

Keith Barnatchez

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Academic and Research Experience

Postdoctoral Research Fellow, Department of Biostatistics, Johns Hopkins Bloomberg School of Public Health, 2026–Present.

T32 Pharmacoepidemiology Training Program.

PhD Student Research Assistant, Neurological Clinical Research Institute, Massachusetts General Hospital, 2024–2026.

Education

Harvard University, PhD in Biostatistics, 2021–2026.

Dissertation: *Causal Inference for Error-Prone and Multi-Source Data*.

Harvard University, AM in Biostatistics, 2021–2023.

Colby College, 2014–2018.

BA in Mathematical Sciences, Statistics Concentration.

BA in Economics-Mathematics; honors thesis: *Employer Mandates and Firm Dynamics*.

Publications

Journal Articles and Conference Proceedings

K. Barnatchez, K. P. Josey, R. C. Nethery, & G. Parmigiani (2026). *Debiased Machine Learning for Conformal Prediction of Counterfactual Outcomes Under Runtime Confounding*. Proceedings of the Fifth Conference on Causal Learning and Reasoning, Proceedings of Machine Learning Research, 323, 1345–1379. [Published proceedings](#). Selected for oral presentation.

K. Barnatchez, R. Nethery, B. E. Shepherd, G. Parmigiani, & K. P. Josey (2025). *Flexible and Efficient Estimation of Causal Effects with Error-Prone Exposures: A Control Variates Approach for Measurement Error*. Biometrics, 81(4), uja151. [doi:10.1093/biometc/ujaf151](https://doi.org/10.1093/biometc/ujaf151).

K. Barnatchez & R. Lester (2017). *The Relationship Between Economic Freedom and Economic Dynamism*. Contemporary Economic Policy, 35(2), 358–372. [doi:10.1111/coep.12194](https://doi.org/10.1111/coep.12194).

Research Reports

K. Barnatchez, L. D. Crane, & R. A. Decker (2017). *An Assessment of the National Establishment Time Series (NETS) Database*. Finance and Economics Discussion Series, 2017-110. Board of Governors of the Federal Reserve System. [doi:10.17016/FEDS.2017.110](https://doi.org/10.17016/FEDS.2017.110).

Preprints

- K. Barnatchez**, W. Butler, J. Geller, & E. Stuart (2026). *Characterizing Survivor Principal Strata Over Time: Identification, Efficient Estimation, and Sensitivity Analysis*. [arXiv:2609.37821](#).
- N. Murali, **K. Barnatchez**, J. Hoppe, B. D. Wagner, K. Keller, & K. Josey (2026). *Causal Inference with Multiple Misclassified Exposures: A Control Variate-Adjusted Calibration Weighting Approach*. [arXiv:2606.23656](#).
- K. Barnatchez**, K. P. Josey, N. S. Hejazi, B. E. Shepherd, G. Parmigiani, & R. Nethery (2025). *Efficient Estimation of Causal Effects Under Two-Phase Sampling with Error-Prone Outcome and Treatment Measurements*. [arXiv:2506.21777](#).

Works in Progress

- K. Barnatchez**, R. Nethery, & K. Josey. *Semiparametric Causal Inference Under Measurement Error: A Review and Unifying Perspective*. In preparation.
- S. Sharma, J. Wang, **K. Barnatchez**, E. Macklin, G. Kittle, J. Shefner, J. Berry, C. Douthwright, & S. Paganoni, for the HEALEY ALS Platform Trial Study Group. *Variability of ALSFRS-R Scores Using Multiple Evaluators in the HEALEY ALS Platform Trial*. In preparation.
- E. A. Macklin, **K. Barnatchez**, L. B. Chibnik, J. Wang, H.-W. Chen, R. Donoghue, M. Quintana, J. Shefner, J. Andrews, J. D. Berry, S. Babu, M. Chase, H. Yu, A. Sherman, S. Paganoni, & M. E. Cudkowicz, for the HEALEY ALS Platform Trial Study Group. *Endpoint Selection for Improved ALS Clinical Trial Efficiency: Lessons from the HEALEY ALS Platform Trial*. In preparation.

Statistical Software

- drcmd**: Doubly-Robust Causal Inference With Missing Data. R package for estimating causal effects with missing data.
[github.com/keithbarnatchez/drcmd](#).
- survstrat**: Methods for Survivor Principal Strata. R package for estimating survivor causal effects and characterizing survivor populations over time.
[github.com/keithbarnatchez/survstrat](#).

Teaching Experience

- Introduction to Statistical Methods (BST 201)**, Harvard T.H. Chan School of Public Health.
Head Teaching Fellow, Fall 2023 and Fall 2024; Teaching Fellow, Fall 2022.
Led weekly recitations and coordinated teaching fellows, homework solutions, grading, and course logistics.
Student ratings of overall TF effectiveness: **5.00/5** (2023, $n = 26$); **4.97/5** (2024, $n = 37$).
- Teaching Assistant, Macroeconomic Theory, Colby College Economics Department, 2017–2018.
- Teaching Assistant, Introductory Statistics, Colby College Mathematics & Statistics Department, 2016–2018.
- Teaching Assistant, Calculus I, Colby College Mathematics & Statistics Department, 2015–2016.

Awards and Honors

Best Student Poster Award, New England Rare Disease Statistics (NERDS) Workshop, 2025.
Poster: *Efficient Estimation of Causal Effects Under Two-Phase Sampling with Error-Prone Outcome and Treatment Measurements*.

Harvard Biostatistics Distinction in Teaching Award, 2022, 2023, 2024.

Phi Beta Kappa, 2018.

Mu Sigma Rho, 2018.

Colby Economics Department Faculty Prize, for high scholarly attainment in economics, 2017.

Professional and Service Activities

Journal Peer Reviewer

Biometrics; Journal of Causal Inference; Cell Press: Patterns; Economic Modelling.

Departmental Service, Harvard T.H. Chan School of Public Health

Biostatistics Student Committee Co-Chair, 2025–2026.

HIV Working Group Seminar Organizer, 2023–2024.

Presentations

“Causal Inference, Machine Learning and Doubly-Robust Estimation.” Boston Red Sox Analytics R&D Journal Club, May 2026.

“Debiased Machine Learning for Conformal Prediction of Counterfactual Outcomes Under Runtime Confounding.” Fifth Conference on Causal Learning and Reasoning (CLear), April 2026.
Selected oral presentation.

“Efficient Estimation of Causal Effects Under Two-Phase Sampling with Error-Prone Outcome and Treatment Measurements.” Harvard Biostatistics Department Seminar Series, February 2026.

“Evaluation of Candidate Surrogate Endpoints of ALS Progression: A Causal Mediation Approach.” Massachusetts General Hospital Biostatistics Seminar Series, November 2025.

“Efficient Estimation of Causal Effects Under Two-Phase Sampling with Error-Prone Outcome and Treatment Measurements.” Joint Initiative for Causal Inference (JICI) Lab Meeting, November 2025.

“Efficient Estimation of Causal Effects Under Two-Phase Sampling with Error-Prone Outcome and Treatment Measurements.” ENAR Annual Spring Meeting, March 2025.

“Estimating Causal Effects with a Mismeasured Exposure Using Control Variates.” ENAR Annual Spring Meeting, March 2024.

“Measurement Error in Causal Inference: A Review.” Harvard Biostatistics Student Seminar Series, April 2023.

Posters

“Debiased Machine Learning for Conformal Prediction of Counterfactual Outcomes Under Runtime Confounding.” American Causal Inference Conference, May 2026.

“Efficient Estimation of Causal Effects Under Two-Phase Sampling with Error-Prone Outcome and Treatment Measurements.” New England Rare Disease Statistics (NERDS) Workshop, October 2025.

“Efficient Estimation of Causal Effects Under Two-Phase Sampling with Error-Prone Outcome and Treatment Measurements.” American Causal Inference Conference, May 2025.

“Estimating Causal Effects with a Mismeasured Exposure Using Control Variates.” American Causal Inference Conference, May 2024.

Other Research and Professional Experience

Research Assistant, Federal Reserve Bank of Boston, 2018–2021.

Economists Jenny Tang and Viacheslav Sheremirov.

Summer Research Assistant, Federal Reserve Board of Governors, 2017.

Economists Leland Crane and Ryan Decker.

Research Assistant, Colby College Economics Department, Robert Lester, 2016.

Data Analyst Summer Intern, UnitedHealth (formerly OmniClaim), 2016.