Nihal Mehta

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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

Applied Econometrics, Structural Modeling, Applied Microeconomics, Machine Learning

Working Papers

"Estimating Production Functions with Latent Team Structures: An Analysis of Nursing Homes"

(Job Market Paper)

Abstract: I develop a robust specification and estimator for production functions when the researcher observes a disaggregated vector of endogenous labor inputs. Drawing on personnel and organizational economics, I construct a latent model of matching teams of worker types with bundles of tasks under time constraints and costly team formation. I adapt its implications into a penalized and shape-constrained GMM estimator and establish its consistency. Applying it to the US nursing home industry, I estimate revenue generation and the impact of a proposed targeted minimum staffing mandate on labor demand and health outcomes. I find that the policy improves care quality for the long-stay patient population but has mixed effects for short-stay patients: it narrows disparities and improves bottom-decile quality, but reduces mean and top-decile quality.

"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 to Keisuke Hirano, Summer 2023 - Present

Provided research assistantship for their paper "Selecting Experimental Sites for External Validity".

Graduate Research Assistant to Patrik Guggenberger, Summer 2022

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

Graduate Research Assistant to Andres Aradillas-Lopez, Summer 2020

Estimating game-theoretic model for detecting predatory behavior in telecom industry using SMM.

Experienced Associate, PricewaterhouseCoopers (PwC) US Advisory, Mumbai, July 2017 - June 2019

Analytics Intern, Standard Chartered Bank, Bengaluru, Summer 2016

Teaching

Instructor of Record, The Pennsylvania State University

Introductory Microeconomics (undergraduate), 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 in College Economics Department, University of Delhi, 2012 - 2015

Skills and Languages

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

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

References

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