Cory McCartan

Curriculum Vitae

August 2024

CONTACT INFORMATION

Department of Statistics, Penn State University
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ACADEMIC EMPLOYMENT

Pennsylvania State University   2024 –
Hoben and Patricia Thomas and Thomas and Ann Hettmansperger
    Early Career Professor of Statistics   2024 – 2027
Assistant Professor of Statistics   2024 –

New York University   2023 – 2024
Center for Data Science
Data Science Assistant Professor / Faculty Fellow

EDUCATION

Harvard University   2019 – 2023
Ph.D., Statistics, 2023.
    Committee: Kosuke Imai (chair), Xiao-Li Meng, Gary King.
    Dissertation: *Computational and Bayesian Methods for Geographic Data*
        in the Social Sciences.
A.M., Statistics, 2021.

Grinnell College   2015 – 2019
B.A., Mathematics, with honors.

PEER-REVIEWED PUBLICATIONS

"Evaluating Bias and Noise Induced by the U.S. Census Bureau's Privacy Protection Methods," with Christopher T. Kenny, Tyler Simko, Shiro Kuriwaki, and Kosuke Imai (2024). *Science Advances* 10:18, eadl2524.

"Measuring and Modeling Neighborhoods," with Jacob R. Brown and Kosuke Imai (2024). *American Political Science Review*, Online ahead of print.

"Census Officials Must Constructively Engage with Independent Evaluations," with Christopher T. Kenny, Tyler Simko, and Kosuke Imai (2024). *Proceedings of the National Academy of Sciences* 121:11, e2321196121.

    Letter to the editor re: Jarmin et al. (2023).

"Making Differential Privacy Work for Census Data Users," with Tyler Simko and Kosuke Imai (2023). *Harvard Data Science Review* 5:4.

    With response and rejoinder.

"Sequential Monte Carlo for Sampling Balanced and Compact Redistricting Plans," with Kosuke Imai (2023). *Annals of Applied Statistics* 17:4, 3300-3323.

Covered by *The Washington Post*, *Quanta* magazine.

"Widespread Partisan Gerrymandering Mostly Cancels Nationally, but Reduces Electoral Competition," with Christopher T. Kenny, Tyler Simko, Shiro Kuriwaki, and Kosuke Imai (2023). *Proceedings of the National Academy of Sciences* 120:25, e2217322120.

"Researchers Need Better Access to U.S. Census Data," with Tyler Simko and Kosuke Imai (2023). *Science* 380:6648, 902-903.

"Recalibration of Predicted Probabilities Using the "Logit Shift": Why Does it Work, and When Can it be Expected to Work Well?" with Evan T.R. Rosenman and Santiago Olivella (2023). *Political Analysis* 31:4, 651-661.

"Comment: the Essential Role of Policy Evaluation for the 2020 Census Disclosure Avoidance System," with Christopher T. Kenny, Shiro Kuriwaki, Evan T.R. Rosenman, Tyler Simko, and Kosuke Imai (2023). *Harvard Data Science Review*, Special Issue 2.

> Response to boyd and Sarathy (2022).

"Simulated Redistricting Plans for the Analysis and Evaluation of Redistricting in the United States," with Christopher T. Kenny, Tyler Simko, George Garcia III, Kevin Wang, Melissa Wu, Shiro Kuriwaki, and Kosuke Imai (2022). *Nature: Scientific Data* 9:1, 689.

"The Use of Differential Privacy for Census Data and Its Impact on Redistricting: the Case of the 2020 U.S. Census," with Christopher T. Kenny, Shiro Kuriwaki, Evan T.R. Rosenman, Tyler Simko, and Kosuke Imai (2021). *Science Advances* 7:41, eabk3283.

> Originally a Public Comment to the Census Bureau (May 28, 2021).

> Covered by *The Washington Post*, the *Associated Press*, the *San Francisco Chronicle*, *NC Policy Watch*, and others.

"Geodesic Interpolation on Sierpinski Gaskets," with Caitlin Davis, Laura LeGare, and Luke Rogers (2021). *Journal of Fractal Geometry* 8:2, 117-152.

WORKING PAPERS "Redistricting Reforms Reduce Gerrymandering by Constraining Partisan Actors," with Christopher T. Kenny, Tyler Simko, Emma Ebowe, Michael Y. Zhao, and Kosuke Imai (2024).

"Estimating Racial Disparities When Race is Not Observed," with Robin Fisher, Jacob Goldin, Daniel E. Ho, and Kosuke Imai (2024). *NBER working paper*, Under Review.

"Individual and Differential Harm in Redistricting," with Christopher T. Kenny (2022).

"Projective Averages for Summarizing Redistricting Ensembles" (2024). Under Review.

"Finding Pareto Efficient Redistricting Plans with Short Bursts" (2023).

OTHER WRITING "Candy Cane Shortages and the Importance of Variation." International Statistical Institute: *Statisticians React to the News* (December 21, 2021).

"Where Will the Rocket Land?" International Statistical Institute: *Statisticians React to the News* (May 12, 2021).

"Who's the Most Electable Democrat? It Might be Warren or Buttigieg, Not Biden." *The Washington Post* (October 23, 2019).

"I-405 Express Toll Lanes: Usage, Benefits, and Equity," with Shirley Leung, C.J. Robinson, Kiana Roshan Zamir, Vaughn Iverson, and Mark Hallenbeck. Technical report for the Washington State Department of Transportation (2019).

SOFTWARE   `redist`: Simulation Methods for Legislative Redistricting

`redistmetrics`: Redistricting Metrics

`birdie`: Bayesian Instrumental Regression for Disparity Estimation

`easycensus`: Quickly Find, Extract, and Marginalize U.S. Census Tables

`PL94171`: Tabulate P.L. 94-171 Redistricting Data Summary Files

`adjustr`: Stan Model Adjustments and Sensitivity Analyses using Importance Sampling

`causaltbl`: Tidy Causal Data Frames and Tools

`conformalbayes`: Jackknife(+) Predictive Intervals for Bayesian Models

`alarmdata`: Download, Merge, and Process Redistricting Data

`blockpop`: Estimate Census Block Populations for 2020

`ggredist`: Scales, Geometries, and Extensions of `ggplot2` for Election Mapping

`tinytiger`: Lightweight Interface to TIGER/Line Shapefiles

`wacolors`: Colorblind-Friendly Palettes from Washington State

`nbhdmodel`: Neighborhood Modeling and Analysis

PRESENTATIONS   **Joint Statistical Meetings**, Invited Paper Panel: 2024, 2022, 2021.

Society for Political Methodology, Annual Meeting, Paper: 2024, 2023, 2022; Poster: 2022, 2021.

American Causal Inference Conference, Annual Meeting, Poster: 2024.

Math and Democracy Seminar, New York University, Invited Talk: 2024.

ACM Conference in Equity and Access in Algorithms, Mechanisms, and Optimization, Annual Meeting, Paper: 2023.

Department of Political Science, MIT, Political Methodology Speaker Series, Invited Talk: 2023.

Institute for Quantitative Social Science, Harvard University, Applied Statistics Workshop, Paper: 2023, 2022, 2021, 2020.

American Association for Public Opinion Research, Annual Meeting, Poster: 2022.

Teaching	**Penn State University**	
	STAT 597: Missing Data (special topic short course)	Fall 2024
	STAT 440: Computational Statistics	Fall 2024
	New York University	
	DS-UA 111: Data Science for Everyone	Spring 2024
	Harvard University	
	STAT 117: Introduction to Biostatistics (Teaching Fellow)	Spring 2021
	STAT 221: Monte Carlo Methods & Other Computational Tools for Statistical Learning (Teaching Fellow)	Fall 2020
	Grinnell College	
	MAT 215: Linear Algebra (Peer Mentor)	Fall 2017 and Spring 2019
	MAT 310: Statistical Modeling (Peer Mentor)	Fall 2018
	Grinnell College Math Lab	2018 – 2019

Honors and
Awards

Hoben and Patricia Thomas and Thomas and Ann Hettmansperger Early Career Professorship in Statistics, 2024 (total award: $75,000).

Best Statistical Software Award, for developing statistical software that makes a significant research contribution; awarded to the `redist` software package by the Society for Political Methodology, 2022.

Certificate of Distinction in Teaching, awarded on the basis of student feedback by the Derek Bok Center for Teaching and Learning, 2021.

Pamela Ferguson Endowed Prize, awarded to up to two senior students by the Grinnell College Department of Mathematics, 2018.

Service

Reviewer: *Proceedings of the National Academy of Sciences, Journal of the American Statistical Association, Annals of Applied Statistics, Quarterly Journal of Political Science, Harvard Data Science Review, Multiscale Modeling and Simulation, Discrete Applied Mathematics, Election Law Journal, Sloan Foundation.*

Discussant: 2024 PolMeth Conference, 2024 Midwest Political Science Association Annual Conference

Penn State University	
Seminar coordinator	2024 – 2025
New York University	
Faculty fellow hiring review	2023 – 2024
MA admissions committee	2023 – 2024
Harvard University	
Harvard Statistics Graduate Council	2020 – 2023
Organized Ph.D. student retreat and research "lightning talks," 2020 and 2021.	
First-year Ph.D. Student Mentor	2020 – 2023
Harvard Graduate Students Union – UAW Local 5118	2019 – 2021
Elected member, Bargaining Committee, 2020–2021 and 2021–2024 contracts.	

Interim chair, Finance and Benefits Committee, 2020.

OTHER EXPERIENCE	**NAACP Legal Defense Fund**	2024

Expert Witness, *McClure et al. v. Jefferson County Commission* (U.S. District Court for the Northern District of Alabama, Case 2:23-cv-00443). Testified by deposition.

Expert Witness, *Callais et al. v. Landry* (U.S. District Court for the Western District of Louisiana, Case 3:24-cv-00122). Testified by deposition and at trial.

American Civil Liberties Union   2021 – 2024

Expert Witness, *GRACE, Inc. et al. v. City of Miami* (U.S. District Court for the Southern District of Florida, Case 1:22-cv-24066). Testified by deposition and at trial.

Expert Witness, *Nairne et al. v. Ardoin* (U.S. District Court for the Middle District of Louisiana, Case 3:22-cv-00178). Testified by deposition and at trial.

Consultant (with Prof. Kosuke Imai), *League of Women Voters of Ohio v. Ohio Redistricting Commission* (Ohio Supreme Court, Case 2021–1193), *League of Women Voters of Ohio v. Ohio Redistricting Commission* (Ohio Supreme Court, Case 2021–1449).

Data for Progress   2022
Consultant, Midterm election modeling

University of Washington eScience Institute   Summer 2019
Data Science for Social Good Fellow

Union of Grinnell Student Dining Workers   2016 – 2019
Founder, President (2016–17), and Advisor to the Executive Board (2018–19)

University of Connecticut   Summer 2018
REU Participant, Department of Mathematics

Fred Hutchinson Cancer Research Center   Summer 2017
Lead Intern, Department of Biostatistics

Cray, Inc. (now HPE)   Summer 2015
Intern, Chapel language testing