

Sheridan Grant | Curriculum Vitae

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I develop statistical solutions to challenging social science problems. Currently, I work on causal discovery and inference methods for assessing fairness in peer review. In the past I've worked in computational algebraic geometry, image processing, small-sample high-dimensional hypothesis testing, and genomics.

Current Research

My dissertation, co-advised by Elena Erosheva and Marina Meilă (UW Statistics), is on causal fairness and bias in peer review. We first develop multivariate causal discovery methods for parts of peer review in which intervention is impossible, and then analyze causal fairness in NIH and AIBS grant review data. Projects currently in progress are:

- **Bayesian Causal Model Selection:** A Bayesian take on causal discovery.
- **Peer Review Refinement:** We define review "Refinement," analyze information-theoretic measures of it, and apply these metrics to peer review data.
- **Causality in Peer Review:** We mold existing causal discovery and inference methods to meet the specific challenges of peer-review data.

Hard details for each project are available in person or upon the release of a technical report.

Education

- **University of Washington** **September 2016–**
PhD Candidate, Statistics
- **Pomona College** **August 2011–May 2015**
B.A., Mathematics (minor, computer science)
Advisor: Mark Huber (Claremont McKenna College). Thesis: "Recycling Randomness: Perfect Sampling on Graphical Distributions with Applications to Image De-Noising."
- **University of Cape Town** **January–June 2014**
Study Abroad

Academic & Research Employment

- **Instructor** **June–July 2019**
University of Washington
Taught MATH/STAT 394: Probability I. Wrote lesson plans, homeworks and tests, and managed one TA.
- **Research Intern** **June–September 2018**
Microsoft Research Genomics
 - Developed software for integrating secondary gene analysis from Microsoft MSGen (BWA and GATK) and clinical data, using relational databases and parallel computation on Azure virtual machines.
 - Built ML model optimization and selection framework that predicts propensity for Sudden Infant Death Syndrome (SIDS) from genomic and clinical data; these models find genetic variants that may be responsible for SIDS.
- **Research Assistant** **January 2017–**
University of Washington
 - Racial Bias in NIH Grant Reviews, with Elena Erosheva (January 2017–March 2018; NIH funded).
 - Peer Review Refinement, with Marina Meilă (March–June 2018; NSA funded).
 - Fair Peer Review, with Elena Erosheva and Marina Meilă (June 2018–March 2019, August 2019–; NSF funded).
- **Teaching Assistant** **September 2016–**
University of Washington

- STAT 220: Principles of Statistical Reasoning (with Ranjini Grove, fall 2016).
- CSSS 564: Bayesian Statistics for the Social Sciences (with Jeff Arnold, spring 2017).
- MATH/STAT 395: Probability II (with Michael Perlman, spring 2018).

Consultant

June 2015–July 2016

○ *Energy and Environmental Economics*

Helped modernize the firm's approach to modeling and analysis with computational and statistical methods such as mixed integer/linear programming and Monte Carlo simulation. Developed methods and software for valuing utility participation in real-time energy markets, economically modeled energy transmission between Arizona and northern Mexico, and researched the impact of climate change on the U.S. electricity grid.

Mentor and Grader

September 2012–May 2015

○ *Pomona College*

- MATH 103: Combinatorics (with Shahriar Shahriari and Vin de Silva; spring 2015, fall 2014, fall 2013).
- MATH 107: Vector Calculus (with Vin de Silva and Dashiell Fryer; spring 2013, fall 2012).

REU Researcher

June 2013–August 2013

○ *Texas A&M University*

Computational algebraic geometry research at a NSF-funded REU (Research Experience for Undergraduates), culminating in a [publication](#) and an [award-winning presentation](#).

Peer-Reviewed Publications

Published

- **Sheridan Grant, Michael Perlman, and Darren Grant:** "[Targeted testing for bias in order assignment, with an application to Texas election ballots.](#)" *Journal of Statistical Planning and Inference*, 2019.
- **Eleanor Anthony, Sheridan Grant, Peter Gritzmman, and J. Maurice Rojas:** "[Polynomial-Time Amoeba Neighborhood Membership and Faster Localized Solving.](#)" In "Topological and Statistical Methods for Complex Data" 1st ed. Springer-Verlag Berlin Heidelberg, 2015.

Submitted

- **Elena Erosheva, Sheridan Grant, Mei-Ching Chen, Mark Lindner, Richard Nakamura, and Carole Lee:** "Criterion Scores Completely Account for Racial Disparities in NIH Grant Review" Under review at *Science Advances*.

Technical Reports

- **Sneller Price, Zachary Ming, Alison Ong, and Sheridan Grant (E3):** "[Nevada Net Energy Metering Evaluation 2016 Update.](#)" 2016.
- **Jack Moore, Sheridan Grant, Sharad Bharadwaj, and Brian Conlon (E3):** "[Idaho Power Company Energy Imbalance Market Analysis.](#)" 2016.
- **Jack Moore, Brian Conlon, Sheridan Grant, and Ren Orans (E3):** "[PGE EIM Comparative Study: Economic Analysis Report.](#)" 2015.

Talks and Presentations

- **Impact of Fresh Frozen Plasma Transfusion on Upper Gastrointestinal Bleeding in Patients with Cirrhosis:** Baxi, A.C., **Grant, S.**, Teng, B.J., Harms, M.A., Jensen-Otsu, E., Strate, L.L. and Ko, C.W. Abstract/Poster. *The American Journal of Gastroenterology*, 2017.
- **Presenting Information Effectively in the Classroom:** Lecturer at the UW TA Conference. University of Washington, summer 2017.
- **Approximating Amoebae Using Archimedean Tropical Varieties:** MAA Mathfest Undergraduate Paper Sessions, summer 2013.

Awards

- **Magna cum Laude:** Pomona College, 2015.
- **Distinction in the Senior Mathematics Thesis:** Pomona College, 2015.

- **Levy Memorial Prize in Mathematics:** Awarded to 3 junior math majors. Pomona College, 2014.
- **Phi Beta Kappa:** Inducted as a junior. Pomona College, 2014.
- **Undergraduate Student Presentation Award:** Best talk in a session of 6. MAA Mathfest, 2013.
- **Tileston General Physics Prize:** Awarded to 4 freshman physicists. Pomona College, 2012.

Service

- **Data Science Mentor** **April 2019**
 ○ *UW DataFest*
 Mentored teams of undergraduates in data science and statistical modeling at the ASA-sponsored UW DataFest.
- **Discrete Math Mentor** **Autumn 2018**
 ○ *UW Math Department*
 Using experience with mixed integer/linear programs from my consulting job, mentored UW Discrete Math (MATH 381) students in scheduling problems in a mock consulting environment.
- **Statistics in the Community** **September 2018–**
 ○ *UW Statistics Department*
 Volunteer consulting work for community partners; helped the Vashon Nature Center assess the effect of bulkhead removal on coastline ecological health.
- **Lead TA** **September 2017–August 2019**
 ○ *UW Statistics Department*
 Manage the Statistics Tutor and Study Center, train incoming TAs, resolve professor-TA conflicts.
- **Facilitator** **September 2017**
 ○ *UW TA Conference*
 Taught a short course on presenting information effectively in the classroom.
- **Teacher** **Summer 2017**
 ○ *STEMPREP Academy*
 Taught statistics to 7th- and 8th-grade students. Basics of probability, R programming, experimental design.
- **Math Department Liaison** **September 2014–May 2015**
 ○ *Pomona College*
 Organized department events, such as retreats, information sessions, and study breaks, and served as a point of contact for underclassmen interested in majoring in math.

Skills and Languages

- **Programming:** Proficient in Python, R. Familiar with C++, Java, Bash, SQL, Matlab, Mathematica, Haskell, Prolog, Racket, VBA.
- **Software:** Git, Excel, Tensorflow, Linux (Ubuntu), GATK, AWS, Microsoft Genomics Services, Azure, Azure Machine Learning Studio, SQL Server Management Studio, Android Studio, ArcGIS.
- **Entrepreneurship:** Head ML engineer for the 3rd place team at [Madrona Venture Labs'](#) GoVertical ML Startup competition 2019.
- **Languages:** English, conversational Spanish.

Interests

I ran Division III Cross Country and Track at Pomona College, and now I compete for (and am on the Board of) Seattle's Club Northwest in track, cross country, road, and trail racing. I also play for the UW Statistics Department's intramural soccer and ultimate frisbee teams, and for the UW Table Tennis Club. I've played piano since I was 8. I go backpacking whenever I get the chance. I've done sections of the PCT, 150 miles in the Grand Canyon, the Salkantay Trail in Peru, 100 miles on the Jordan National Trail, and a number of shorter trips around Washington state.