MICHAEL PEARCE

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Reed College, Department of Mathematics and Statistics

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CURRENT APPOINTMENT

Assistant Professor of Statistics
Reed College, Department of Mathematics and Statistics   2023 - Present

EDUCATION

University of Washington, Seattle, WA   2018 - 2023
Ph.D., Statistics (*Statistics in the Social Sciences* track)
Advisor: Elena A. Erosheva
Dissertation: Methods for the Statistical Analysis of Preferences, with Applications to Social Science Data

St. Olaf College, Northfield, MN   2013 - 2017
B.A., Mathematics (*Concentration in Statistics*)
Summa cum laude, Phi Beta Kappa

SCHOLARLY PUBLICATIONS

Gallo, S.A., **Pearce, M.**, Lee, C.J., and Erosheva, E.A. (2023) "A new approach to peer review assessments: Score, then rank." *Research Integrity and Peer Review* 8.10: 10.

Pearce, M. and Erosheva, E.A. (2024+) "Modeling preferences: A Bayesian mixture of finite mixtures for rankings and ratings" *arXiv preprint arXiv:2301.09755* (*under revision*)

Pearce, M. and Perlman, M. (2024+) "Estimating the ratio of means in a zero-inflated Poisson mixture model." (*under revision*)

Pearce, M. and Erosheva, E.A. (2022) "On the validity of bootstrap uncertainty estimates in the Mallows-Binomial model." *arXiv preprint arXiv:2206.12365.*

Pearce, M. and Erosheva, E.A. (2022) "A unified statistical learning model for rankings and scores with application to grant panel review." *Journal of Machine Learning Research* 23.210: 1–33.

Pearce, M. and Raftery, A.E. (2021) "Probabilistic forecasting of maximum human lifespan by 2100 using Bayesian population projections." *Demographic Research* 44.52: 1271–1294.

Pearce, M.*, Sparrow, Z.*, Mabote, T. R., and Sanchez-Gonzalez, R. (2020) "stoBEST: An efficient methodology for increased spatial resolution in two-component molecular tagging velocimetry." *Measurement Science and Technology* 32.3: 035302

**indicates authors contributed equally.*

OTHER PUBLICATIONS

Pearce, M. and Raftery, A.E. (2021) "Will this be a record-breaking century for human longevity?" *Significance.*

Pearce, M. and Raftery, A.E. (2021) "The maximum human life span will likely increase this century, but not by more than a decade" *The Conversation.*

HONORS AND AWARDS

Distinguished Dissertation Award *(The Classification Society)*   2024
ISBA World Meeting Travel Award *(International Society for Bayesian Analysis)*   2022, 2024
Scholar Award *(NeurIPS)*   2022
Dorothy M. Gilford Teaching Award *(University of Washington)*   2021

TEACHING AND MENTORSHIP

Reed College

Instructor, MATH 141 (Introduction to Probability and Statistics)	Fall 2023
Instructor, MATH 346 (Bayesian Statistics)	Spring 2024

University of Washington

Instructor, CSSS 508 (Introduction to R for Social Scientists)	Autumn 2022, Spring 2023
Teaching Assistant, STAT 528 (Applied Statistics Capstone)	Winter 2021, Winter 2022
Teaching Assistant, CSSS 589 (Multivariate Data Analysis for the Social Sciences)	Autumn 2021
Teaching Assistant, STAT 498/CSSS 594 (Statistics and Philosophy of Voting)	Autumn 2020
Teaching Assistant, STAT 311 (Elements of Statistical Methods)	Autumn 2018, Winter 2019
Teaching Assistant, STAT 342 (Introduction to Probability and Mathematical Statistics)	Spring 2019
Teaching Assistant, STAT 220 (Statistical Reasoning)	Autumn 2019
Directed Reading Program Mentor, "Social Choice Analysis of Peer Review Data"	Spring 2022
Directed Reading Program Mentor, "Voting, Ranking, and Preference Modeling"	Autumn 2021
Directed Reading Program Mentor, "Nonlinear Regression"	Winter 2020, Winter 2021, Spring 2021
Directed Reading Program Mentor, "History and Practice of Data Communication"	Autumn 2020
Washington eXperimental Mathematics Lab Mentor, "Improving Panel Consensus Tool"	Autumn 2021

St. Olaf College

Supplemental Intructor, MATH 126 (Calculus II)	Spring 2017
Supplemental Instructor, MATH 242 (Modern Computational Mathematics)	Spring 2017
Student Mentor, TRiO Upward Bound Program	2013 - 2015

THESIS STUDENTS

Every student at Reed College writes a senior thesis. Below is a list of students whom I have advised.

Conor Bekaert, "Towards a Weighted Joint Statistical Model for Rankings and Ratings" (2024)
Quinn Hargrove, "Visualizations to Improve Ranked Data Analyses, with Applications to Board Game Data" (2024)

CONFERENCE PRESENTATIONS

Classification Society Annual Meeting   June 2024
University of British Columbia – Okanagan Campus, Kelowna, BC
"Methods for the Statistical Analysis of Preferences, with Applications to Social Science Data" (Distinguished Dissertation Award plenary)

International Meeting of the Psychometrics Society, College Park, MD   July 2023
"Improving preference analysis: Joint models for ordinal and cardinal data" (presentation)

NeurIPS, New Orleans, LA   December 2022
"A Unified Statistical Learning Model for Rankings and Scores with Application to Grant Panel Review" (Journal-to-Conference Track Poster Session)

Joint Statistical Meetings, Washington, D.C.   August 2022
"Using ranking data for decision-making" (topic-contributed paper session; organizer and chair)
"Fast Bayesian estimation for ranking models" (speed session)

ISBA World Meeting, Montreal, Canada   June 2022
"Joint Bayesian inference for rankings and ratings under heterogeneous preferences" (poster session)

WORKING GROUP PRESENTATIONS

Statistics and Machine Learning in the Social Sciences Working Group   April 2024
University of Washington, Seattle, WA
"Weighted Mallows-Binomial Model for Rankings and Ratings" (invited presentation)

Statistics and Machine Learning in the Social Sciences Working Group   November 2023
University of Washington, Seattle, WA
"Rankings and ratings in peer review: A mixture of finite mixtures accounting for degree of reviewer leniency" (invited presentation)

Working Group on Model-Based Clustering, Athens, Greece (virtual)   October 2021
"Unified latent class modeling of scores and rankings applied to grant panel review" (poster session)

Joint Statistical Meetings, Seattle, WA (virtual)   August 2021
"Unified latent class modeling of score and rank data applied to grant panel review" (speed session)

SELECTED MEDIA COVERAGE

BBC News (Brazil) "Por que cada vez mais pessoas estão vivendo até os 100 anos?" (July 11, 2022)

Stats and Stories (Podcast) "The Age of the Supercentenarian" (April 29, 2022) `https://statsandstories.net/health1/the-age-of-the-supercentenarian`.

Washington Post "Want to add healthy years to your life? Here's what new longevity research says." (Oct. 11, 2021)

Southern Weekly (China) "What is the limit of human life span?" (Sept. 16, 2021)

CNBC "Researchers say the probability of living past 110 is on the rise — here's what you can do to get there" (July 17, 2021)

Elemental (Medium) "How Long Can Humans Really Live?" (July 15, 2021)

Gulf News "Surviving up to 150: How long can a person live?" (July 12, 2021)

Indian Express "Can a person live to age 124, 135 or 150? Some optimism, some caveats" (July 6, 2021)

The South African "Rise of the supercentenarians: Today's kids could live for 130 years" (July 4, 2021)

UW News "How long can a person live? The 21st century may see a record-breaker" (July 1, 2021)

PROFESSIONAL EXPERIENCE

Boeing Research and Technology   2019 - 2020
Applied Statistics Intern

Deloitte LLC   2017 - 2018
Analytics Consultant

SOFTWARE

rankrate: Statistical Tools for Preference Learning with Rankings and Ratings. R package available on CRAN. Vignettes: `https://pearce790.github.io/rankrate/`

Peer Review with Rankings and Ratings. R Shiny application. `https://pearce790.shinyapps.io/rankrate_PeerReview/`

ACADEMIC SERVICE AND OUTREACH

Anonymous peer reviewer for several publications, including *PlosOne*, *Biomedicine Hub*, *Cogent Social Sciences*, and *Advances in Data Science and Classification*.

Reed College

Statistics Tenure-Track Search Committee	2023, 2024
Statistics Visiting Search Committee	2024
Undergraduate Research Committee	2023-2024
Mathematics and Statistics Colloquium Organizer	2023-2024

University of Washington

Pre-Application Review Service (reviewer)	2022
PhD Admissions (reviewer)	2020-2021
International Conference on Machine Learning (workflow chair)	2021
Queer Union for (Bio)statistician Inclusion and Community (founder)	2022-2023
Undergraduate Curriculum Revamp Committee (member)	2021-2022