Nihal Mehta

Department of Economics
The Pennsylvania State University
303 Kern Building
State College, PA 16801

Email: nzm5430@psu.edu
Homepage: nihal-mehta.com
Citizenship: India

Education

Ph.D. Economics, The Pennsylvania State University, 2019-2025 (expected)

Committee: Keisuke Hirano (co-chair), Andres Aradillas-Lopez (co-chair), Patrik Guggenberger

M.A. Economics, Delhi School of Economics, 2015-2017

B.A. (Honors) Economics, University of Delhi, 2012-2015

Research Interests

Health Economics, Econometrics, Machine Learning, Industrial Organization

Working Papers

"Estimating Production with Latent Team Structures: Case Study of Nursing Homes" **(Job Market Paper)**

Abstract: In early 2024, the Centers for Medicare & Medicaid Services (CMS) introduced a nationwide minimum staffing mandate to address inadequate care provision in US nursing facilities. It heterogeneously targets specific worker types. Given cost minimizing behavior of for-profit nursing homes, we are interested in estimating their new staffing mix under this policy. This would depend on the complex patterns of substitution between workers. We develop a model of team-based production with restrictions and sparsities that draw on the theories of personnel economics and organizational design. The resulting specification balances parsimony and flexibility while being able to handle inputs at a reasonably disaggregated level. We then propose a novel group-LASSO penalized and shape constrained GMM estimator for this model. Surprisingly, our estimates suggest that mortality outcomes may worsen for a significant fraction of nursing homes, highlighting a potential limitation in the policy's efficacy in aligning private incentives with social welfare objectives.

"Minimax Regret Treatment Rules with Finite Samples when a Quantile is the Object of Interest"

(with Patrik Guggenberger and Nikita Pavlov)

Abstract: Consider a policymaker who is informed about the population by a finite sample. Based on that sample, she has to decide whether or not to apply a certain treatment to the population. We work out finite sample minimax regret treatment rules under various sampling schemes when outcomes are restricted onto the unit interval. In contrast to Stoye (2009) where the focus is on maximization of expected utility, the focus here is instead on a particular quantile of the outcome distribution. We find that when the sample consists of a fixed number of untreated and treated units, any treatment rule is minimax regret optimal. The same is true under random treatment assignment in the sample with any assignment probability and in the case of testing an innovation when the known quantile of the untreated population equals $1/2$. However if that quantile exceeds $1/2$ then never treating is the unique optimal rule and if it is smaller than $1/2$ then always treating is optimal. We also consider the case with a covariate.

"Robust Nonparametric Testing of Conditional Independence"

Abstract: Testing for equality between two conditional probability functions can show up in a wide variety of economic settings. When covariates are high dimensional or continuous, we propose discretization of the covariate space as the tuning parameter in the contingency table approach to testing. Through

Monte Carlo simulations, we observe that it has superior size control and power against alternatives while being robust to choice of the tuning parameter compared to testing based on series estimation. We show that testing for racial bias in judicial decisions reduces to a test of equality of conditional recidivism probabilities across races under certain assumptions. We apply this framework to parole decisions in the state of Georgia and find evidence of racial bias.

Employment

Graduate Research Assistant Appointment

Keisuke Hirano, Summer 2023 - Present

Based on Bayesian decision theory, found sites for experimentation to optimize external validity from among hundreds of thousands of sites across multiple sites for a mobile banking experiment.

Patrik Guggenberger, Summer 2022

Projects involving minimax regret assignment rules with covariates, quantiles, and multiple treatments.

Andres Aradillas-Lopez, Summer 2020

Estimating an econometric model for detecting predatory behavior in the telecom industry using SMM.

Experienced Associate, PricewaterhouseCoopers (PwC) US Advisory, Mumbai, Jul. 2017 - Jun. 2019

Analytics Intern, Standard Chartered Bank, Bengaluru, Summer 2016

Teaching

Instructor of Record, The Pennsylvania State University

Introductory Microeconomics, Summer 2021

Graduate Teaching Assistant, The Pennsylvania State University

Introductory Econometrics, Honors (undergraduate), Spring 2023
Money and Banking (undergraduate), Fall 2022
Introductory Econometrics (undergraduate), Spring 2022
Introductory Macroeconomic Analysis and Policy (undergraduate), Fall 2020, Spring 2021, Fall 2021

Honors and Awards

Graduate Economics Scholarship, Penn State, 2019-2025

Merit Scholarship, Delhi School of Economics, 2015 - 2017

First Rank, Dyal Singh College, University of Delhi, 2012 - 2015

Languages and Skills

Computer Skills: Julia, Python, R, Matlab, Stata, LaTeX, Git, job scheduling (Slurm), parallel processing, SQL

Languages: English (fluent), Hindi (native), Punjabi (basic)

References

Keisuke Hirano,
Professor of Economics,
The Pennsylvania State University,
kuh237@psu.edu

Andres Aradillas-Lopez,
Associate Professor of Economics,
The Pennsylvania State University,
aza12@psu.edu

Patrik Guggenberger,
Professor of Economics,
The Pennsylvania State University,
pxg27@psu.edu