Luke W. Miratrix

Harvard Graduate School of Education
Larsen 603
14 Appian Way
Cambridge, MA 02138

luke_miratrix@gse.harvard.edu
http://scholar.harvard.edu/lmiratrix
http://cares.gse.harvard.edu
(510) 735-7635

PROFESSIONAL EXPERIENCE

Associate Professor, Harvard Graduate School of Education	July 2020–Present
Assistant Professor, Harvard Graduate School of Education	July 2015–2020
Faculty Affiliate, Department of Statistics, Harvard University	July 2015–Present
Assistant Professor, Department of Statistics, Harvard University	July 2012–June 2015
Faculty Affiliate, Harvard Graduate School of Education	June 2014–June 2015

EDUCATION

Ph.D., Statistics, University of California, Berkeley	2012
Mathematics Education Ph.D. Program, University of California, Berkeley In the Graduate Group in Science and Mathematics Education (SESAME) Switched to Statistics Program A.B.D.	2006–2009
M.S., Computer Science, Massachusetts Institute of Technology	1999
B.S. with Honors, Computer Science, California Institute of Technology	1997
B.A., Mathematics, Reed College	1997

HONORS AND AWARDS

SREE Early Career Award	2019
Everett Mendelsohn Excellence in Mentoring Award	2019
NaED/Spencer Postdoctoral Fellowship	2018
National Science Foundation Graduate Research Fellowship	2007
Berkeley Graduate Fellowship	2006
Rensselear Polytechnic Institute Award for Excellence	1995
Dean's List, Reed College	1993–1995

EXTERNAL GRANTS

Principal Investigator, with Drs. Reagan Mozer and Shiren Al-Adeimi. *Practical tools for large-scale evaluation of text data in randomized trials in education.* Institute of Education Sciences. R305D220032. $899,606. 07/01/2022–06/30/2025.

Co-Principal Investigator, with Dr. Mike Weiss. *Identifying Best Practices for Estimating Average Treatment Effects in Cluster Randomized Trials: Estimands, Estimators, and Estimates.* Institute of Education Sciences. R305D220046. $898,275. 07/01/2022 - 06/30/2025

Co-Principal Investigator, with Dr. Avi Feller. *Improving methods for policy impact evaluation with group panel data in education research.* Institute of Education Sciences. R305D200010. $896,026. 07/01/2020–06/30/2023

Co-Principal Investigator, with Drs. Lindsay Page and Luke Keele. *Matching in Multilevel Contexts.*

Spencer Foundation. 201900074. $385,733. 01/01/2019–12/31/2022

Principal Investigator, with Drs. Avi Feller and Peng Ding. *Understanding and Measuring Treatment Effect Heterogeneity in Large Scale Experiments and Pseudo-Experiments in Education.* Institute of Education Sciences. $803,246. 7/1/2015–6/30/2018

Co-Principal Investigator, with Dr. Luke Bornn. *Statistical Methods for Causal Inference in Geographic Regression Discontinuity Designs.* National Science Foundation. $330,000. 4/15/2015–3/31/2018

Co-Principal Investigator, with Drs. Warren Little and Joan Heller. *Investigating How and Under What Conditions Effective Professional Development Increases Student Achievement in Elementary Science.* Institute of Education Science. $699,354. 2015–2018

EDITORIAL SERVICES

Journal of Research on Educational Effectiveness, Research Methods Editor, 2019–

Evaluation Review, Editorial Board, 2022–

Journal of Educational and Behavioral Statistics, Editorial Board, 2019–

Journal of Research on Educational Effectiveness, Editorial Board, 2017–2019.

JASA/TAS Book Reviews, Associate Editor, 2014–2018.

Regularly review papers of *The Annals of Applied Statistics, The Journal of the American Statistical Association, The American Journal of Political Science, The Journal of Causal Statistics, The Journal of Statistical Software, the Journal of Research on Educational Effectiveness, the American Journal of Evaluation,* and others.

JOURNAL PUBLICATIONS

1) Gagnon-Bartsch, J. A., Sales, A. C., Wu, E., Botelho, A. F., Erickson, J. A., Miratrix, L. W., and Heernan, N. T. (In press) Precise unbiased estimation in randomized experiments using auxiliary observational data. *The Journal of Causal Inference.*
2) Gilbert, J., Kim, J., & Miratirx, L. (In Press) Modeling Item-Level Heterogeneous Treatment Effects With the Explanatory Item Response Model: Leveraging Large-Scale Online Assessments to Pinpoint the Impact of Educational Interventions. *Journal of Educational and Behavioral Statistics.*
3) Huang, M., Egami, N., Hartman, E., and Miratrix, L. (In Press) Leveraging Observational Outcomes to Improve the Generalization of Experimental Results. *Annals of Applied Statistics.*
4) Lu, B., Ben-Michael, E., Feller, A., and Miratrix, L. (In Press) Is it who you are or where you are? Accounting for compositional differences in cross-site treatment variation. *JEBS.*
5) *Keele, L., Ben-Michael, E., Feller, A., Kelz, R., & Miratrix, L. (2023) Hospital Quality Risk Standardization via Approximate Balancing Weights. Annals of Applied Statistics. 17(2): 901-928.*
6) *Miratrix, L., Simulation as an Analysis Strategy for Interrupted Time Series Designs. (2022) Evaluation Review, 46(6), 750-778.*
7) *Hanno, E. C., Cuartas, J., Miratrix, L. W., Jones, S. M., & Lesaux, N. K. (2022) Changes in children's behavioral health and family well-being during the COVID-19 pandemic. Journal of Developmental & Behavioral Pediatrics, 43(3), 168-175.*

8) *Sabol, T. J., McCoy, D., Gonzalez, K., Miratrix, L., Hedges, L., Spybrook, J. K., & Weiland, C. (2022). Exploring treatment impact heterogeneity across sites: Challenges and opportunities for early childhood researchers. Early Childhood Research Quarterly, 58, 1426.*

9) *Danielsen, A. C., Lee, K. M., Boulicault, M., Rushovich, T., Gompers, A., Tarrant, A., Reiches, M., Shattuck-Heidorn, H., Miratrix. Luke W., & Richardson, S. S. (2022). Sex disparities in COVID-19 outcomes in the United States: Quantifying and contextualizing variation. Social Science & Medicine, 114716.*

10) *Pashley, N. E., Basse, G. W., & Miratrix, L. W. (2021). Conditional as-if analyses in randomized experiments. Journal of Causal Inference, 9(1), 264-284.*

11) *Weidmann, B. & Miratrix, L. (2021) Missing, presumed different? Quantifying the risk of attrition bias in education evaluations. Journal of the Royal Statistical Society: Series A (Statistics in Society), 184(2), 732-760.*

12) *Pashley, N., & Miratrix, L. (2021) Block what you can, except when you shouldn't. Journal of Educational and Behavioral Statistics, 46(3), 271-296.*

13) *Miratrix*, L., Weiss*, M., & Henderson, B. (2021) An Applied Researcher's Guide to Estimating Effects from Multisite Individually Randomized Trials: Estimands, Estimators, and Estimates. The Journal of Educational Effectiveness. 14(1), 270-308.*

14) *Pashley, N. & Miratrix, L. (In press) Insights on Variance Estimation for Blocked and Matched Pairs Designs. The Journal of Educational and Behavioral Statistics, 46(3), 271-296.*

15) *Rischard, M., Branson, Z., Bornn, L., & Miratrix, L. (2021) Do School Districts Affect NYC House Prices? Identifying Border Differences Using a Bayesian Nonparametric Approach to Geographic Regression Discontinuity Designs Journal of the American Statistical Association, 116(534), 619-631. Related poster awarded Best Poster at BAYSM 2018, University of Warwick, UK.*

16) *Schochet, P., Pashley, N., Miratrix, L., & Kautz, T. (2021) Design-Based Ratio Estimators for Clustered, Blocked RCTs. Journal of the American Statistical Association.*

17) *Weidmann, B. & Miratrix, L. (2021) Lurking inferential monsters? Quantifying bias in non-experimental evaluations of school programs. Journal of Policy Analysis and Management, 40: 964-986.*

18) *Mozer, R, Miratrix, L., Kaufman, A. R., & Anastasopoulos, L. J. (2020). Matching with Text Data: An Experimental Evaluation of Methods for Matching Documents and of Measuring Match Quality. Political Analysis, 28(4), 445-468. This work received the Society for Political Methodology's 2021 Miller Prize.*

19) *Yuan, L.-H., Feller, A., & Miratrix, L. (2019). Identifying and Estimating Principal Causal Effects in Multisite Trials. The Annals of Applied Statistics, 13(3), 1348-1369. Paper awarded the Tom Ten Halves Award at ACIC 2017.*

20) *Jay J., Miratrix L., Branas C. C., Zimmerman M. A. & Hemenway, D. (2019). Urban Building Demolitions, Firearm Violence and Drug Crime. Journal of Behavioral Medicine, 42(4), 626-634.*

21) *Branson, Z., & Miratrix, L. (2019). Randomization Tests that Condition on Non-Categorical Covariate Balance. Journal of Causal Inference, 7(1).*

22) *Ding, P. & Miratrix, L., (2019). Model-free Causal Inference of Binary Experimental Data. Scandinavian Journal of Statistics, 46(1), 200-214.*

23) *Fan, A., Doshi-Velez, & F., Miratrix, L. (2019). Promoting Domain-Specific Terms in Topic Models with Informative Priors. Journal of Statistics and Data Science, 12(3), 210-222.*

24) *Ding, P., Feller, A., & Miratrix, L., (2019). Decomposing Treatment Effect Variation. Journal of the American Statistical Association, 114(524), 304-317.*

25) *Branson, Z., Rischard, M., Bornn, L., & Miratrix, L. (2019). A Nonparametric Bayesian Methodology for Regression Discontinuity Designs. Journal of Statistical Planning and Inference, 202, 14-30. Paper awarded IBM student paper award at 2017 New England Statistics Symposium (NESS).*

26) *Keele, L. & Miratrix, L. (2018). Randomization Inference for Outcomes with Clumping at Zero. The American Statistician, 73(2), 141-150.*

27) *Miratrix, L, Wager, S., & Zubizarreta, J. (2018). Shape-constrained Partial Identification of a Population Mean under Unknown Probabilities of Sample Selection. Biometrika, 105(1), 103-114.*

28) *Forastiere, L., Mealli, F., & Miratrix, L. (2018). Posterior Predictive p-values with Fisher Randomization Tests in Noncompliance Settings: Test Statistics vs Discrepancy Variables. Bayesian Analysis, 13(3), 681-701.*

29) *Miratrix, L., Sekhon, J. S., Theodoridis, A., & Campos L., (2018). Worth Weighting? How to Think About and Use Sample Weights in Survey Experiments. Political Analysis, 26(3), 275-291. This work received the Society for Political Methodology's 2019 Miller Prize.*

30) *Miratrix, L., Furey, J., Feller, A., Grindal, T., & Page, L. (2018). Bounding, an Accessible Method for Estimating Principal Causal Effects, Examined and Explained. Journal on Research in Education Effectiveness (JREE), 11(1), 133-162. This work received the best paper award for 2018 from JREE.*

31) *Feller, A., Mealli, F., & Miratrix, L. (2017). Principal Score Methods: Assumptions, Extensions, and Practical Considerations. Journal of Educational and Behavioral Statistics, 42(6), 726-758.*

32) *Ding, P., Li, X., & Miratrix, L. (2017) Bridging Finite and Super Population Causal Inference. Journal of Causal Inference, 5(2).*

33) *Lee, J., Forastiere, L., Miratrix, L., & Pillai, N. S. (2017). More Powerful Multiple Testing in Randomized Experiments with Non-Compliance. Statistica Sinica, 27(3), 1319-1345.*

34) *Miratrix, L. & Ackerman, R. (2016). Conducting Sparse Feature Selection on Arbitrarily Long Phrases in Text Corpora with a Focus on Interpretability. Statistical Analysis and Data Mining, 9(6), 435-460.*

35) *Feller, A., Grindal, T., Miratrix, L., & Page, L. (2016). Compared to What? Variations in the Impacts of Early Childhood Education by Alternative Care-Type Settings. Annals of Applied Statistics, 10(3), 1245-1285.*

36) *Hennessy, J., Dasgupta, T., Miratrix, L., Pattanayak. C. & Sarkar, P. (2016). A Conditional Randomization Test to Account for Covariate Imbalance in Randomized Experiments. Journal of Causal Inference, 4(1), 61-80.*

37) *Ding, P., Feller, A., & Miratrix, L. (2015). Randomization Inference for Treatment Effect Variation. Journal of the Royal Statistical Society, Series B, 78(3), 655-671.*

38) *Ding, P. & Miratrix, L. (2015). To Adjust or Not to Adjust? Sensitivity Analysis of M-Bias and Butterfly-Bias. Journal of Causal Inference, 3(1), 41-57.*

39) *Page, L., Feller, A., Grindal, T., Miratrix, L., & Somers, M.-A. (2015). Principal Stratification: A Tool for Understanding Variation in Program Effects across Endogenous Subgroups. American Journal of Evaluation, 36(4), 514-531.*

40) *Jia*, J., Miratrix*, L., Yu, B., Gawalt, B., El Ghaoui, L., Barnesmoore, L. & Clavier, S. (2014). Concise Comparative Summaries (CCS) of Large Text Corpora with a Human Experiment. Annals of Applied Statistics, 8(1), 499-529.*

41) *Miratrix, L.W., Sekhon, J.S., & Yu, B. (2013). Adjusting Treatment Effect Estimates by Post-stratification in Randomized Experiments. Journal of the Royal Statistical Society, Series B, 75(2), 369-396.*

42) *Heller, J.I., Daehler, K.R., Wong, N., Shinohara, M., & Miratrix, L.W. (2012). Differential Effects of Three Professional Development Models on Teacher Knowledge and Student Achievement in Elementary Science. Journal of Research in Science Teaching, 49(3), 333-362.*

43) *Miratrix, L.W. & Stark, P.B. (2009). Election Audits using a Trinomial Bound. IEEE Transactions on Information Forensics and Security, 4(4), 974-981.*

* *Co-first authors.*

CONFERENCE PAPERS & PROCEEDINGS

1) Ho, N., Feller, A., Grief, E., Miratrix, L., & Pillai, N. (2022). "Weak separation in principal stratification and finite mixture models," *AISTATS: The 25th International Conference on Artificial Intelligence and Statistics.*

2) Rischard, M., Branson, Z., Miratrix, L. & Bornn, L. (2018). Bayesian Nonparametrics for Geographic RDDs. Paper presented at *BNPNeurIPS 2018*, Montreal, Canada.

3) Miratrix, L., Feller, A., Pillai, N., & Pati, D. (2016). Using Dirichlet Processes for Modeling Heterogeneous Treatment Effects across Sites. Paper presented at the *Society for Research on Educational Effectiveness (SREE)* Conference 2016, Washington, D.C.

4) Anastasopoulos, J., Kaufman, A., & Miratrix, L. (2015). Separating Topic Selection and Word Choice in Estimates of Media Bias. Paper presented at the Meeting of the Midwest Political Science Association, Chicago, IL.

5) Miratrix, L., Theodoridis, A., & Sekhon, J. (2014). Why You Should (Usually) Post-Stratify on Sample Weights in Survey Experiments. Presented at the 31st annual meeting for the *Society for Political Methodology (POLMETH)*, Athens, Georgia.

6) Reinecke, K., Yeh, T., Miratrix, L., Mardiko, R., Zhao, Y., Liu, J. & Gajos, K.Z. (2013). Predicting Users' First Impressions of Website Aesthetics with a Quantification of Perceived Visual Complexity and Colorfulness. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, pp. 2049-2058. Won Best Paper Honorable Mention Award for the CHI 2013.

7) Heller, J. I., Shinohara, M., Daehler, K. R., Rabe-Hesketh, S., & Miratrix, L. (2012). Effects of Making Sense of SCIENCE Professional Development on the Science Achievement of Middle School Students. In N. Finkelstein (Chair), Implementing Randomized Controlled Trials in Local Education Settings: Design, Methods, Findings and Practical Research Realities. Symposium conducted at the annual meeting of the *American Educational Research Association (AERA)*, Vancouver, Canada.

8) Heller, J.I., Shinohara, M., Miratrix, L.W., Rabe-Hesketh, S., & Daehler, K.R. (2010). Learning Science for Teaching: Effects of Professional Development on Elementary Teachers, Classrooms, and Students. Paper presented at SREE 2010, Washington, D.C.

9) Gawalt, B., Jia, J., Miratrix, L.W., Ghaoui, L., Yu, B., & Clavier, S. (2010). Discovering Word Associations in News Media via Feature Selection and Sparse Classification. In *Proceedings of the 11th ACM SIGMM International Conference on Multimedia Information Retrieval.*

10) Hall, J.L., Miratrix, L.W., Stark, P.B., Briones, M., Ginnold, E., Oakley, F., et al. (2009). Implementing Risk-limiting Post-election Audits in California. Paper presented at the *2009 Electronic Voting Technology Workshop/Workshop on Trustworthy Elections (USENIX EVT/WOTE)*, Montreal, Canada.

11) Ranney, M.A., Miratrix, L.W., & Martinez, C.A. (2009). Relationships among Beliefs about Evolution, Creation, Nationalism, Theism, and Global Warming. Paper presented at the *Annual Meeting of the Psychonomic Society*, Boston, Massachusetts.

12) Heller, J. I., Shinohara, M., Daehler, K.R., Miratrix, L.W., & Rabe-Hesketh, S. (2009). Impact of Content-focused and Practice-based Professional Development Models on Elementary Electric Circuits Teaching and Learning. In J. W. Little (Chair), Learning Science for Teaching: A Study

of Highly-designed Professional Development and its Effects on Teacher Knowledge, Classroom Practice, and Student Learning. Symposium conducted at *AERA 2009*, San Diego, California.

13) Ranney, M., Rinne, L.F., Yarnall, L., Munnich, E., Miratrix, L.W., & Schank, P. (2007). Designing and Assessing Numeracy Training for Journalists: Toward Improving Quantitative Reasoning among Media Consumers. In *Proceedings of the Eighth International Conference of the Learning Sciences.*

14) Gajos, K., Weisman, L.†, & Shrobe, H. (2001). Design Principles for Resource Management Systems for Intelligent Spaces. Paper presented at the *Second International Workshop on Self-Adaptive Software*, Budapest, Hungary.

15) Coen, M., Phillips, B., Warshawsky, N., Weisman, L.†, Peters, S., & Finin, P. (1999). Meeting the Computational Needs of Intelligent Environments: the Metaglue System. Paper presented at the *1st International Workshop on Managing Interactions in Smart Environments (MANSE).*

16) Lackner, T.M., Dobson, K., Rodenstein, R., & Weisman, L.† (1999). Sensory puzzles. In *Extended Abstracts of the Conference of Human Factors in Computing Systems.* New York, NY: ACM Press; pp. 270-271.

17) Chandy, K.M., Dimitrov, B., Le, H., Mandleson, J., Richardson, M., Rifkin, A., et al. (1996). A World-wide Distributed System using Java and the Internet. In *Proceedings of the Fifth IEEE International Symposium on High Performance Distributed Computing.* Syracuse, NY: IEEE Computer Society Press; pp. 11-18.

† Changed name to Miratrix from Weisman in 2006

SOFTWARE PACKAGES DEVELOPED

1) Kristin Porter, Luke Miratrix, Kristen Hunter and Zarni Htet (2022). `PUMP`: Power Under Multiplicity Project. R package version 1.0.1. `https://github.com/MDRCNY/PUMP` (CRAN package for calculating power, especially with planned multiple testing adjustment.)

2) Nicole Pashley and Luke Miratrix (2022). `blkvar`: ATE and Treatment Variation Estimation for Blocked and Multisite RCTs. R package version 0.0.1.5. `https://github.com/lmiratrix/blkvar` (Tools for analyzing multi-site and blocked experiments.)

3) Miratrix L (2020). `simITS`: Analysis via Simulation of Interrupted Time Series (ITS) Data. R package version 0.1.1. (CRAN package accompanying paper for simulation-based evaluation of ITS designs.)

4) Peng Ding, Avi Feller, Ben Fifield and Luke Miratrix (2019). `hettx`: Fisherian and Neymanian Methods for Detecting and Measuring Treatment Effect Variation. R package version 0.1.1. (CRAN package for detecting and measuring treatment variation in large trials.)

5) Luke Miratrix (2018). `textreg`: n-Gram Text Regression, aka Concise Comparative Summarization. R package version 0.1.5. (CRAN package for text analysis, in particular sparse regression on text to summarize large corpora.)

6) Luke Miratrix (2019). `elec`: Collection of Functions for Statistical Election Audits. R package version 0.1.2.1. (CRAN package for conducting risk-limiting electoral audits.)

BOOK REVIEWS, TECHNICAL REPORTS & OTHER PUBLICATIONS

1) Porter, C., Redcross, C., & Miratrix, L. (2020) Balancing Promise and Caution in Pretrial Risk Assessments *MDRC Center for Data Insights*

2) Anderson, C., Redcross, C., Valentine, E., & Miratrix, L. (2019) Evaluation of Pretrial Justice System Reforms that Use the Public Safety Assessment: Effects of New Jersey's Criminal Justice Reform *MDRC Center for Criminal Justice Research.*

3) Redcross, C., Henderson, B., Miratrix, L & Valentine, E. (March 2019) Evaluation of Pretrial Justice System Reforms That Use the Public Safety Assessment: Effects in Mecklenburg County, North Carolina, Report 1 & 2. *MDRC Center for Criminal Justice Research.*

4) Redcross, C., Henderson, B., Miratrix, L & Valentine, E. (March 2019) Evaluation of Pretrial Justice System Reforms That Use the Public Safety Assessment: Effects in Mecklenburg County, North Carolina, Report 1 & 2. *MDRC Center for Criminal Justice Research.*

5) Bind, M-A. & Miratrix, L. (2017) Review of *Analyzing Longitudinal Clinical Trial Data: A Practical Guide*

6) Grindal, T., Page, L., Feller, A. & Miratrix, L. (July 15, 2016) When it comes to publicly funded preschool, are we asking the wrong questions and getting the wrong answers? *The Huffington Post.*

7) Miratrix, L., (2016) Review of *Introduction to Statistical Investigations*

8) Miratrix, L., (2016) Review of *Propensity Score Analysis: Fundamentals and Developments*

9) Miratrix, L., (2015) Review of *Regression Models for Categorical Dependent Variables Using Stata, Third Edition*

10) Branson, Z., Campos, L., & Miratrix, L. (2015) Review of *Hierarchical Modeling and Analysis for Spatial Data, Second Edition*

11) Miratrix, L., (2015) Review of *Multilevel Modeling Using R*

12) Miratrix, L., (2015) Review of *A Handbook of Statistical Analyses Using R, Third Edition*

13) Miratrix, L., (2014) Review of *Foundations of Statistical Algorithms: With References to R Packages*

14) Miratrix, L., (2014) Review of *Doing Survey Research: A Guide to Quantitative Methods, Third Edition*

15) Miratrix, L., (2013) Review of *Design of Observational Studies* (Psychometrika 79(3):540-542)

16) Miratrix, L.W., Jia, J., Gawalt, B., Yu, B., & El Ghaoui, L. (2011). What is in the news on a subject: automatic and sparse summarization of large document corpora. UC Berkeley Dept. of Statistics Technical Report #801.

17) Miratrix, L.W. (2006) Java, Bots, and You. (A textbook and associated Java package for teaching programming to high school students.)

Book reviews for JASA or TAS unless otherwise noted

WORKING PAPERS AND PAPERS UNDER REVIEW

1) Caughey, D., Dafoe, A., Li, X., & Miratrix, L., Bounded Null Hypotheses and Quantiles of Individual Treatment Effects. Under revision at *Journal of the Royal Statistics Society, Series B.*

2) Gonzalez, K., Healy, O., Miratrix, L., & Sabol, T. The Ups and Downs of Classroom Quality Over the Preschool Year and Relations to Children's School Readiness. Working paper.

3) Ham, Dae Woong & Miratrix, L. Quantifying the benefits and costs of matching prior to a Difference in Differences analysis when the parallel trend assumptions does not hold. Under revision at the *Annals of Applied Statistics.* ArXiV

4) Hsin, L. B., Miratrix, L., Kim, H. Y., LaRusso, M. D., & Snow, C. E. Dosage, Take-Up, and Exposure: Exploring Implementation Variation in Word Generation Using Curricular Materials. Submitted to the *Elementary School Journal.*

5) Guo, R., Xu, L., Perrault, A., Miratrix, L., Plumtre, A., Mabong, J., Kitimbo, H., Wanama, F., Tambe, M. Ranger patrols deter poaching: first causal insights for improving protected area management. Submitted to *Science.*

6) Hunter, K., Miratrix, L., & Porter, K. Power Under Multiplicity Project (PUMP): Estimating Power, Minimum Detectable Effect Size, and Sample Size When Adjusting for Multiple Outcomes. Under revision at *the Journal of Statistical Software*. Working paper on ArXiV. `https://arxiv.org/abs/2112.15273`

7) Kim, E., & Miratirx, L. The Causal Impact of Charter Schools on Private Tutoring Prevalence. Working paper on Ed Working Papers. `https://edworkingpapers.com/ai23-756`.

8) Lee, J., A. Feller, S. Rabe-Hesketh, J. Che., Feller, A., and L. Miratrix. Estimating treatment effect distributions in multi-site trials. Working paper.

9) Litschwartz, S., & Miratrix, L. Characterizing Cross-Site Variation in Local Average Treatment Effects in Multisite RDD contexts with an Application to Massachusetts High School Exit Exams. Working paper on Ed Working Papers. `https://edworkingpapers.com/index.php/ai21-422`

10) Miratrix, L. & Unterman, B. Improved matching methods using school choice data to capture variation in school impacts with an application of the New York City Small Schools of Choice. Working paper.

11) Mozer, R., Miratrix, L., Relyea, J. E., & Kim, J. S. Bridging human and machine scoring in experimental assessments of writing: tools, tips, and lessons learned from a field trial in education. Submitted to JEBS. On Ed Working Papers. `https://edworkingpapers.com/ai21-493`

12) Rosenman, E. T., & Miratrix, L. Designing Experiments Toward Shrinkage Estimation. Under revision at the *Electronic Journal of Statistics*. Working paper on arXiv `https://arxiv.org/abs/2204.06687`.

13) Page, L.C., Unterman, R., Feller, A., Miratrix, L., & Somers, M-A., Ninth-grade On-track Status as a Precursor to High School Success in Small Schools of Choice. Working paper.

14) Pashley, N., Keele, L., & Miratrix, L. Improving instrumental variable estimators with post-stratification. Submitted to *Journal of the Royal Statistical Society: Series A*. Working paper on arXiv `https://arxiv.org/abs/2303.10016`

15) Weiland, C., Unterman, R., Dynarski, S., Abenavoli, R., Bloom, H., Braga, B., Faria, A.-M., Greenberg, E., Jacob, B., Lincove, J. A., Manship, K., McCormick, M., Miratrix, L., Monarrez, T. E., Morris-Perez, P., Shapiro, A., Valant, J., Weixler, L., Lottery-Based Evaluations of Early Education Programs: Opportunities and Challenges for Building the Next Generation of Evidence. Working paper on Ed Working Papers. `https://edworkingpapers.com/ai23-726`

CURRENT DOCTORAL STUDENTS

Josh Gilbert, EPPE, School of Education (co-advisor with Jimmy Kim)

Brein Mosley, EPPE, School of Education (advisor)

Lily An, EPPE, School of Education (co-advisor with Andrew Ho)

Matthew Lenard, EPPE, School of Education (advisor)

Lisa Ruan, Statistics (advisor)

Jonathan Seiden, EPPE, School of Education (co-advisor with Dana McCoy)

CURRENT DOCTORAL DISSERTATION COMMITTEES

Avriel Epps-Darling, Education

Madelyn Gardner, Education

Dae (David) Wong, Statistics

Emma Klugman, Education

Zach Himmelsbach, Education

PRIOR DOCTORAL STUDENTS

Jonathan Che, Statistics (2023): Game, Site, Match: Topics in Causal Inference and Sports Statistics

Sophie Litschwartz, EPPE, School of Education (co-advisor with Andrew Ho) (2021): Three Essays on Doing Causal Inference with Test Scores

Ben Weidmann, EPPE, School of Education (co-advisor with Dave Deming) (2021): Building Evidence for Effective Education: Essays in Quantitative Research Methods

Nicole Pashley, Statistics (2020): Innovations in Randomization Inference for the Design and Analysis of Experiments and Observational Studies

Jameson Quinn, Statistics (2020): Two Numerical Methods for Approximating High-Dimensional Posterior Distributions

Luis Campos (2019): Fortunes and Misadventures with Parametric Models: They can Confound, be Burdensome and Unstable, yet Insightful, Powerful and Flexible.

Maxime Rischard (2019): Considering Uncertainty in Spatial Models: Causal Inference, Missing Data Imputations, and Model Comparison.

Reagan Mozer (2019): New Directions for Causal Inference with Complex Data in Health Care, Social Science, and Neyond.

Zach Branson (2019): Innovations in Randomization Inference for the Design and Analysis of Experiments and Observational Studies.

Lo-Hua Yuan (2018): Regressions for Estimating Main and Principal Causal Effects in Multi-Site Randomized Trials and Small Sample Designs.

Peng Ding (2015): Exploring the Role of Randomization in Causal Inference.

Avi Feller (2015): Essays in Causal Inference and Public Policy.

PRIOR DOCTORAL DISSERTATION COMMITTEES

Kristen Hunter (2022): Exploring wanted and unwanted variation (Statistics)

Masha Bertling (2022): Essays on measurement and causal inference in education (EPPE, School of Education)

Catherine Armstrong (2021): Investigating Sources of Treatment Effect Heterogeneity in Intervention Research (EPPE, School of Education)

Eddie Kim (2021): Statistical Explorations of Testing and Testing Culture (EPPE, School of Education)

Aaron Kaufman (2019): Essays on The Applications of Machine Learning & Causal Inference in American Political Behavior & Institutions. (Government)

Yi Xe Thng (2019): Essays on Educational Testing in an Era of "Higher (College Ready)" Standards. (School of Education)

Shireen Al-Adeimi (2018): Talking to Learn: Investigating the Relationship between Classroom Discussion and Persuasive Writing (School of Education)

Guillaume Basse (2018): New frontiers in causal inference: learning from experiments in a connected world. (Statistics)

Wenjuan Qin (2018): Navigating across Communicative Contexts: Exploring Writing Proficiency in Adolescent and Adult EFL Learners. (Education)

Joseph McIntyre (2017): A Study of the Representation of Gender and Race in Children's Books: A Tragedy in Three Acts. (Education)

Darrick Yee (2017): A Three-Study Examination of Test-based Accountability Metrics. (Education)

Joseph Lee (2015): Extensions of Randomization-Based Methods for Causal Inference. (Statistics)

Jiannan Lu (2015): On Causal Inference for Ordinal Outcomes. (Statistics)

Joseph Kelly (2014): Advances in the Normal-Normal Hierarchical Model. (Statistics)

Dave Watson (2014): Complications in causal inference: incorporating information observed after treatment is assigned. (Statistics)

Valeria Espinosa (2014): A Bayesian Perspective on Factorial Experiments Using Potential Outcomes. (Statistics)

Jonathan Bischof (2014): Interpretable and Scalable Bayesian Models for Advertising and Text. (Statistics)

AB THESES SUPERVISED

Thu Pham (2023): The Importance of Random Effects in Variable Selection: A Case Study of Early Childhood Education(Statistics & Computer Science)

Liren Ma (2020): "Fancier Bubble Tea": The Promise and Pearls of Minority Gentrification (Statistics & Sociology, co-advised)

Angela Fan (2016): Solutions to the Stopword Problem: Semantically Interpretable Latent Dirichlet Allocation Models. (Statistics)

Sam Finegold (2015): The Price Is Right: Predicting The Prices Of Local Consumer Services. (Statistics)

Ian Lundberg (2015): Who Pays a Motherhood Wage Penalty? The Role of Job Change and Employment Gaps. (Statistics & Sociology)

Stephen Bates (2014): Thoughts on Permutation Tests and Other Nonparametric Methods for Causal Inference. (Statistics)

Kai Fe (2014): Generalizing Results of Experiments with Non-Representative Samples. (Statistics)

George Pocheptsov (2014): Traces of Oblomov's Utopia: Applying Methods in Text Mining to Track

and Critically Analyze the Thematic, Aesthetic, and Linguistic Features of the Dream in the Rest of the Novel. (Statistics & Slavic Languages)

Kevin Wu (2014): Understanding "Fedspeak": Identifying the Sources of Investor Sentiment in Central Bank Communications. (Applied Mathematics) (Informal advisor and thesis reader)

Sylvia Warren (2014): From Tent to Home: Measuring the Causal Effect of Relocation Programs in Port-au-Prince, Haiti. (Statistics)

Raj Bhuptani (2013): Yelping for Help and Helping Yelp. (Statistics) Thesis won the Hoopes Prize.

COURSES TAUGHT AT HARVARD UNIVERSITY

S-043/Stat 151 (Analysis for Clustered and Longitudinal Data): Fall 2015, Fall 2016, Fall 2018, Fall 2019, Fall 2020, Fall 2021

S-049M (Simulation Design in R): Spring 2022

S-022 (Statistical Computing and Simulation-Based Analysis): Spring 2016, Spring 2017, Spring 2020, Spring 2021, Spring 2022, Spring 2023

S-071 (Doctorate Workshop on Complex Data): Spring 2017, Fall 2019

Stat 100 (Introduction to Statistics for the Social Sciences): Fall 2012, Fall 2013, Fall 2014

Stat E-100 (Introduction to Statistics for the Social Sciences, Extension School): Fall 2014

Stat 240 (Matched Sampling and Study Design, joint with Donald Rubin): Fall 2013

Stat 242 (Permutation and Resampling Based Statistical Methods): Spring 2013, Spring 2015

Stat 315 (High Dimensional Causal Inference): Fall 2014

Stat 328 (Bayesian Nonparametrics, joint with Luke Bornn): Fall 2013

Stat 329 (Special Topics in Bootstrap and Permutation Methods): Spring 2014

Stat 342 (Causal Graphs in Low and High Dimensions): Fall 2012

Stat 303f (The Art and Practice of Teaching Statistics, joint with Xiao-Li Meng): Spring 2014

Gov 3009 (Research Workshop in Applied Statistics, joint with Gary King, Don Rubin and others): Fall & Spring, 2012 onwards

WORKSHOPS GIVEN

Designing and Implementing Simulations in R, ACIC, 2023

Power Analysis for RCTs with Multiple Outcomes, SREE, 2022

Estimating Impacts for Multisite Individually Randomized Trials (There's More to It Than We Originally Thought!), SREE, 2021 with Mike Weiss

Workshop on simulation design, online workshop for SREE, June, 2021

Workshop on treatment variation, SREE, 2019

Workshop on principal stratification, Stanford Graduate School of Education, 2016

Workshop on principal stratification, SREE, 2015

PRIOR TEACHING EXPERIENCE

GSI/Teacher at UC Berkeley

- Stat 20: Introduction to Statistics (Summer 2010; Fall 2011).
- Stat 215B: Applied Statistics (Spring, 2010).
- AP Statistics for the ATDP Summer Program (Summer 2007; Summer 2008).

High-School Mathematics and Computer Science Teacher 2003–2005
Sonoma Academy, Santa Rosa, CA

High-School Mathematics and Computer Science Teacher 1999–2003
The Commonwealth School, Boston, MA

WORK EXPERIENCE

Statistical Consultant 2008–2015
Heller Research Associates, Oakland, CA

Statistical Consultant 2007–2009
Community Resources for Science, Berkeley, CA

Research Intern Summer, 2008
Genentech, South San Francisco, CA

Researcher for the Intelligent Room Project (Part-Time) 1997–2000
AI Lab (CSAIL), M.I.T. with Howard Shrobe and Prof. Randall Davis

Programming Consultant 1997
CfMC, San Francisco, CA

Infospheres Research Assistant 1996–1997
Caltech, Pasadena, CA with Prof. Mani Chandy

PROFESSIONAL DEVELOPMENT (TEACHING)

Ross Summer Program for Teachers Summer, 2005

- Three week program on number theory and pedagogical techniques for teaching abstract math in an inquiry based manner.

Klingenstein Summer Institute Summer, 2002

- Intensive two-week program analyzing pedagogy and diversity issues in independent schools.

PROFESSIONAL ACTIVITIES

Program Committee for the Spring meeting of *the Society for Research on Education Effectiveness*, 2018.

Member of the ASA (American Statistical Association), IMS (Institute of Mathematical Statistics), and SREE (Society for Research in Education Effectiveness).

SERVICE (SELECTED ACTIVITIES)

Co-Organizer for the Harvard University Causal Inference Working Group

Co-Organizer for two Anti-Racist Faculty Organizations (DARWE and CR&R)

Faculty Co-Director of the PhD in Education Program (F2022–)

EPPE Concentration Chair for the EdD & PhD Steering Committee (F2019)

Served on the Bluhm Search Committee (F2019-S2020).

Served on the IRB Review Board (F2019).

Co-Convener for HGSE Research Doctoral Strand Colloquia (Education Policy), 2016-2017.

Served on the Equity and Opportunity Subgroup for HGSE Master Redesign/Curriculum Planning Committee, Spring, 2017.

Session organizer for "Four Approaches to Treatment Effect Heterogeneity" for the Joint Statistical Meeting, Summer 2015.

Designed and implemented professional development workshop "Principal Stratification: A Tool for Understanding Causal Impacts on Latent Groups" with Avi Feller and Lindsay Page for SREE Spring Conference, 2015.

Organizer for the Statistics Colloquium (2012-2013). Organizer for Prospective Graduate Student visiting days. On committee for redesigning undergraduate education in Statistics (2014-2015).

Session organizer for "Exchanging pedagogy between post-secondary and secondary school statistics courses" for the International Conference on Teaching Statistics (ICOTS9), Summer 2014.

SELECTED TALKS

A Bayesian Nonparametric Approach to Geographic and two-Dimensional Regression Discontinuity Designs, Department of Statistics, Duke University, April 2023 (Invited Talk)

A Bayesian Nonparametric Approach to Geographic and two-Dimensional Regression Discontinuity Designs, RMME, UConn, April 2023 (Invited Talk)

Missing, presumed different: Quantifying the risk of attrition bias in education evaluations, Institute for Social Research, University of Michigan, January 2023 (Invited Talk)

A devils bargain? Repairing a Difference in Differences parallel trends assumption with an initial matching step, CMStat 2022, London, UK

Characterizing Cross-Site Variation in Local Average Treatment Effects in Multisite RDD contexts with an Application to Massachusetts High School Exit Exams, 2022 IMS Conference, Florence, Italy

A devils bargain? Repairing a Difference in Differences parallel trends assumption with an initial matching step, Online Causal Inference Seminar, November, 2022

A quick overview and comparison of methods to adjust tests on a modest number of outcomes, Invited Talk and subsequent panel, National Cancer Institute's Statistical Adjustment for Multiplicity Virtual Workshop, October, 2022

Missing, Presumed Different: Quantifying the Risk of Attrition Bias in Education Evaluations, SREE 2022 Conference, September, 2022

On power analyses for individual site impacts in multisite trials, SREE 2022 Conference, September, 2022 (with Jonathan Che)

Missing, Presumed Different: Quantifying the Risk of Attrition Bias in Education Evaluations, APPAM 2021 Fall Conference, March, 2022

Using Simulation for Straightforward Interrupted Time Series (ITS) Analyses of Policy Changes Such As Bail Reform, APPAM 2021 Fall Conference, March, 2022

Bridging Human and Machine Scoring in Experimental Assessments of Writing: Tools, Tips, and Lessons Learned from a Field Trial in Education, APPAM 2021 Fall Conference, March, 2022

Using national data and meta-analysis techniques to get a handle on how bad some biases might be in practice, Invited Talk, UC Berkeley Neyman Seminar, October, 2021

Lessons learned when designing a synthetic-comparison-based impact evaluation of a county-wide placed-based initiative, SREE, September, 2021

Private Costs of School Choice: Investigating the Causal Impact of Charter Schools on Private Tutoring Prevalence, SREE, September, 2021

Statistical Power When Adjusting for Multiple Hypothesis Tests: Methodology Expansions and Software Tools, SREE, September, 2021

Writing Successful Methodological Papers Related to Child and Adolescent Development (Panel), Society for Research on Child Development (SRCD), April, 2021

Using national data and meta-analysis techniques to get a handle on how bad some biases might be in practice, Invited Talk, Online Causal Inference Seminar (OCIS), Dec 18, 2020

A Practitioners Guide to Intent-to-Treat Effects from Multisite (blocked) Individually Randomized Trials: Estimands, Estimators, and Estimates Invited talk. USC-CESR Seminar Series, September, 2020

Roundtable: Miller Prize Paper, APSA, Washington, DC., 2019 (This was a panel discussion of my "Worth Weighting?" paper which won the Miller Prize; I presented an overview of the paper to start the discussion.)

Best Practices for Detecting Treatment Effect Heterogeneity in Multisite Trials, Joint Statistical Meeting (JSM), Denver, CO; July, 2019

Conditional Inference in Randomized Experiments, Atlantic Causal Inference Conference (ACIC); May, 2019.

Insights into Variance Estimation for Blocked and Matched Pairs Design, Invited talk at University of Michigan; April, 2019.

A Practitioner's Guide to Intent-to-Treat Effects from Multisite (blocked) Individually Randomized Trials: Estimands, Estimators, and Estimates, SREE; March, 2019.

Estimating Population Wide Impact Estimates of School Type by Leveraging Student School Choice

Data and School Lotteries, SREE; March, 2019.

Simulating for uncertainty with interrupted time series (ITS) designs, Invited talk at Northwestern University; February 2019.

Using Covariates to Detect Treatment Effect Heterogeneity in Multisite Trials, Association for Public Policy Analysis and Management (APPAM) - Fall Research Conference; November 2018.

Matching with Text Data: An Experimental Evaluation of Methods for Matching Documents and of Measuring Match Quality. Text as Data; September, 2018.

Matching with Text Data: An Experimental Evaluation of Methods for Matching Documents and of Measuring Match Quality. POLMETH; July, 2018.

Using Covariates to Detect Treatment Effect Heterogeneity in Multisite Trials. ACIC; May, 2018.

Insights on Variance Estimation for Blocked and Matched Pairs Designs. Invited talk at European Causal Inference Meeting (EuroCIM); April, 2018.

Randomization Inference for Outcomes with Clumping at Zero. ENAR; March, 2018.

Using Covariates to Detect Treatment Effect Heterogeneity in Multisite Trials. SREE; February, 2018.

Estimating Causal Effects with Zero-Inflated Outcomes. SREE; February, 2018

Matching with Text Data: An Experimental Evaluation of Methods for Matching Documents and of Measuring Match Quality. Harvard Applied Statistics Colloquium; March, 2018.

Using Covariates to Detect Treatment Effect Heterogeneity in Multisite Trials. SREE; February, 2018.

Approachable, interpretable tools for mining and summarizing large text corpora in R CSP; February, 2018.

Whose side are you on? Different patterns of treatment effect variation. Invited talk at Institute of Education Sciences PI meeting; January, 2018.

Matching as a road towards interpretable causal inference analysis, with media bias illustration. Invited talk at Lincoln Labs; November, 2017.

Prior matters: simple and general methods for evaluating and improving topic quality in topic modeling. Text as Data; October, 2017.

Matching for Inference on Text Data with an Application to Measuring Media Bias. Invited talk at Joint Statistical Meetings; 2017.

Decomposing Treatment Effect Variation. Invited talk at Stanford Statistics, 2017.

Randomization Inference for Treatment Effect Heterogeneity. Columbia University Causal Inference Conference; May, 2017.

Treatment effect distributions in multi-site trials. Columbia University Causal Inference Conference; May, 2017. *Estimating treatment effect distributions in multi-site trials.* NESS, 2016.

Ninth-Grade On-Track Status as a Precursor to High School Success in Small Schools of Choice. SREE, 2017.

Covariate Restrictions for Estimating Principal Causal Effects in Single- and Multi-Site Trials. SREE, 2017.

Randomization Inference for Treatment Effect Heterogeneity. University of Pennsylvania, 2017.

Beyond the Sharp Null: Permutation Tests, Heterogeneous Effects, and Bounded Null Hypotheses. UC Berkeley, 2016.

Estimating treatment effect distributions in multi-site trials. NESS, 2016.

Principal Stratification in the Twilight Zone: Weak Separation in Finite Mixture Models. SREE, 2016.

Assessing Dosage-Related Variation in Treatment Effects with Principal Stratification. SREE, 2016.

Using Dirichlet Processes for Modeling Heterogeneous Treatment Effects across Sites. SREE, 2016.

Finding risk-factors for workplace accidents in an OSHA fatality and catastrophe database. Text as Data; October, 2015.

Why You Should (Usually) Post-Stratify in Survey Experiments. ACIC, 2015.

Statistics in the Twilight Zone: Component-Specific Inference in Finite Mixture Models. Joint Statistical Meetings, 2015.

Methods for Modeling and Decomposing Treatment Effect Variation in Large-Scale Randomized Trials. SREE; March, 2015.

Examining the Foundations of Methods That Assess Treatment Effect Heterogeneity across Intermediate Outcomes. SREE; March, 2015.

Principal Stratification: A Tool for Understanding Causal Impacts on Latent Groups. SREE; March, 2015.

Randomization Inference for Treatment Effect Variation. Invited Workshop on Quantitative Methods in Education, Health and the Social Sciences (QMEHSS), University of Chicago; May, 2014.

An introspection on using sparse regression techniques to analyze text. Invited talk at Statistics Research Seminar, NYU Stern School of Business (Department of Information, Operations & Management Sciences); April, 2014.

Randomization Inference for Treatment Effect Variation. Invited talk at MIT-Harvard Econometrics Workshop; February, 2014.

Compared to What? Estimating Causal Effects for Latent Subgroups to Understand Variation in the Impacts of Head Start by Alternate Child Care Setting. SREE, 2014.

Testing for and Characterizing Treatment Effect Heterogeneity Under the Neyman-Rubin Potential Outcomes Framework. Joint Statistical Meetings, Section on Statistics in Epidemiology, 2013.

Assessing Treatment Effect Heterogeneity in Randomized Experiments. Invited talk at ACIC; May,

2013.

An introspection on using sparse regression techniques to analyze text. Invited talk at Department of Mathematics and Statistics, Boston University, 2013.

Random Weight Estimators: Adjusting Randomized Trials Without Using Observed Outcomes. Invited talk at Department of Statistics, Stanford, 2012.

Adjusting treatment effect estimates with post-stratification. Poster presented at *POLMETH 2011*.

Implementing Risk-Limiting Audits in California. Joint Statistical Meetings, 2009.