

# Keith Barnatchez

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## EDUCATION

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Harvard University, 2021-2026 (expected)

PhD Candidate in Biostatistics

Dissertation: *Modern Causal Inference Methods for Heterogeneous Data Sources*

Harvard University, 2021-2023

AM Biostatistics

Colby College, 2014-2018

BA Mathematical Sciences, Statistics Concentration

BA Economics-Mathematics, Honors thesis: *Employer Mandates and Firm Dynamics*

## ACADEMIC EXPERIENCE

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PhD Student Research Assistant, [Neurological Clinical Research Institute, Massachusetts General Hospital](#), 2023-Present

Research Assistant, [Federal Reserve Bank of Boston](#), Economists Jenny Tang and Viacheslav Sheremirov, 2018-2021

Summer Research Assistant, [Federal Reserve Board of Governors](#), Economists Leland Crane and Ryan Decker, 2017

Research Assistant, [Colby College Economics Department](#), Professor Robert Lester, 2016

## TEACHING EXPERIENCE

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Introduction to Statistical Methods (BST 201), Harvard T.H. Chan School of Public Health

- **Fall 2023, Fall 2024** Head Teaching Fellow
- **Fall 2022** Teaching Fellow
- Average effectiveness score exceeding 4.95/5 across 3 years

## OTHER EXPERIENCE

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Teaching Assistant for Macroeconomic Theory, [Colby College Economics Department](#), 2017-2018

Data Analyst Summer Intern, [UnitedHealth](#) (formerly OmniClaim), 2016

Teaching Assistant for Introductory Statistics, [Colby College Mathematics & Statistics Department](#), 2016-2018

Teaching Assistant for Calculus I, [Colby College Mathematics & Statistics Department](#), 2015-2016

## PUBLICATIONS AND PRE-PRINTS

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**Barnatchez, K.**, Crane, L. D., & Decker, R. A. (2017). *An Assessment of the National Establishment Time Series (NETS) Database* (No. 2017-110, pp. 1-51). Board of Governors of the Federal Reserve System (US).

**Barnatchez, K.**, Nethery, R., Shepherd, B. E., Parmigiani, G., & Josey, K. P. (2025). *Flexible and Efficient Estimation of Causal Effects with Error-Prone Exposures: A Control Variates Approach for Measurement Error*. Biometrics (in press).

**Barnatchez, K.**, Josey, K. P., Hejazi, N. S., Shepherd, B. E., Parmigiani, G., & Nethery, R. (2025). *Efficient Estimation of Causal Effects Under Two-Phase Sampling with Error-Prone Outcome and Treatment Measurements*. arXiv preprint arXiv:2506.21777. Under review.

## WORKS IN PROGRESS

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**K. Barnatchez**, R. Nethery, K. Josey, & G. Parmigiani. *Double machine learning for conformal prediction of counterfactual outcomes under runtime confounding*. Under review.

**K. Barnatchez**, R. Nethery, & K. Josey. *Measurement error in causal inference: A review*. In preparation.

Sharma, S., Wang, J., **Barnatchez, K.**, Macklin, E., Kittle, G., Shefner, J., Berry, J., Doughwright, C., Paganoni, S 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.

N. Murali, **K. Barnatchez**, K. Keller, J. Hoppe, B. D. Wagner, & K. Josey. *Causal inference with multiple misclassified exposures: A control variate-adjusted calibration weighting approach*. In preparation.

N. Wang, **K. Barnatchez**, & K. Josey. *Integrating outcome evidence from misaligned control variates*. In preparation.

## AWARDS & HONORS

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

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

## STATISTICAL SOFTWARE

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**Barnatchez, K.** *drcmd: Doubly-Robust Causal Inference With Missing Data*, R package. [Online]. Available: <https://github.com/keithbarnatchez/drcmd>.

## PRESENTATIONS

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

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

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

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

## POSTERS

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

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

“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

## **PROFESSIONAL AND SERVICE ACTIVITIES**

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### **Journal Peer Reviewer**

Journal of Causal Inference, Cell Press: Patterns, Economic Modelling

### **Service Activities, Department of Biostatistics, HSPH**

Biostatistics Student Committee Co-Chair, 2024-Present

HIV Working Group Seminar Organizer, 2023-2024

## **SKILLS**

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Programming languages: Python, R

Software: Stata & Mata, LaTeX, MATLAB