MIT Economics

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DOCTORAL STUDIES

Massachusetts Institute of Technology (MIT)
PhD, Economics, Expected completion June 2023
DISSERTATION: *"Essays in Health Economics and Applied Econometrics"*

DISSERTATION COMMITTEE AND REFERENCES

Professor Amy Finkelstein
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Professor Alberto Abadie
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Professor Jonathan Gruber
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PRIOR EDUCATION

University of California, Berkeley — 2016
B.A., Applied Mathematics, Economics, Statistics
Highest Distinction in General Scholarship

CITIZENSHIP Singapore **GENDER:** Male

LANGUAGES English, Mandarin

FIELDS

Primary Field: Health Economics

Secondary Fields: Applied Econometrics, Labor Economics

TEACHING EXPERIENCE

14.01 Principles of Microeconomics — 2022
Teaching Assistant to Professor Sara Ellison

	14.01 Principles of Microeconomics Teaching Assistant to Professor Jonathan Gruber	2020
	14.30 Introduction to Statistical Methods in Economics Teaching Assistant to Professor Alberto Abadie	2020
RELEVANT POSITIONS	Research Assistant to Professor Nikhil Agarwal	2018
	Research Assistant to Professor Amy Finkelstein	2017
FELLOWSHIPS, HONORS, AND AWARDS	Sahin (1963) Presidential Fellowship, MIT	2017
	Mark A. Schimbor Prize: Best Undergraduate Research in Economics, UC Berkeley	2016
	Steve Goldman Memorial Prize: Highest Academic Achievement in Economics, UC Berkeley	2016
	University Medal Finalist, UC Berkeley	2016
	Percy Lionel Davis Award: Excellence in Scholarship in Mathematics, UC Berkeley	2016
	Dean's Honors, UC Berkeley	2013-15

PUBLICATIONS

"Mixed Beam Murine Harderian Gland Tumorigenesis: Predicted Dose-Effect Relationships if neither Synergism nor Antagonism Occurs" (with Nopphon Siranart, Eleanor A. Blakely, Naval Handa, and Rainer K. Sachs). *Radiation Research*, 2016.

RESEARCH PAPERS

"Demand for Quality in the Presence of Information Frictions: Evidence from the Nursing Home Market" (Job Market Paper)

This paper studies consumers' demand for quality in the nursing home market, where information frictions are a source of concern. Using administrative data on the universe of nursing home residents, I estimate quality of nursing homes in California, and use these estimates as inputs into a structural demand model. I find substantial variation in nursing home quality: one standard deviation higher quality is associated with 2 percent lower risk-adjusted 90-day mortality rate. Yet, despite the high stakes for residents, average demand for quality is very low, even after accounting for unobserved supply-side constraints arising from selective admissions practices by nursing homes. Patterns of demand heterogeneity highlight information frictions as a major reason for this low demand: residents who were younger, highly educated, free from dementia, and who made their choices after the introduction of the star rating system were more responsive to quality. Counterfactual simulations based on estimates of the structural demand model and a competing risks model suggest that eliminating information frictions can reduce deaths by at least 8 to 28 percent, and potentially even more if supply side responses are considered.

"Regression Discontinuity Designs with Multiple Running Variables"

In this paper, I introduce a new estimator for regression discontinuity designs with multiple running variables. My estimator provides efficiency gains relative

to the common empirical practice of analyzing each running variable separately. In addition, it can be used to estimate heterogeneous treatment effects over a subset of the running variable space. I derive Bayesian confidence intervals for my estimator, and confirm their validity in simulations. Finally, I demonstrate the performance of my estimator in an empirical application from Londoño-Vélez, Rodríguez, and Sánchez (2020), which studies the effect of a large financial aid program on higher education in Colombia.

RESEARCH IN PROGRESS

"Assessing the Relative Importance and Potential Interactions Between Common Explanations for Racial Segregation: Evidence from Nursing Homes"

Racial segregation is a pervasive phenomenon in a number of important settings, such as school, neighborhood, and nursing home choice. Past work has found evidence supporting a number of explanations for these patterns, including in-group preferences, discrimination, and location. However, since most of these factors have been studied independently, it is difficult to make precise statements about the relative importance of these explanations and potential interactions between them. In this project, I take advantage of an administrative data set on the universe of nursing home residents to study a number of explanations simultaneously using a two-sided matching model. The estimation results indicate that both in-group preferences and discrimination contribute to the observed pattern of minorities being disproportionately concentrated in lower-quality nursing homes, whereas location is unlikely to play a major role. Moreover, lower minority demand for quality also contributes to segregation, with further analysis suggesting that this may be due to information frictions. In simulations, I quantify the relative importance and potential interactions between these factors.

"Selective Admissions and Discharges by Nursing Homes"

Previous research has shown that as a consequence of capacity constraints, nursing homes selectively choose which types of residents to admit (Gandhi, 2019; Cheng, 2022), and when to discharge residents (Hackmann, Pohl, and Ziebarth, 2020). I provide a microfoundation for a structural model which incorporates both selective admission and discharge decisions – arrivals of different types of new residents and evolution of "discharge readiness" of existing residents follow certain stochastic processes, and nursing homes choose optimal admission and discharge policies that maximize expected present discounted value of future profits. The solution to this optimal control problem yields testable implications, and sheds light on identification of the structural model – intuitively, nursing homes' admission and discharge policies are identified by differences in the characteristics of residents they admit and discharge during times of high and low occupancy. I estimate the model using an extension of the Gibbs sampler in Agarwal and Somaini (2022) and Cheng (2022), with data augmentation on residents' indirect utility and latent variables

that determine nursing homes' admission decisions for potential residents and discharge decisions for existing residents.

"Bounds on Omitted Variables Bias in Discrete Choice Models"

In this project, I extend methods in Altonji, Elder, and Taber (2005), and Oster (2019) for bounding omitted variables bias (OVB) in OLS to discrete choice settings. I derive bounds for the bias based on movements in the coefficient of interest before and after the inclusion of additional regressors, combined with an assumption about the importance of the omitted variables relative to the importance of the additional regressors for consumer utility. In simulations, I show that this bounding procedure is robust to various alternative distributional assumptions. Finally, I conduct an empirical application studying whether the low estimates of nursing home residents' demand for quality in Cheng (2022) can be explained by OVB. The bounds derived in this paper indicate that the gap between estimated demand and demand estimates in the literature from other healthcare settings can only be explained by OVB if (i) residents value the omitted variable positively, but the omitted variable is negatively correlated with the main survival-based quality measure, and (ii) residents value the omitted variable at least 10 times more than they value publicly observable nursing home characteristics.