

# Cory McCartan

## Curriculum Vitae

October 2024

CONTACT INFORMATION	Department of Statistics, Penn State University 325 Thomas Building, 461 Pollock Road University Park, PA 16802	(425) 770-9244 mccartan@psu.edu
ACADEMIC EMPLOYMENT	<b>Pennsylvania State University</b> Hoben and Patricia Thomas and Thomas and Ann Hettmansperger Early Career Professor of Statistics Assistant Professor of Statistics Assistant Professor of Political Science (by courtesy)  <b>New York University</b> Center for Data Science Data Science Assistant Professor / Faculty Fellow	2024 – 2024 – 2027 2024 – 2023 – 2024
EDUCATION	<b>Harvard University</b> Ph.D., Statistics, 2023. Committee: Kosuke Imai (chair), Xiao-Li Meng, Gary King. Dissertation: <i>Computational and Bayesian Methods for Geographic Data in the Social Sciences</i> . A.M., Statistics, 2021.  <b>Grinnell College</b> B.A., Mathematics, with honors, 2019.	2019 – 2023 2015 – 2019
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). <i>Science Advances</i> 10:18, eadl2524.  “Measuring and Modeling Neighborhoods,” with Jacob R. Brown and Kosuke Imai (2024). <i>American Political Science Review</i> , Online ahead of print.  “Census Officials Must Constructively Engage with Independent Evaluations,” with Christopher T. Kenny, Tyler Simko, and Kosuke Imai (2024). <i>Proceedings of the National Academy of Sciences</i> 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). <i>Harvard Data Science Review</i> 5:4.  With response and rejoinder.  “Sequential Monte Carlo for Sampling Balanced and Compact Redistricting Plans,” with Kosuke Imai (2023). <i>Annals of Applied Statistics</i> 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).

“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**    **Keystone State Statistics Symposium**, University of Pittsburgh, Paper: 2024.  
**Frontiers in Data Science Symposium: Advances in Record Linkage**, Princeton University, Invited Talk: 2024.  
**Colloquium Series**, Department of Political Science, Penn State, Invited Talk: 2024.  
**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.  
**Political Methodology Speaker Series**, Department of Political Science, MIT, 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	<b>Penn State University</b>	
	STAT 597: Missing Data (special topic short course)	Fall 2024
	STAT 440: Computational Statistics	Fall 2024
	<b>New York University</b>	
	DS-UA 111: Data Science for Everyone	Spring 2024
	<b>Harvard University</b>	
	STAT 117: Introduction to Biostatistics (Teaching Fellow)	Spring 2021
	STAT 221: Monte Carlo Methods & Other Computational Tools for Statistical Learning (Teaching Fellow)	Fall 2020
	<b>Grinnell College</b>	
	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	<i>Hoben and Patricia Thomas and Thomas and Ann Hettmansperger Early Career Professorship in Statistics</i> , 2024 (total award: \$75,000).
	<i>Best Statistical Software Award</i> , for developing statistical software that makes a significant research contribution; awarded to the redist software package by the Society for Political Methodology, 2022.
	<i>Certificate of Distinction in Teaching</i> , awarded on the basis of student feedback by the Derek Bok Center for Teaching and Learning, 2021.
	<i>Pamela Ferguson Endowed Prize</i> , awarded to up to two senior students by the Grinnell College Department of Mathematics, 2018.

SERVICE	Reviewer: <i>Proceedings of the National Academy of Sciences</i> , <i>Journal of the American Statistical Association</i> , <i>Annals of Applied Statistics</i> , <i>American Journal of Political Science</i> , <i>Quarterly Journal of Political Science</i> , <i>Harvard Data Science Review</i> , <i>Public Choice</i> , <i>Multiscale Modeling and Simulation</i> , <i>Discrete Applied Mathematics</i> , <i>Election Law Journal</i> , <i>Sloan Foundation</i> .	
	Discussant: 2024 PolMeth Conference, 2024 Midwest Political Science Association Annual Conference	
	<b>Penn State University</b>	
	Seminar coordinator	2024 – 2025
	<b>New York University</b>	
	Faculty fellow hiring review	2023 – 2024
	MA admissions committee	2023 – 2024
	<b>Harvard University</b>	
	Faculty fellow hiring review	
	MA admissions committee	

	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	<b>NAACP Legal Defense Fund</b>	2024
	Expert Witness, <i>McClure et al. v. Jefferson County Commission</i> (U.S. District Court for the Northern District of Alabama, Case 2:23-cv-00443). Testified by deposition.	
	Expert Witness, <i>Callais et al. v. Landry</i> (U.S. District Court for the Western District of Louisiana, Case 3:24-cv-00122). Testified by deposition and at trial.	
	<b>American Civil Liberties Union</b>	2021 – 2024
	Expert Witness, <i>GRACE, Inc. et al. v. City of Miami</i> (U.S. District Court for the Southern District of Florida, Case 1:22-cv-24066). Testified by deposition and at trial.	
	Expert Witness, <i>Nairne et al. v. Ardoin</i> (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), <i>League of Women Voters of Ohio v. Ohio Redistricting Commission</i> (Ohio Supreme Court, Case 2021–1193), <i>League of Women Voters of Ohio v. Ohio Redistricting Commission</i> (Ohio Supreme Court, Case 2021–1449).	
	<b>Data for Progress</b>	2022
	Consultant, Midterm election modeling	
	<b>University of Washington eScience Institute</b>	Summer 2019
	Data Science for Social Good Fellow	
	<b>Union of Grinnell Student Dining Workers</b>	2016 – 2019
	Founder, President (2016–17), and Advisor to the Executive Board (2018–19)	
	<b>University of Connecticut</b>	Summer 2018
	REU Participant, Department of Mathematics	
	<b>Fred Hutchinson Cancer Research Center</b>	Summer 2017
	Lead Intern, Department of Biostatistics	
	<b>Cray, Inc. (now HPE)</b>	Summer 2015
	Intern, Chapel language testing	