/

 GitHub: RWPParsons  LinkedIn: rexwp

## Education

<b>PhD (Statistics) - Queensland University of Technology</b> Thesis: High dimensional data for predicting inpatient falls. Supervisors: A/Prof Susanna Cramb, Prof Steven McPhail and Dr Ahmad Abdel-hafez.	<b>2020–Feb 2024</b>
<b>MSc (Medical Statistics) - University of Newcastle</b> GPA: 6.88/7.	<b>2019–2020</b>
<b>BSc (Biomedical Science) and Honours (Neuroscience) - University of Queensland</b> Thesis: The Role of Melatonin on Hippocampal Rhythmicity. Supervisors: Dr Oliver Rawashdeh and Dr Prasad Chunduri.	<b>2015–2017</b>

## Employment

<b>Data Scientist</b> <i>Health Policy Analysis</i> <ul style="list-style-type: none"><li>– Shiny and R package development.</li><li>– Statistical analyses using large linked datasets, including spatial and time-series data.</li></ul>	<b>Jun 2023–Present</b> <i>Sydney, Australia</i>
<b>Senior Research Assistant</b> <i>QUT (Centre for Data Science and Australian Centre for Health Services Innovation)</i> 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: <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>– Redesigned the algorithm development workflow to improve performance and reduce time for optimisation.</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 (shiny) with direct odbc for up-to-date analytics on KPIs.</li><li>– Streamlined monthly reporting processes for marketing team using R.</li><li>– Data extraction, cleaning and statistical analysis for clinician-led research projects and prediction model development.</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 (data collection and analyses).</li><li>– Questionnaire development with Qualtrics.</li><li>– Preparation of grant applications and project reports to for 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>– Worked in a multidisciplinary team to develop immunoassays for diagnostic medical devices.</li></ul>	<b>Jan 2016–Mar 2018</b> <i>Brisbane, Australia</i>

## 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

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GLMMcosinor	pkg site
<ul style="list-style-type: none"><li>- An R package to fit a cosinor model to rhythmic data using the glmmTMB framework.</li><li>- Unlike existing cosinor modelling packages, allows fitting of GLMs and mixed-models.</li></ul>	
hpa.spatial	pkg site
<ul style="list-style-type: none"><li>- An R package for accessing and manipulating spatial data, focusing on the Australian (health) context.</li></ul>	
predictNMB	CRAN and rOpenSci March 2023
<ul style="list-style-type: none"><li>- 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.</li><li>- Can be used to determine whether or when a clinical prediction model or clinical decision support system may be worthwhile before development or implementation.</li></ul>	
DSSP	CRAN June 2022
<ul style="list-style-type: none"><li>- An R package that allows users to fit Bayesian spatial models with direct sampling (<i>fast</i>).</li><li>- Draws samples from the direct sampling spatial prior model which is 100-1000 times faster than MCMC.</li></ul>	
simMetric	CRAN January 2022
<ul style="list-style-type: none"><li>- 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.</li><li>- This allows for easy integration with other simulation study frameworks and the tidyverse-style workflow.</li></ul>	
circacompare	CRAN February 2021
<ul style="list-style-type: none"><li>- An R package that allows users to analyse circadian datasets using nonlinear regression models.</li><li>- Documented with a vignette; also available as a shiny app and in python.</li></ul>	

## Teaching

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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

## Awards

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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

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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

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- 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 8

1. N White, R Parsons, G Collins, A Barnett BMC Med (2023)  
*Evidence of questionable research practices in clinical prediction models.*
2. B Abell, S Naicker, D Rodwell, T Donovan, A Tariq, M Baysari, R Parsons, R Blythe, SM McPhail Implement Sci (2023)  
*Identifying barriers and facilitators to successful implementation of computerized clinical decision support systems in hospitals: a NASSS framework-informed scoping review.*
3. 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.*
4. 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.*
5. 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*
6. O Durunna, JA Carroll, [4 authors], R Parsons, 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*
7. J-F Harmsen, M van Weeghel, R Parsons, [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.*
8. S Cramb, A Rolley, CR Gibbs, R Parsons, 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.*
9. R Parsons, RD Blythe, SM Cramb, SM McPhail Gerontology (2022)  
*Inpatient Fall Prediction Models: A Scoping Review.*
10. 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.*
11. LVM de Assis, L Harder, JT Lacerda, R Parsons, [5 authors], H Oster eLife (2022)  
*Rewiring of liver diurnal transcriptome rhythms by triiodothyronine (T3) supplementation.*
12. R Parsons, SM Cramb, SM McPhail BMJ Open (2021)  
*Clinical prediction models for hospital falls: a scoping review protocol.*
13. 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.*
14. 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.*
15. 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.*
16. R Parsons, K Newbiggin, D Deller, R Edwards, R McBean Respirology (2019)  
*Stonemasons with silicosis: Preliminary findings and a warning message from Australia.*
17. 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.*
18. Wesley Dust Disease Research Centre. ACARP (2019)  
*A Clinical, Radiological and Occupational Review of Coal Mine Dust Lung Disease in Queensland.*
19. 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

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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.*