



Rex Parsons

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rwparsons.github.io/

 GitHub: RWPParsons  LinkedIn: rexwp

Education

- PhD (Statistics) - Queensland University of Technology** 2020–Feb 2024
Thesis: Clinical Prediction Models to Improve Patient Safety and Value of Care.
Supervisors: A/Prof Susanna Cramb, Prof Steven McPhail and Dr Ahmad Abdel-hafez.
- MSc (Medical Statistics) - University of Newcastle** 2019–2020
GPA: 6.88/7.
- BSc (Biomedical Science) and Honours (Neuroscience) - University of Queensland** 2015–2017
Thesis: The Role of Melatonin on Hippocampal Rhythmicity.
Supervisors: Dr Oliver Rawashdeh and Dr Prasad Chunduri.

Employment

- Senior Data Scientist** Jun 2023–Present
Nous Group (Health Policy Analyses until acquired by Nous in August 2024) Brisbane, Australia
– Developed a market reference price and relativities between diagnosis related groups using millions of inpatient claims data for middle eastern country to improve negotiations between healthcare payers and providers.
– Developed a shiny app to visualise unmet need of psychosocial care across Australia by region to better inform geographic need for services.
- Senior Research Assistant** Nov 2020–Dec 2023
QUT (Centre for Data Science and Australian Centre for Health Services Innovation) Brisbane, Australia
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:
– Nicole White: Several projects relating to clinical trials, meta research and clinical prediction models.
– 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 traumatic brain injury care using R, presented as a shiny app.
– Sanjeeva Kularatna: Health economic evaluation of policy change by the Department of Veteran Affairs.
- Research & Development Scientist** Mar 2020–Aug 2020
Ellume Brisbane, Australia
– Redesigned the algorithm development workflow to improve performance and reduce time for optimisation.
– 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 (shiny) with direct database connectivity to report insights relating to KPIs.
– Streamlined monthly reporting processes for marketing team using R.
– Data extraction, cleaning and statistical analysis for clinician-led research projects and prediction model development.
- Project Coordinator** Mar 2018–Jun 2019
UnitingCare Medical Imaging Brisbane, Australia
– Occupational lung disease and radiology research (questionnaire development, data collection and analyses).
– Preparation of grant applications and reports for funding bodies.
- Research Assistant** Jan 2016–Mar 2018
Ellume Brisbane, Australia
– Worked in a multidisciplinary team to develop immunoassays for diagnostic medical devices.

Technical Skills

Proficient: R, Shiny, Data Analysis and Visualisation, Statistical and Prediction Modelling, Functional Programming
Competent: Python, SQL & duckdb, Git & GitHub

Statistical Software Development

GLMMcosinor	CRAN and rOpenSci January 2024
<ul style="list-style-type: none">– An R package to fit a cosinor model to rhythmic data using the glmmTMB framework.– Extends cosinor modelling to allow for GLMs and mixed models.	
hpa.spatial	pkg site
<ul style="list-style-type: none">– An R package for accessing and manipulating spatial data, focusing on the Australian (health) context.	
predictNMB	CRAN and rOpenSci March 2023
<ul style="list-style-type: none">– 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.– 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
<ul style="list-style-type: none">– An R package that allows users to fit Bayesian spatial models with direct sampling (<i>fast</i>), optimised with C++.– Draws samples from the direct sampling spatial prior model which is 100-1000 times faster than MCMC.	
simMetric	CRAN January 2022
<ul style="list-style-type: none">– 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.– Allows for easy integration with other simulation study frameworks and the tidyverse-style workflow.	
circacompare	CRAN February 2021
<ul style="list-style-type: none">– 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
– 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

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)
<i>(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.</i>	
2. ACARP and DNRME	\$315,770 (2019)
<i>A Clinical, Radiological and Occupational Review of Coal Mine Dust Lung Disease in Queensland.</i>	

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 8

1. **R Parsons**, RD Blythe, SM Cramb, A Abdel-Hafez, SM McPhail **JMIR (2024)**
An electronic medical record-based prognostic model for inpatient falls: development and internal-external cross-validation.
2. P Kim, N Garner, A Tatkovic, **R Parsons**, P Chunduri, J Vukovic, M Piper, **npj Biol Timing Sleep (2024)**
M Pfeffer, M Weiergräber, H Oster, O Rawashdeh
Melatonin's role in the timing of sleep onset is conserved in nocturnal mice.
3. R Blythe, **R Parsons**, AG Barnett, D Cook, SM McPhail, NM White **Crit Care (2024)**
Prioritising deteriorating patients using time-to-event analysis: prediction model development and internal-external validation.
4. N White, **R Parsons**, D Borg, G Collins, A Barnett **J Clin Epi (2024)**
Planned but ever published? A retrospective analysis of clinical prediction model studies registered on clinicaltrials.gov since 2000.
5. L De Assis, L Harder, J Lacerda, **R Parsons**, M Kaehler, I Cascorbi, I Nagel, **Sci Rep (2024)**
O Rawashdeh, J Mittag, H Oster
Tuning of liver circadian transcriptome rhythms by thyroid hormone state in male mice.
6. N White, **R Parsons**, G Collins, A Barnett **BMC Med (2023)**
Evidence of questionable research practices in clinical prediction models.
7. B Abell, S Naicker, D Rodwell, T Donovan, A Tariq, M Baysari, **R Parsons**, **Implement Sci (2023)**
R Blythe, SM McPhail
Identifying barriers and facilitators to successful implementation of computerized clinical decision support systems in hospitals: a NASSS framework-informed scoping review.
8. 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.
9. **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.
10. **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.
11. O Durunna, JA Carroll, JW Dailey, D Damiran, KA Larson, E Timsit, **R Parsons**, **Front Genet (2023)**
G Manafiazar, HA Lardner
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.
12. J-F Harmsen, M van Weeghel, **R Parsons**, GE Janssens, J Wefers, D van Moorsel, **Cell Rep (2022)**
J Hansen, J Hoeks, MKC Hesselink, RH Houtkooper, P Schrauwen
Divergent remodeling of the skeletal muscle metabolome over 24h between young, healthy men and older, metabolically compromised men.
13. S Cramb, A Rolley, CR Gibbs, **R Parsons**, C Hayden, A Woodley, **QUT ePrints (2022)**
K Vallmuur, J Warren
Injury Treatment and Rehabilitation Accessibility Queensland Index (iTRAQI) Pilot for Moderate-to-Severe Traumatic Brain Injury: Technical report.
14. **R Parsons**, RD Blythe, SM Cramb, SM McPhail **Gerontology (2022)**
Inpatient Fall Prediction Models: A Scoping Review.
15. 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.
16. LVM de Assis, L Harder, JT Lacerda, **R Parsons**, M Kaehler, I Cascorbi, I Nagel, **eLife (2022)**
O Rawashdeh, J Mittag, H Oster
Rewiring of liver diurnal transcriptome rhythms by triiodothyronine (T3) supplementation.
17. **R Parsons**, SM Cramb, SM McPhail **BMJ Open (2021)**
Clinical prediction models for hospital falls: a scoping review protocol.
18. Bassi GL, JY Suen, N White, HJ Dalton, J Fanning, A Corley, S Shrapnel, **Crit Care Explor (2021)**

- S Hinton, S Forsyth, R Parsons, JG Laffey, E Fan, R Bartlett, D Brodie, A Burrell, D Chiumello, A Elhazmi, G Grasselli, C Hodgson, S Ichiba, C Luna, E Marwali, L Merson, S Murthy, A Nichol, M Panigada, P Pelosi, A Torres, PY Ng, M Ogino, Fraser JF*
Assessment of 28-Day In-Hospital Mortality in Mechanically Ventilated Patients With Coronavirus Disease 2019: An International Cohort Study.
19. *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.
 20. *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.
 21. *R Parsons, K Newbiggin, D Deller, R Edwards, R McBean* **Respirology (2019)**
Stonemasons with silicosis: Preliminary findings and a warning message from Australia.
 22. *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.
 23. *R McBean, B O'Kane, R Parsons, D Wong* **J Med Imaging Radiat Oncol (2019)**
Lu177-PSMA therapy for men with advanced prostate cancer: Initial 18 months experience at a single Australian tertiary institution.
 24. *Wesley Dust Disease Research Centre.* **ACARP (2019)**
A Clinical, Radiological and Occupational Review of Coal Mine Dust Lung Disease in Queensland.
 25. *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.