# Cory McCartan

**Curriculum Vitae**

August 2023


**Contact Information**

Center for Data Science, New York University
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**Academic Employment**

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

**Education**

**Harvard University** 2019 – 2023
Ph.D., Statistics, 2023.
Advisor: Kosuke Imai.
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**

"Sequential Monte Carlo for Sampling Balanced and Compact Redistricting Plans," with Kosuke Imai (2023). *Annals of Applied Statistics*, Forthcoming.

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* 1:11.

"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

"Estimating Racial Disparities When Race is Not Observed," with Jacob Goldin, Daniel E. Ho, and Kosuke Imai (2023).

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

"Measuring and Modeling Neighborhoods," with Jacob R. Brown and Kosuke Imai (2021). Under Review.

"Evaluating Bias and Noise Induced by the U.S. Census Bureau's Privacy Protection Methods," with Christopher T. Kenny, Shiro Kuriwaki, Tyler Simko, and Kosuke Imai (2023).

"Making Differential Privacy Work for Census Data Users," with Tyler Simko and Kosuke Imai (2023). 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

## Presentations

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

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

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

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

## Teaching

**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

*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.

## Service

Reviewer: *Discrete Applied Mathematics, Election Law Journal, Sloan Foundation.*

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

**American Civil Liberties Union** 2021 – 2023

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-KMM)

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

**Grinnell College Department of Mathematics** 2017
Course Grader

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