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Email: edward@stat.cmu.edu / edwardh.kennedy@gmail.com  
Address: 132J Baker Hall, Carnegie Mellon University, Pittsburgh, PA 15213

## Professional Experience

2016- CARNEGIE MELLON UNIVERSITY  
*Associate Professor*, Department of Statistics & Data Science. (2021-present)  
*Assistant Professor*, Department of Statistics & Data Science. (2016-2021)  
*Courtesy Faculty*, Heinz College of Information Systems & Public Policy. (2017-present)

## Education

2012-2016 UNIVERSITY OF PENNSYLVANIA  
Ph.D. in Biostatistics. (Advisor: Dylan Small. Co-advisor: Marshall Joffe.)  
Dissertation: “Doubly robust causal inference with complex parameters”.

2013-2014 THE WHARTON SCHOOL, UNIVERSITY OF PENNSYLVANIA  
M.A. in Statistics. (Advisors: Marshall Joffe, Dylan Small.)  
Thesis: “Optimal restricted estimation for more efficient longitudinal causal inference”.

2007-2009 UNIVERSITY OF MICHIGAN  
M.S. in Biostatistics. (Advisor: Jeremy Taylor.)

2003-2007 UNIVERSITY OF PENNSYLVANIA  
B.A. *magna cum laude* in Mathematics, with a minor in Statistics.

## Research Interests

Theory: causal inference, high-dimensional data, machine learning, nonparametric methods  
Application: criminal justice, health services research, medicine, public policy

## Other Experience & Training

2012-2016 *Research & Teaching Assistant*, Department of Biostatistics, University of Pennsylvania  
Grant support: “Selective and future ignorability in causal inference” (NIH R01-DK090385).

2010-2012 *Research Health Science Specialist*, Ann Arbor VA Center for Clinical Management Research  
Duties: statistical analysis and consulting for research in critical care medicine and patient safety.

2010-2011 *Statistical Consultant*, University of Michigan Law School  
Research area: wrongful convictions. Supervisors: J.J. Prescott, Brandon Garrett, Samuel Gross.

2008-2010 *Research Assistant*, Department of Biostatistics, University of Michigan  
Grant support: “PSA-based early detection of prostate cancer recurrence” (NIH CA-110518).

## Grants & Funding

### *As Principal Investigator*

- 2022-2025 PCORI Grant (Co-Principal Investigator)  
“Improved statistical methods for IV designs in comparative effectiveness” (Co-PI: Luke Keele)
- 2021-2026 NIH R01 Grant LM013361-01A1 (Co-Principal Investigator)  
“Efficient nonparametric estimation of heterogeneous treatment effects” (Co-PI: Luke Keele)
- 2021-2025 NSF CAREER Award 2047444 (Principal Investigator)  
“Advances in modern causal inference: high dimensions, heterogeneity, and beyond”
- 2019-2020 University of Pennsylvania Synergy Grant (Co-Principal Investigator)  
“Regression discontinuity to quantify outcomes & optimize thresholds” (Co-PI: Luke Keele)
- 2019-2020 Carnegie Mellon Block Center for Technology and Society Grant (Co-Principal Investigator)  
“Counterfactual risk assessment in child welfare services” (Co-PI: Alexandra Chouldechova)
- 2018-2021 NSF DMS Grant 1810979 (Principal Investigator)  
“Optimal nonparametric estimation of high-dimensional functionals in causal inference”
- 2017-2018 Carnegie Mellon University Berkman Faculty Development Grant (Principal Investigator)  
“Nonparametric methods for high-dimensional capture-recapture designs”
- 2017 University of Pittsburgh CTSI Biomedical Modeling Pilot Award (Co-Principal Investigator)  
“Modeling partial non-compliance in clinical trials” (Co-PI: Ashley Naimi)

### *As Co-Investigator*

- 2020-2025 NIH R01 Grant HD102313 (Co-Investigator)  
“Informing national guidelines on diet patterns that promote healthy pregnancy outcomes”  
(PIs: Lisa Bodnar & Ashley Naimi)
- 2018-2019 Pennsylvania Department of Health CURE Grant (Co-Investigator)  
“Smarter big data for a healthy Pennsylvania” (PIs: Daniel Polsky, Kevin Volpp)

## Selected Awards & Honors

- 2021 CAREER Award, National Science Foundation
- 2017 David P. Byar Young Investigator Award, *Joint Statistical Meetings*
- 2016 Saul Winegrad Award for outstanding dissertation, University of Pennsylvania
- 2016 Young Statistician Showcase Award, *International Biometric Conference*
- 2016 Young Researcher Award, *Conference of the International Society for Nonparametric Statistics*
- 2016 JSM Student Paper Award (Health Policy Statistics Section), *Joint Statistical Meetings*
- 2015 Ten Have Award for exceptional causal inference research, *Atlantic Causal Inference Conference*
- 2015 ENAR Distinguished Student Paper Award, *International Biometric Society ENAR Spring Meeting*
- 2013 Jonathan Raz Award for best performance on qualifying exam, University of Pennsylvania

## Publications & Manuscripts

(Note: \* indicates lead author was student or advisee at time of writing; pre-prints are left unnumbered)

### Statistics

Kennedy EH, Balakrishnan S, Wasserman LA. Minimax rates for heterogeneous causal effect estimation. [arxiv.org:2203.00837](https://arxiv.org/abs/2203.00837)

Bates S, Kennedy EH, Tibshirani R, Ventura V, Wasserman L. Causal inference with orthogonalized regression: taming the phantom. [arxiv.org:2201.13451](https://arxiv.org/abs/2201.13451)

Das M\*, Kennedy EH. drpop: Efficient and doubly robust population size estimation in R. [arxiv.org:2111.07191](https://arxiv.org/abs/2111.07191)

Mishler A\*, Kennedy EH. FADE: FAir Double Ensemble learning for observable and counterfactual outcomes. [arxiv.org:2109.00173](https://arxiv.org/abs/2109.00173)

Das M\*, Kennedy EH, Jewell NP. Doubly robust capture-recapture methods for estimating population size. [arxiv.org:2104.14091](https://arxiv.org/abs/2104.14091)

Scharfstein DO, Nabi R, Kennedy EH, Huang MY, Bonvini M, Smid M. Semiparametric sensitivity analysis. [arxiv.org:2104.08300](https://arxiv.org/abs/2104.08300)

Waudby-Smith I\*, Arbour D, Sinha R, Kennedy EH, Ramdas A. Doubly robust confidence sequences for causal effects. [arxiv.org:2103.06476](https://arxiv.org/abs/2103.06476)

Liu L\*, Kennedy EH. Median optimal treatment regimes. [arxiv.org:2103.01802](https://arxiv.org/abs/2103.01802)

Kennedy EH, Balakrishnan S, Wasserman LA. Semiparametric counterfactual density estimation. [arxiv.org:2102.12034](https://arxiv.org/abs/2102.12034)

Liu Y\*, Schnitzer M, Wang G, Kennedy EH, Viiklepp P, Vargas MH, Sotgiu G, Menzies D, Benedetti A. Modeling treatment effect modification in multidrug-resistant tuberculosis in an individual patient data meta-analysis. [arxiv.org:2101.03997](https://arxiv.org/abs/2101.03997)

Kennedy EH. Optimal doubly robust estimation of heterogeneous causal effects. [arxiv.org:2004.14497](https://arxiv.org/abs/2004.14497)

Lu Y, Scharfstein DO, Brooks MM, Quach K, Kennedy EH. Causal inference for comprehensive cohort studies. [arxiv.org:1910.03531](https://arxiv.org/abs/1910.03531)

Kim K\*, Kim J, Kennedy EH. Causal effects based on distributional distances. [arxiv.org:1806.02935](https://arxiv.org/abs/1806.02935)

25. Bonvini M\*, Kennedy EH, Ventura V, Wasserman LA. Causal inference in the time of COVID-19. *Annals of Applied Statistics*. (to appear). [arxiv.org:2103.04472](https://arxiv.org/abs/2103.04472)

24. Bahamyirou A\*, Schnitzer M, Kennedy EH, Blais L, Yang Y. Doubly robust adaptive LASSO for effect modifier discovery. *International Journal of Biostatistics*. (to appear). [arxiv.org:2011.12746](https://arxiv.org/abs/2011.12746)

23. Kim K\*, Kennedy EH, Naimi AI. Incremental intervention effects in studies with many timepoints, repeated outcomes, and dropout. *Journal of Causal Inference*. (to appear). [arxiv.org:1907.04004](https://arxiv.org/abs/1907.04004)  
- won JSM Student Paper Award (Nonparametric Statistics Section) in 2020.
22. Lee Y\*, Kennedy EH, Mitra N. Doubly robust nonparametric instrumental variable estimators for survival outcomes. *Biostatistics*. (to appear). [arxiv.org:2007.12973](https://arxiv.org/abs/2007.12973)
21. Mishler A\*, Kennedy EH. Fairness in risk assessment instruments: post-processing to achieve counterfactual equalized odds. *Proceedings of the ACM Conference on Fairness, Accountability, and Transparency (FAccT 2021)*. (to appear). [arxiv.org:2009.02841](https://arxiv.org/abs/2009.02841)
20. Bonvini M\*, Kennedy EH. Sensitivity analysis via the proportion of unmeasured confounding. *Journal of the American Statistical Association*. (to appear). [doi:10.1080/01621459.2020.1864382](https://doi.org/10.1080/01621459.2020.1864382) ([arxiv.org:1912.02793](https://arxiv.org/abs/1912.02793))  
- won JSM Student Paper Award (Statistics in Epidemiology Section) in 2020.
19. Coston A\*, Kennedy EH, Chouldechova A. Counterfactual predictions under runtime confounding. *Proceedings of the Conference on Neural Information Processing Systems (NeurIPS)*. (to appear). [arxiv.org:2006.16916](https://arxiv.org/abs/2006.16916)
18. Kennedy EH. Efficient nonparametric causal inference with missing exposure information. *International Journal of Biostatistics*. 2020; 16(1): 1-11. [doi:10.1515/ijb-2019-0087](https://doi.org/10.1515/ijb-2019-0087) ([arxiv.org:1802.08952](https://arxiv.org/abs/1802.08952))
17. Mauro JA\*, Kennedy EH, Nagin D. Instrumental variable methods using dynamic interventions. *Journal of the Royal Statistical Society: Series A*. 2020; 183(4): 1523-1551. [doi:10.1111/rssa.12563](https://doi.org/10.1111/rssa.12563) ([arxiv.org:1811.01301](https://arxiv.org/abs/1811.01301))  
- won JSM Student Paper Award (Government, Social Science, & Survey Methods Section) in 2018.
16. Coston A\*, Mishler A\*, Kennedy EH, Chouldechova A. Counterfactual risk assessments, evaluation, and fairness. *Proceedings of the ACM Conference on Fairness, Accountability, and Transparency (FAT\* 2020)*. 2020; 582-593. [doi:10.1145/3351095.3372851](https://doi.org/10.1145/3351095.3372851) ([arxiv.org:1909.00066](https://arxiv.org/abs/1909.00066))
15. Cuellar M\*, Kennedy EH. A nonparametric projection-based estimator for the probability of causation, with application to water sanitation in Kenya. *Journal of the Royal Statistical Society: Series A*. 2020; 183(4): 1793-1818. [doi:10.1111/rssa.12548](https://doi.org/10.1111/rssa.12548) ([arxiv.org:1810.00767](https://arxiv.org/abs/1810.00767))  
- won JSM Student Paper Award (Breslow Prize, Statistics in Epidemiology Section) in 2018.
14. Fisher A, Kennedy EH. Visually communicating and teaching intuition for influence functions. *The American Statistician*. 2021; 75(2): 162-172. [doi:10.1080/00031305.2020.1717620](https://doi.org/10.1080/00031305.2020.1717620) ([arxiv.org:1810.03260](https://arxiv.org/abs/1810.03260))
13. Kennedy EH, Balakrishnan S, G'Sell M. Sharp instruments for classifying compliers and generalizing causal effects. *Annals of Statistics*. 2020; 48(4): 2008-2030. [doi:10.1214/19-AOS1874](https://doi.org/10.1214/19-AOS1874) ([arxiv.org:1801.03635](https://arxiv.org/abs/1801.03635))
12. Kennedy EH, Small DS. Paradoxes in instrumental variable studies with missing data and one-sided noncompliance. *Journal of the French Statistical Society*. 2020; 161(1): 120-134. <http://journal-sfds.fr/article/view/784/831> ([arxiv.org:1705.00506](https://arxiv.org/abs/1705.00506))
11. Kennedy EH, Lorch SA, Small DS. Robust causal inference with continuous instruments using the local instrumental variable curve. *Journal of the Royal Statistical Society: Series B*. 2019; 81(1): 121-143. [doi:10.1111/rssb.12300](https://doi.org/10.1111/rssb.12300) ([arxiv:1607.02566](https://arxiv.org/abs/1607.02566))

- won JSM Student Paper Award (David P. Byar Young Investigator Award, Biometrics Section) in 2017 & Young Statistician Showcase Award in 2016; earlier draft won the Thomas Ten Have Award in 2015.

10. Kennedy EH, Mauro JA, Daniels MJ, Hogan JW, Small DS. Handling missing data in instrumental variable methods for causal inference. *Annual Review of Statistics and Its Application*. 2019; 6: 125-148. doi:10.1146/annurev-statistics-031017-100353
9. Kennedy EH, Harris S, Keele LJ. Survivor-complier effects in the presence of selection on treatment, with application to a study of prompt ICU admission. *Journal of the American Statistical Association*. 2019; 114(525): 93-104. doi:10.1080/01621459.2018.1469990 (arxiv.org:1704.05706)
8. Kennedy EH. Nonparametric causal effects based on incremental propensity score interventions. *Journal of the American Statistical Association*. 2019; 114(526): 645-656. doi:10.1080/01621459.2017.1422737 (arxiv:1704.00211)
7. Kennedy EH, Kangovi S, Mitra N. Estimating scaled treatment effects with multiple outcomes. *Statistical Methods in Medical Research*. 2019; 28(4): 1094-1104. doi:10.1177/0962280217747130 (arxiv:1608.02273)
6. Kennedy EH, Ma Z, McHugh MD, Small DS. Nonparametric methods for doubly robust estimation of continuous treatment effects. *Journal of the Royal Statistical Society: Series B*. 2017; 79(4): 1229-1245. doi:10.1111/rssb.12212 (arxiv:1507.00747)  
- won JSM Student Paper Award (Health Policy Statistics Section) & Young Researcher Award in 2016.
5. Kennedy EH, Sjölander A, Small DS. Semiparametric causal inference in matched cohort studies. *Biometrika*. 2015; 102(3): 739-746. doi:10.1093/biomet/asv025 (pdf here)  
- won ENAR Distinguished Student Paper Award in 2015.
4. Hsu JY, Kennedy EH, Roy JA, Stephens-Shields AJ, Small DS, Joffe MM. Surrogate markers for time-varying treatments and outcomes. *Clinical Trials*. 2015; 12(4): 309-316. doi:10.1177/1740774515583500
3. Kennedy EH, Joffe MM, Small DS. Optimal restricted estimation for more efficient longitudinal causal inference. *Statistics & Probability Letters*. 2015; 97: 185-191. doi:10.1016/j.spl.2014.11.022
2. Taylor JMG, Shen J, Kennedy EH, Wang L, Schaubel DE. Comparison of methods for estimating the effect of salvage therapy in prostate cancer when treatment is given by indication. *Statistics in Medicine*. 2014; 33(2): 257-274. doi:10.1002/sim.5890
1. Kennedy EH, Taylor JMG, Schaubel DE, Williams S. The effect of salvage therapy on survival in a longitudinal study with treatment by indication. *Statistics in Medicine*. 2010; 29(25): 2569-2580. doi:10.1002/sim.4017

#### Book Chapters & Discussions

Kennedy EH. Semiparametric doubly robust targeted double machine learning: a review.

\*Coston A, \*Rubio MD, Kennedy EH. Statistical analysis of randomized experiments.

8. \*Bonvini M, \*McClean A, Branson Z, Kennedy EH. Incremental causal effects: an introduction and review. *Handbook of Matching and Weighting in Causal Inference*. (to appear). [arxiv:2110.10532](https://arxiv.org/abs/2110.10532)
7. Naimi AI, Mishler A, Kennedy EH. Practical strategies for mitigating the unknowable. *American Journal of Epidemiology*. (to appear). [doi:10.1093/aje/kwab202](https://doi.org/10.1093/aje/kwab202)
6. Bonvini M\*, Mishler A\*, Kennedy EH. Discussion of “Statistical modeling: the two cultures” by Leo Breiman. *Observational Studies*. (to appear). [arxiv:2103.15281](https://arxiv.org/abs/2103.15281)
5. Kennedy EH, Balakrishnan B, Wasserman LA. Discussion of “On nearly assumption-free tests of nominal confidence interval coverage for causal parameters estimated by machine learning” by Lin Liu, Rajarshi Mukherjee, and James Robins. *Statistical Science*. 2020; 35(3): 540-544. [doi:10.1214/20-STS796](https://doi.org/10.1214/20-STS796) ([arxiv:2006.09613](https://arxiv.org/abs/2006.09613))
4. Greenhouse JB, Kennedy EH. Review of “Observation and experiment: an introduction to causal inference” by Paul Rosenbaum. *Psychometrika*. 2018; 83(4): 1007-1010. [doi:10.1007/s11336-018-9632-y](https://doi.org/10.1007/s11336-018-9632-y)
3. Kennedy EH. Semiparametric theory. *Wiley StatsRef: Statistics Reference Online*. New York: Wiley & Sons. [doi:10.1002/9781118445112.stat08083](https://doi.org/10.1002/9781118445112.stat08083) ([arxiv:1709.06418](https://arxiv.org/abs/1709.06418))
2. Kennedy EH, Balakrishnan S. Discussion of “Data-driven confounder selection via Markov and Bayesian networks” by Jenny Häggström. *Biometrics*. 2018; 74(2): 399-402. [doi:10.1111/biom.12787](https://doi.org/10.1111/biom.12787)
1. Kennedy EH. Semiparametric theory and empirical processes in causal inference. In *Statistical Causal Inferences and Their Applications in Public Health Research*, edited by He H, Wu P, Chen D. New York: Springer. 2016; 141-167. [doi:10.1007/978-3-319-41259-7\\_8](https://doi.org/10.1007/978-3-319-41259-7_8) ([arxiv:1510.04740](https://arxiv.org/abs/1510.04740))

#### *Methodology for Applied Research*

Rudolph JE, Kim K, Kennedy EH, Naimi AI. Time-varying incremental effect of aspirin on pregnancy in the Effects of Aspirin in Gestation and Reproduction trial.

Naimi AI, Kennedy EH, Bodnar LM, Cole SR, Schisterman EF. Understanding and dealing with the curse of dimensionality.

13. Rudolph JE, Kennedy EH, Benkeser D, Schisterman EF, Naimi AI. Estimation of the average causal effect in longitudinal data with time-varying exposures: the challenge of non-positivity and the impact of model flexibility. *American Journal of Epidemiology*. (to appear).
12. Zhong Y, Brooks MM, Kennedy EH, Triantafillou S, Bodnar LM, Naimi AI. Use of machine learning to estimate the per-protocol effect of low-dose aspirin on pregnancy outcomes in a randomized clinical trial. *JAMA Network Open*. (to appear).
11. Conzuelo-Rodriguez G, Bodnar LM, Brook MM, Wahed A, Kennedy EH, Schisterman EF, Naimi AI. Non-parametric evaluation of effect measurement modification. *American Journal of Epidemiology*. (to appear).
10. Zhong Y, Kennedy EH, Bodnar LM, Naimi AI. AIPW: An R package for augmented inverse probability weighted estimation of average causal effects. *American Journal of Epidemiology*. (to appear).

9. Naimi AI, Mishler A, Kennedy EH. Challenges in obtaining valid causal effect estimates with machine learning algorithms. *American Journal of Epidemiology*. (to appear). [arxiv.org:1711.07137](https://arxiv.org/1711.07137)
8. Naimi AI, Rudolph JE, Kennedy EH, Cartus A, Kirkpatrick SI, Haas DM, Simhan H, Bodnar LM. Incremental propensity score effects for time-fixed exposures. *Epidemiology*. (to appear). [doi:10.1097/ede.0000000000001315](https://doi.org/10.1097/ede.0000000000001315)
7. Rudolph JE, Naimi AI, Westreich DJ, Kennedy EH, Schisterman EF. Defining and identifying per-protocol effects in randomized trials. *Epidemiology*. 2020; 31(5): 692-694. [doi:10.1097/EDE.0000000000001234](https://doi.org/10.1097/EDE.0000000000001234)
6. Bodnar LM, Cartus A, Himes KP, Kennedy EH, Kirkpatrick SI, Simhan HN, Naimi AI. Machine learning as a strategy to account for dietary synergy: an illustration based on dietary intake and adverse pregnancy outcomes. *American Journal of Clinical Nutrition*. 2020; 111(6): 1235-1243. [doi:10.1093/ajcn/nqaa027](https://doi.org/10.1093/ajcn/nqaa027)
5. Bacak V, Kennedy EH. Principled machine learning using the Super Learner: an application to predicting prison violence. *Sociological Methods and Research*. 2019; 48(3): 698-721. [doi:10.1177/0049124117747301](https://doi.org/10.1177/0049124117747301)
4. Naimi AI, Cole SR, Kennedy EH. An introduction to G-methods. *International Journal of Epidemiology*. 2017; 46(2): 756-762. [doi:10.1093/ije/dyw323](https://doi.org/10.1093/ije/dyw323)
3. Bacak V, Kennedy EH. Marginal structural models: an application to incarceration and marriage during young adulthood. *Journal of Marriage and Family*. 2015; 77(1): 112-125. [doi:10.1111/jomf.12159](https://doi.org/10.1111/jomf.12159)
2. Iwashyna TJ, Kennedy EH. Instrumental variable analyses: exploiting natural randomness to understand causal mechanisms. *Annals of the American Thoracic Society*. 2013; 10(3): 255-260. [doi:10.1513/AnnalsATS.201303-054FR](https://doi.org/10.1513/AnnalsATS.201303-054FR)
1. Kennedy EH, Wiitala WL, Hayward RA, Sussman JB. Improved cardiovascular risk prediction using nonparametric regression and electronic health record data. *Medical Care*. 2013; 51(3): 251-258. [doi:10.1097/MLR.0b013e31827da594](https://doi.org/10.1097/MLR.0b013e31827da594)

#### *Health & Social Sciences*

Molina BSG, Kennedy TM, Howard AL, Swanson JM, Stehli A, Mitchell JT, Arnold LE, Kennedy EH, Curran P. ADHD stimulant treatment effects on substance use through adolescence into early adulthood: prospective longitudinal findings from the MTA.

Zhou M, Abhishek V, Kennedy EH, Srinivasan K, Sinha R. Linking clicks to bricks: spillover benefits of online advertising. [ssrn.com/abstract=3168028](https://ssrn.com/abstract=3168028)

16. Bodnar LM, Cartus A, Kennedy EH, Kirkpatrick SI, Parisi S, Himes KP, Parker C, Grobman W, Simhan H, Silver R, Wing D, Naimi AI. A doubly robust machine learning-based approach to evaluate body mass index as a modifier of the association between fruit and vegetable intake and preeclampsia. *American Journal of Epidemiology*. (to appear).
15. Oliveira NL, Kennedy EH, Tibshirani RJ, Levine A, Martin E, Munro C, Ragin AB, Rubin LH, Sacktor NW, Seaberg EC, Weinstein A, Becker JT. Longitudinal 5-year prediction of cognitive impairment among men with HIV disease. *AIDS*. (to appear).

14. Navathe AS, Lei VJ, Fleisher LA, Luong T, Chen X, Kennedy EH, Volpp KG, Polsky DE, Groeneveld PG, Weiner M, Holmes JH, Neuman MD. Improving identification of patients at low risk for major cardiac events after noncardiac surgery using intraoperative data. *Journal of Hospital Medicine*. 2020; 15(10): 581-587. doi:10.12788/jhm.3459
13. Patel MS, Polsky D, Kennedy EH, Small DS, Evans DN, Rareshide CAL, Volpp KG. Smartphones vs. wearable devices for remotely monitoring physical activity after hospital discharge: a secondary analysis of a randomized clinical trial. *JAMA Network Open*. 2020; 3(2):e1920677. doi:10.1001/jamanetworkopen.2019.20677
12. Lei VJ, Kennedy EH, Luong T, Chen X, Polsky DE, Volpp KG, Neuman MD, Holmes JH, Fleisher LA, Navathe AS. Model performance metrics in assessing the value of adding intraoperative data for death prediction: applications to noncardiac surgery. *Studies in Health Technology and Informatics*. 2019; 264: 223-227. doi:10.3233/shti190216
11. Evans CN, Volpp KG, Polsky DE, Small DS, Kennedy EH, Karpink K, Djaraher R, Mansi N, Rareshide CAL, Patel MS. Prediction using a Randomized Evaluation of Data collection Integrated through Connected Technologies (PREDICT): Design and rationale of a randomized trial of patients discharged from the hospital to home. *Contemporary Clinical Trials*. 2019; 83: 53-56. doi:110.1016/j.cct.2019.06.018
10. Wachtel H, Kennedy EH, Zaheer S, Bartlett EK, Fishbein L, Roses RE, Fraker DL, Cohen DL. Preoperative metyrosine improves cardiovascular outcomes for patients undergoing surgery for pheochromocytoma and paraganglioma. *Annals of Surgical Oncology*. 2015; 22(3): 646-654. doi:10.1245/s10434-015-4862-z
9. Gross SR, O'Brien B, Hu C, Kennedy EH. Rate of false conviction of criminal defendants who are sentenced to death. *Proceedings of the National Academy of Sciences*. 2014; 111(20): 7230-7235. doi:10.1073/pnas.1306417111
8. Kennedy EH, Greene MT, Saint S. Estimating hospital costs due to catheter-associated urinary tract infection. *Journal of Hospital Medicine*. 2013; 8(9): 519-522. doi:10.1002/jhm.2079
7. Chen LM, Kennedy EH, Sales AE, Hofer TP. Use of health information technology for higher-value critical care. *New England Journal of Medicine*. 2013; 368(7): 594-597. doi:10.1056/NEJMp1213273
6. Chen LM, Render ML, Sales AE, Kennedy EH, Wiitala WL, Hofer TP. Intensive care unit admitting patterns in the Veterans Affairs healthcare system. *Archives of Internal Medicine*. 2012; 172(16): 1220-1226. doi:10.1001/archinternmed.2012.2606
5. Apisarnthanarak A, Khawcharoenporn T, Greene MT, Kennedy EH, Krein SL, Saint S. A national survey of Thai infection preventionists in the era of patient safety. *American Journal of Infection Control*. 2013; 41(4): 362-364. doi:10.1016/j.ajic.2012.04.338
4. Cooke CR, Kennedy EH, Wiitala WL, Sales AE, Iwashyna TJ. Despite variation in volume, Veterans Affairs hospitals show consistent outcomes among patients with non-postoperative mechanical ventilation. *Critical Care Medicine*. 2012; 40(9): 2569-2575. doi:10.1097/CCM.0b013e3182591eee
3. Apisarnthanarak A, Greene MT, Kennedy EH, Khawcharoenporn T, Krein SL, Saint S. A national study of practices to prevent hospital-associated infections in Thailand. *Infection Control and Hospital Epidemiology*. 2012; 33(7): 711-717. doi:10.1086/666330



2. Fakhri MG, Watson SR, Greene MT, Kennedy EH, Olmsted R, Krein SL, Saint S. Promoting patient safety by reducing inappropriate urinary catheter use: a statewide effort in Michigan. *Archives of Internal Medicine*. 2012; 172(3): 255-260. doi:[10.1001/archinternmed.2011.627](https://doi.org/10.1001/archinternmed.2011.627)
1. Fakhri MG, Greene MT, Kennedy EH, Meddings JA, Krein SL, Olmsted R, Saint S. Introducing a population-based outcome measure to evaluate the effect of interventions to reduce catheter-associated urinary tract infection. *American Journal of Infection Control*. 2012; 40(4): 359-364. doi:[10.1016/j.ajic.2011.05.012](https://doi.org/10.1016/j.ajic.2011.05.012)

## Invited Talks

(Note: \* indicates presentation scheduled for future date)

### *Invited Conference & Workshop Presentations*

36. \*Joint Statistical Meetings, Washington, DC. (8/2022)
35. \*International Chinese Statistical Association Conference, Xi'an, CN. (7/2022)
34. \*American Causal Inference Conference, Berkeley, CA. (5/2022)
33. \*Banff International Research Station workshop on complex data, Kelowna, BC. (5/2022)
32. \*International Biometric Society ENAR Spring Meeting, Houston, TX. (3/2022)
31. International Conference on Computational & Methodological Statistics, London, UK. (12/2021)
30. IMS workshop on "Causal Inference with Big Data", Singapore. (12/2021)
29. Institute for Foundations of Data Science ML Workshop, Madison, WI. (8/2021)
28. Frontiers of Causal Inference in Data Science, Penn Center for Causal Inference (discussant). (5/2021)
27. International Biometric Society ENAR Spring Meeting, Baltimore, MD. (3/2021)
26. Joint Statistical Meetings, Philadelphia, PA. (8/2020)
25. International Conference on Computational & Methodological Statistics, London, UK. (12/2019)
24. Statistical & Applied Mathematical Sciences Institute (SAMSI) Workshop, Durham, NC. (12/2019)
23. Joint Statistical Meetings, Denver, CO. (8/2019)
22. International Biometric Society WNAR Meeting, Portland, OR. (6/2019)
21. Joint Statistical Meetings, Vancouver, BC. (8/2018)
20. Institute of Mathematical Statistics Annual Meeting, Vilnius, LT. (7/2018)
19. Causal Inference & Big Data Summer Institute, Philadelphia, PA (6/2018)
18. Society for Epidemiologic Research Annual Meeting, Baltimore, MD. (6/2018)
17. Conference on Statistical Learning & Data Science / Nonparametric Statistics, New York, NY. (6/2018)
16. Atlantic Causal Inference Conference, Pittsburgh, PA. (5/2018)
15. International Conference on Health Policy Statistics, Charleston, SC. (1/2018)
14. International Conference on Computational & Methodological Statistics, London, UK. (12/2017)
13. Joint Statistical Meetings, Baltimore, MD. (8/2017)
12. International Biometric Society WNAR Meeting, Santa Fe, NM. (7/2017)
11. Southern Regional Council on Statistics Summer Conference, Jekyll Island, GA. (6/2017)
10. Atlantic Causal Inference Conference, Chapel Hill, NC. (5/2017)
9. International Biometric Society ENAR Spring Meeting, Washington, DC. (3/2017)
8. Joint Statistical Meetings, Chicago, IL. (8/2016)
7. International Biometric Conference, Victoria, BC. (7/2016)
6. Conference of the International Society of Nonparametric Statistics, Avignon, FR. (6/2016)
5. Atlantic Causal Inference Conference, Philadelphia, PA. (5/2015)
4. Deming Conference on Applied Statistics, Atlantic City, NJ. (12/2014)
3. Joint Statistical Meetings, Boston, MA. (8/2014)
2. International Biometric Society ENAR Spring Meeting, Baltimore, MD. (3/2014)
1. Joint Statistical Meetings, Montreal, QC. (8/2013)

### *Keynote Speaker Appearances*

3. \*Missing Data & Causal Inference Workshop, University of Geneva, CH. (cancelled due to COVID-19)
2. European Causal Inference Meeting (EuroCIM) (5/2021).
1. Winter Conference in Statistics, Hemavan, SE. (3/2019)

## *Invited Seminars*

46. University of Maryland, Baltimore County, Department of Mathematics & Statistics. (3/2022)
45. Emory University, Department of Biostatistics & Bioinformatics. (2/2022)
44. Boston University, Causal Inference Seminar. (10/2021)
43. University of Washington, CHOICE Institute. (5/2021)
42. RAND Statistics Group. (4/2021)
41. University of California, Irvine, Department of Economics. (4/2021)
40. Indiana University, Department of Biostatistics. (3/2021)
39. Singapore Institute for Clinical Sciences, Agency for Science, Technology & Research. (3/2021)
38. University of Chicago, Booth School of Business. (2/2021)
37. [International Seminar on Selective Inference](#) (discussant). (1/2021)
36. Yale University, Department of Biostatistics. (11/2020)
35. [Online Causal Inference Seminar](#). (4/2020)
34. University of Copenhagen, Department of Biostatistics. (4/2020, cancelled due to COVID-19).
33. Stanford University, Graduate School of Business. (2/2020)
32. University of Pittsburgh, Department of Biostatistics. (1/2020)
31. University of Pittsburgh, Department of Statistics. (11/2019)
30. University of Massachusetts, Amherst, Department of Biostatistics. (10/2019)
29. University of North Carolina, Chapel Hill, Department of Biostatistics. (10/2019)
28. University of Pennsylvania, Department of Biostatistics. (9/2019)
27. Harvard University, Department of Health Care Policy. (5/2019)
26. University of Pittsburgh, Katz School of Business. (4/2019)
25. Yale University, MacMillan-CSAP Workshop on Quantitative Research Methods. (10/2018)
24. North Carolina State University, Department of Statistics. (10/2018)
23. Johns Hopkins University, Department of Biostatistics. (10/2018)
22. Princeton University, Quantitative Social Science Colloquium. (4/2018)
21. University of California, Berkeley, Division of Biostatistics. (3/2018)
20. University of Washington, Department of Biostatistics. (2/2018)
19. Ohio State University, Division of Biostatistics. (2/2018)
18. Johns Hopkins University, Causal Inference & SLAM Working Groups. (11/2017)
17. University of California, Berkeley, Division of Biostatistics. (11/2016)
16. Carnegie Mellon University, Heinz College. (9/2016)
15. University of North Carolina, Chapel Hill, Causal Inference Research Group. (3/2016)
14. Carnegie Mellon University, Department of Statistics. (2/2016)
13. RAND Statistics Group. (2/2016)
12. University of California, Berkeley, Division of Biostatistics. (2/2016)
11. University of Minnesota, Division of Biostatistics. (2/2016)
10. University of Michigan, Department of Biostatistics. (2/2016)
9. Johns Hopkins University, Department of Biostatistics. (2/2016)
8. University of Illinois, Department of Statistics. (1/2016)
7. North Carolina State University, Department of Statistics. (1/2016)
6. University of Rochester, Department of Biostatistics & Computational Biology. (1/2016)
5. Emory University, Department of Biostatistics & Bioinformatics. (1/2016)
4. Yale University, Department of Biostatistics. (1/2016)
3. McGill University, Department of Epidemiology, Biostatistics & Occupational Health. (11/2015)
2. Johns Hopkins University, Causal Inference Working Group. (11/2015)
1. University of Pennsylvania, Department of Biostatistics. (9/2015)

## Advising

### *Ph.D. Advisor*

- 2018- Amanda Coston, Ph.D. in Machine Learning & Public Policy (co-advisor: Alex Chouldechova)
- 2017- Matteo Bonvini, Ph.D. in Statistics  
Thesis: “Topics in nonparametric causal inference”
- 2018-2022 Manjari Das, Ph.D. in Statistics  
Thesis: “Nonparametric estimation in capture-recapture designs”
- 2018-2021 Alan Mishler, Ph.D. in Statistics  
Thesis: “Auditing and achieving counterfactual fairness”  
→ Research Scientist, Artificial Intelligence Research, JP Morgan
- 2016-2020 Kwangho Kim, Ph.D. in Statistics & Machine Learning  
Thesis: “Causal inference with complex data structures and non-standard effects”  
→ Seidman Postdoctoral Fellow, Department of Health Care Policy, Harvard University
- 2016-2018 Jackie Mauro, Ph.D. in Statistics & Public Policy  
Thesis: “Nonparametric estimation of the effects of policies to reduce recidivism”  
→ Postdoctoral Scholar, School of Information, University of California, Berkeley  
(now: Data Scientist at Google)
- 2016-2017 Maria Cuellar, Ph.D. in Statistics & Public Policy (co-advisor: Stephen Fienberg)  
Thesis: “Causal reasoning and data analysis in the law: estimation of the probability of causation”  
→ Assistant Professor, Department of Criminology, University of Pennsylvania

### *Advanced Data Analysis (ADA) Advisor*

- 2021-2022 Kenta Takatsu
- 2020-2021 Vinayak Bhatia
- 2020-2021 Holly Bossart (co-advisor: Zach Branson)
- 2020-2021 Victoria Lin
- 2020-2021 Mateo Dulce Rubio
- 2020-2021 Zhengao (Tiger) Zeng
- 2019-2020 Alec McClean (co-advisor: Zach Branson)
- 2017-2018 Natalia Lombardi de Oliveira (co-advisor: Ryan Tibshirani)
- 2017-2018 Matteo Bonvini
- 2016-2017 Kwangho Kim

## Editorial Service

2021- Associate Editor, *Electronic Journal of Statistics*  
2021- Associate Editor, *Journal of Data Science*  
2021- Associate Editor, *Journal of the Royal Statistical Society: Series B*  
2019- Associate Editor, *International Journal of Biostatistics*  
2019- Associate Editor, *Biostatistics*

## Referee Service

### *Statistical & Methodological Journals*

Annals of Applied Statistics  
Annals of Statistics  
Bernoulli  
Biometrics  
Biometrika  
BMC Medical Research Methodology  
Clinical Trials  
Computational Statistics & Data Analysis  
Econometrics & Statistics  
Electronic Journal of Statistics  
Health Services & Outcomes Res. Methodology  
International Journal of Biostatistics  
Journal of Causal Inference  
Journal of Econometrics  
Journal of Educational and Behavioral Statistics  
Journal of Machine Learning Research  
Journal of Multivariate Analysis  
Journal of the American Statistical Association  
Journal of the Royal Statistical Society: Series B  
Journal of the Royal Statistical Society: Series C  
Quantitative Economics  
Stat  
Statistical Methods in Medical Research  
Statistical Science  
Statistics in Medicine

### *Selected Other Scientific Journals*

American Journal of Epidemiology  
Archives of Internal Medicine  
Health Services Research  
Journal of Quantitative Criminology  
Medical Decision Making  
Proceedings of the National Academy of Sciences  
Sociological Methodology

### *Conferences*

AISTATS (2021)  
COLT (2019)  
NeurIPS (2020)

## Software

*npcausal*: R package for nonparametric causal inference ([github.com/ehkennedy/npcausal](https://github.com/ehkennedy/npcausal))

## Teaching Experience

### *As Primary Instructor at Carnegie Mellon*

Modern Regression (36-401)

- Fall 2018, Fall 2019, Fall 2020, Fall 2021

Foundations of Causal Inference (36-731) & Modern Causal Inference (36-732)

- Spring 2020

Statistical Paradoxes (66-108)

- Fall 2017

Experimental Design & Time Series (36-618)

- Spring 2017

### *External Short Courses & Workshops*

“Influence Functions & Machine Learning in Causal Inference”

\*American Causal Inference Conference, Austin, TX. (2021)

University of North Carolina, Chapel Hill, Causal Inference Research Group. (10/2019)

Causal Inference and Big Data Summer Institute, Philadelphia, PA. (6/2019)

Winter Conference in Statistics, Hemavan, SE. (3/2019)

North Carolina State University, Department of Statistics. (10/2018)

Causal Inference and Big Data Summer Institute, Philadelphia, PA. (6/2018)

Atlantic Causal Inference Conference, Pittsburgh, PA. (5/2018)

Johns Hopkins University, Causal Inference & SLAM Working Groups. (12/2017)

Causal Inference and Big Data Summer Institute, Philadelphia, PA. (7/2017)

University of North Carolina, Chapel Hill, Causal Inference Research Group. (3/2016)

## Academic Service

### *Leadership*

President (2022-2023), Pittsburgh Chapter of the American Statistical Association

President-Elect (2021-2022), Pittsburgh Chapter of the American Statistical Association

### *Conference Organizing*

Organizing Committee Member, Atlantic Causal Inference Conference, Pittsburgh, PA. (5/2018)

Organizing Committee Member, Atlantic Causal Inference Conference, Philadelphia, PA. (5/2015)

### *Conference Session Organizing*

Invited Session Organizer, Atlantic Causal Inference Conference, Pittsburgh, PA. (5/2018)

Topic-Contributed Session Chair, Joint Statistical Meetings, Boston, MA. (8/2014)

Topic-Contributed Session Organizer, Joint Statistical Meetings, Boston, MA. (8/2014)

Invited Session Organizer, International Biometric Society ENAR Spring Meeting, Baltimore, MD. (3/2014)

*Award Committees*

Reviewer, Statistical Learning & Data Science Paper Award, Joint Statistical Meetings (8/2021)

Reviewer, Health Policy Statistics Paper Award, Joint Statistical Meetings, Philadelphia, PA. (8/2019)

Reviewer, Health Policy Statistics Paper Award, Joint Statistical Meetings, Baltimore, MD. (8/2017)

*Professional Memberships*

American Statistical Association

Institute of Mathematical Statistics

International Biometric Society, Eastern North American Region (ENAR)

Irish Statistical Association