

Mark M. Fredrickson

Department of Statistics
University of Michigan, Ann Arbor
323 West Hall
1085 South University
Ann Arbor, MI 48109

Ph: 651.233.0773
mfredric@umich.edu
<http://github.com/markmfredrickson>

Education

- **PhD, Statistics.** University of Illinois at Urbana-Champaign. August 2018. Dissertation: *Causal Inference for Complex Data: Randomization inference for network outcomes, treatment effect heterogeneity, and subgroup specific effects*
Co-chairs: Yuguo Chen (Statistics), Jake Bowers (Political Science)
- **MA, Political Science.** University of Illinois at Urbana-Champaign. December 2016.
- **MS, Statistics.** University of Illinois at Urbana-Champaign. August 2012.
- **BA, Government and Computer Science.** Claremont McKenna College. May 2005.

Employment

- **Lecturer.** Department of Statistics, University of Michigan, Ann Arbor, MI. (2021 – Present)
- **Postdoctoral Research Fellow.** Department of Statistics, University of Michigan, Ann Arbor, MI. (2018 – 2022)

Publications and Working Papers

- Hayes, A., Fredrickson, M. M., and Levin, K. (2025) “Estimating Network-Mediated Causal Effects via Principal Components Network Regression.” *Journal of Machine Learning Research*, 26 (13): 1 – 99.

- Hayes, M., Wong, C., Bloeser, A., Fredrickson, M. M., and LaForge, C. (2024) “Elected Officials, Empowered Voters: The Impact of Descriptive Representation on Voter Turnout.” *Political Behavior*, 46 (1): 185 – 207.
- Fredrickson, M. M. and Hansen, B. (2023) “Optimal Full Matching.” In Zubrizarreta, Stuart, Small, and Rsoenbaum, eds, *Handbook of Matching and Weighting Adjustments for Causal Inference*. pp. 87–104. Chapman and Hall/CRC, New York.
- Fredrickson, M. M. and Chen, Y. (2023) “Testing attributable effects hypotheses with an application to the Oregon Health Insurance Experiment.” *Statistics and Its Interface*, 16 (3): 349 – 361.
- Fredrickson, M., Errickson, J. and Hansen, B.B. (2020). “Comment on Yu et al., ‘Matching methods for observational studies from large databases’.” *Statistical Science*, 35 (3): 361 – 366.
- Wong, C., Bowers, J., Rubenson, D., Fredrickson, M. M., and Rundlett, A. (2020). “Maps in People’s Heads: Assessing A New Measure of Context.” *Political Science Research and Methods*, 8(1) : 160 – 168.
- Fredrickson, M. M. and Chen, Y. (2019) “Non-parametric Tests of Network Formation in Randomized Controlled Trials.” *Social Networks*, 59: 171 – 183.
- Bowers, J., Desmarais, B., Fredrickson, M. M., Wang, S., Ichino, N., and Lee, H. (2018). “Models, Methods and Network Topology: Experimental Design for the Study of Interference.” *Social Networks*, 54: 196 – 208.
- Xu, Q., Man, A., Fredrickson, M. M., Hou, Z., Pitkänen, J., Wing, B., Ramirez, C., Li, B., Greenberg, J. (2018) “Quantification of uncertainty in aboveground biomass estimates derived from small-footprint airborne LiDAR.” *Remote Sensing of Environment*, revise and resubmit.
- Bowers, J., Fredrickson, M. M., and Aronow, P. M. (2016). “Research Note: A More Powerful Test Statistic for Reasoning about Interference between Units.” *Political Analysis*, 24: 395 – 403.
- Bowers, J., Fredrickson, M. M., and Panagopoulos, C. (2013). “Reasoning about Inference Between Units: A General Framework.” *Political*

Analysis, 21(1): 97 – 124. Winner of the 2014 of the *Miller Prize* for best paper published in *Political Analysis* in the previous year.

- Winters, M. S., Testa, P., and Fredrickson, M. M. (2012). “Using Field Experiments to Understand Information as an Antidote to Corruption.” In Serra and Wantchekon, eds, *New Advances in Experimental Research on Corruption*. pp 213 – 246. Emerald Group Publishing, Ltd., Bingley, UK.
- Fredrickson, M. M. and Hansen, B. B. “Diagnosing and Correcting Balance Assessments in High Dimensions.”
- Hayes, A., Fredrickson, M. M. and Levin, K. “Estimating network-mediated causal effects via spectral embeddings.”
- Fredrickson, M. M. and Hansen, B. B. “Subgroup Analysis for Group Randomized Trials.”
- Ichino, N., Bowers, J., Fredrickson, M. M., and Grady, C. “A randomized experiment investigating spillover in the 2008 Ghana election registration.”

Teaching Experience

- University of Michigan
 - Computational Methods for Statistics and Data Science (STATS 406/DATASCI 406). Instructor.
 - Introduction to Data Science (STATS 206/DATASCI 101). Instructor.
 - Introduction to Statistical Programming (STATS 306/DATASCI 101). Instructor.
- University of Illinois
 - Data Science Foundations (STAT 480). TA. Spring 2018.
 - Statistics and Probability I (STAT 400). Lead TA. Fall 2017.
 - Professional Statistics (STAT 443). TA. Fall 2016, Fall 2015.
 - Statistical Analysis (STAT 200). Instructor under faculty supervision. Spring 2016.

Software

- RItools: An R package for randomization inference. With Jake Bowers and Ben B. Hansen.
- Optmatch: Optimal bipartite matching in R. With Ben B. Hansen.

Presentations

- “Full Matching with More Precise Set Size Constraints.” University of Michigan, Dearborn, Dept. of Mathematics and Statistics Colloquium. March 2022.
- “Baseline Equivalency Measures in High Dimensions.” Society for Research Effectiveness in Education, September 2021.
- “Full Matching with More Precise Set Size Constraints.” Joint Statistical Meetings, August 2021.
- “Diagnosing and Correcting Balance Assessments in High Dimensions.” Statistical Learning and Data Science conference, scheduled for May 2020, cancelled due to COVID-19.
- “Diagnosing and Correcting Balance Assessments in High Dimensions.” Society for Research Effectiveness in Education conference, scheduled for March 2020, cancelled due to COVID-19.
- “Diagnosing and Correcting Balance Assessments in High Dimensions.” International Conference on Health Policy Statistics, January 2020.
- “Attributable Effects for Count and Continuous Data.” Bohrer Memorial Workshop, November 2017.
- “Randomization and Permutation Tests of Network Formation.” Joint Statistical Meetings, July 2017.
- “Subgroup Analysis for Group Randomized Trials.” Atlantic Causal Inference Conference, May 2017.
- “Randomization and Permutation Tests of Network Formation.” Bohrer Memorial Workshop, November 2016.

- “Randomization and Permutation Tests of Network Formation” (poster). Nonparametric Statistics Workshop: Integration of Theory, Methods and Applications, October 2016.
- “Annotated Love Plots For Balance Tests and Sensitivity Analysis” (poster). Atlantic Causal Inference Conference, May 2014.
- “Controlling the Family-Wise Error Rate in Online Survey Experiments” (poster). Polmeth (Political science methodology section summer meeting), July 2013.
- “Using a randomized experiment to investigate spillover in voter registration irregularities in the 2008 Ghana election” (poster). Political Networks, June 2013.
- “Implementing Fisherian Randomization Inference.” Causality and Political Networks, May 2013

Awards and Grants

- Foundational Course Initiative for Development of Data Science 101 (2024)
- Large Course Initiative Grant for Team Based Learning development of Stats 206, “Introduction to Data Science” (2023)
- University of Illinois Graduate College Travel Award (2017)
- University of Illinois Graduate College Travel Award (2016)
- NSF Travel Award for the Nonparametric Statistics Workshop at the University of Michigan, Ann Arbor (2016)
- Miller Prize for best paper published in *Political Analysis* in 2014.

Academic Service and Professional Membership

- Teaching During COVID-19 Committee, Fall 2020.
- Department of Statistics photographer, University of Illinois
- Served as reviewer:

- National Science Foundation, Methodology, Measurement, and Statistics Program
- *Journal of Educational and Behavioral Statistics*
- *Journal of Research on Educational Effectiveness*
- *Journal of Computational and Graphical Statistics*
- *Psychological Methods*
- *Political Behavior*
- *Political Analysis*
- *Reproducible Research with R and RStudio* by Christopher Gandrud. CRC Press.
- Panels and workshops
 - Introduction to the R Programming Language, SIAM Getting Started Series, March 2014.
 - Reproducible research round table, UIUC Library Open Access Week, October 2013.
 - Propensity score matching with Optmatch workshop (JSM 2012; University of Michigan, June 2011)
- Member of the American Statistical Association (2012 – Present)
- Member of the Institute of Mathematical Statistics (2017 – Present)