

Zachary A. Goodman

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Summary

I am an Economics Ph.D. candidate at the University of California, San Diego where I use applied econometrics to estimate the impact of policies on positive behaviors like choosing nutritious foods and studying. My dissertation work examines the role of sugar-sweetened-beverage taxes and income shocks on sugar consumption as well as the effectiveness of video lectures on learning. As a data science intern at Quora, I worked on optimizing A/B tests for statistical power, training ML models to predict ad clickthrough rates, and conducting observational studies to inform product decisions. Recently in my spare time I have been developing a web-based service that helps cyclists compete safely and equitably during the COVID-19 pandemic.

Technical Skills

- **Causal inference:** bootstrapping, difference-in-differences, event studies, instrumental variables, matching, regression discontinuity, potential outcomes, selectivity corrections, synthetic controls
- **Experimental design:** A/B testing, attrition and compliance, heterogeneity analysis, power calculations, power-optimized treatment assignment, randomization inference, spillover effects
- **Machine learning:** clustering, feature selection methods, neural networks, random forests, regularization, text embeddings
- **Statistics:** fixed-effect models, geospatial analysis, hypothesis testing, logit and probit models, multivariate linear regression, nonparametric methods, quantile regression, time series analysis
- **Software:** R, Python, SQL, Stata

Education

Ph.D. Economics, University of California, San Diego	2021 (expected)
M.S. Economics, University of California, San Diego	2018
B.S. Economics and B.S. Mechanical Engineering, North Carolina State University Valedictorian, minor in Mathematics	2016

Relevant experience

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| Data Science Intern, Quora, Mountain View, CA | 2019 |
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- Demonstrated that with thoughtful experimental design, our team could detect reasonable effect sizes on outcomes too underpowered to detect with existing methods
 - Suggested and analyzed the potential benefits and costs of new features for ML models that predict advertisement clickthrough rates
 - Identified economic inefficiencies in advertisement auctions and estimated the effects of alternatives including revenue and user behavior changes
 - Rewrote the data science take-home challenge to improve signal of applicant quality

GPSRace Cofounder, San Diego, CA

2020

- With one other cofounder, developed GPSRace.cc, a platform that facilitates safe and fair bicycle racing during the COVID-19 pandemic
- Contributed to all programming aspects of the platform including a Flask/Python backend deployed with Docker, MySQL database, and HTML/JavaScript frontend
- Launched at the end of the summer and currently being used by several hundred cyclists

Research Assistant, University of California, San Diego

2018 – 2019

- Designed and analyzed several experiments to determine the impact of student achievement programs offered by the Teaching + Learning Commons at UCSD
- Experimental designs optimized statistical power while maintaining ethical considerations

Academic Research

The Role of Liquidity in Food Choice: Evidence from the Economic Stimulus Act of 2008

I use Nielsen Consumer Panel data and exploit the quasi-random timing of the 2008 economic stimulus payments as a natural experiment to examine how liquidity affects food choice. I construct an analysis data set from raw panel and nutrition data using Python and estimate treatment effects using a stacked event study design and fixed effects models in Stata.

The Effect of Sugar-Sweetened Beverage Taxes in the United States: Evidence from Scanner Data (with Jacob Orchard)

We use Nielsen Consumer Panel data to estimate the effect of taxes on sugar-sweetened beverages in the United States ranging from one to two cents per ounce. We use Python and publicly available APIs to estimate driving time between panelist homes and nearest grocery stores inside and outside of taxed regions. We use Stata to clean and assemble our analysis data set as well as to estimate treatment effects using differences-in-differences and synthetic controls methods.

The Effect of Supplementary Videos on University Educational Outcomes (with Melissa Famulari)

We estimate the effect of watching video lectures on exam performance in a field experiment involving about 800 students. The experimental design allows for identification of treatment effects local to two populations: students who scored below the median on the first of three exams, and students who scored at the median. We use Stata to assign treatment while optimizing for statistical power, Python for assembling an analysis data set, and Stata for estimating local average treatment effects using instrumental variables and regression discontinuity methods. We test for robustness of our estimates with nonparametric methods including bootstrapping and randomization inference.

Select Honors and Personal Accomplishments

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| 2019: | Outstanding Teaching Award, UCSD
Finished in the top 20% of the field at the Ironman World Championships in Kona, HI |
| 2016: | Biked self-supported from Washington state to Maryland |
| 2015: | Outstanding Senior Award, Department of Economics, NCSU
Phi Beta Kappa, NCSU |
| 2012 – 2016: | Roy H. Park Scholarship |
| 2012: | Eagle Scout |