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Education

University of Chicago, 2013 - 2020 (expected) P.h.D. in Economics

Brigham Young University, 2010 - 2013 B.S. in Math, B.S in Economics

References

Professor Neale Mahoney (Chair)
Univ. of Chicago Booth School of Business
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Professor Jens Ludwig
Univ. of Chicago Harris School of Public Policy
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Professor Michael Greenstone
Univ. of Chicago Department of Economics
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Professor David Meltzer
Univ. of Chicago Harris School of Public Policy
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Teaching and Research Fields

Primary fields: Health Economics, Public Economics

Secondary fields: Machine Learning, Applied Microeconomics

Conferences and Presentations

Jun 2019	Agency for Healthcare Research and Quality NRSA Trainees Research Conference
Jun 2019	Academy Health Annual Research Meeting (Poster)
Oct 2018	University of Chicago Applied Micro Lunch
Jun 2018	Agency for Healthcare Research and Quality NRSA Trainees Research Conference
Jun 2018	Academy Health Annual Research Meeting (Poster)

Mar 2018	University of Chicago Applied Micro Lunch
Feb 2018	University of Chicago Health Economics Workshop
Jan 2018	University of Chicago-Northwestern Health Research Workshop
July 2017	Western Economic Association International Conference
Apr 2017	Association for Public Policy Analysis and Management Regional Student Conference
Apr 2017	Population Association for America Annual Meeting (Poster)
Mar 2017	University of Chicago Applied Micro Lunch

Teaching Experience

Spr. 2019	Big Data (MBA), TA for Veronicka Rockova
Spr. 2019	Health Economics for Public Policy, TA for David Meltzer
Spr. 2019	The Economics of Sports, TA for Allen Sanderson
Win. 2019	Applications of Machine Learning to the Empirical Sciences (PhD), TA for Sendhil Mullainathan
Spr. 2018	Health Economics for Public Policy, TA for David Meltzer
Spr. 2016	Urban Economics, Univ. of Chicago, TA for Kathryn Ierulli and George Tolley
Win. 2016	Intermediate Micro, Univ. of Chicago, Lecturer
Fall 2015	Economics of Education, Univ. of Chicago, TA for Derek Neal
Win. 2015	Intermediate Micro, Univ. of Chicago, TA for Mohammed Moravvej
Win. 2012	Introductory Econometrics, Brigham Young University, TA for Richard Butler

Research Experience

Fall 2016 - Win. 2018	University of Chicago, Research Assistant for Professor Jens Ludwig
Sum. 2013 - Sum. 2014	University of Chicago, Research Assistant for Professors John List and Mike Price
Fall 2011 - Sum. 2013	Brigham Young University, Research Assistant for Professor Joe Price
Fall 2012 - Spr. 2013	Brigham Young University, Research Assistant for Professor Richard Butler

Honors, Scholarships, and Fellowships

2017-2020	Predoctoral Fellow, (AHRQ T32 Trainee) The University of Chicago Health Services Research Training Program for the Center for Health and the Social Sciences
2016-2017	Becker Friedman Institute, Health Economics Initiative Pre-doctoral Fellowship
2013-2018	University of Chicago Social Sciences Fellowship

Working Papers

"Comparative Advantage in Health Care Delivery:
A Machine Learning Approach"
(Job Market Paper)

Abstract

With health care spending having increased roughly 35% from 2010 to 2017, now consuming over $3 trillion per year in the US alone, there is growing interest in ways of reducing costs without compromising health outcomes. Since a large share of health care costs come from labor, one approach many states have taken is to change regulations to expand the set of medical providers, shifting from just medical doctors (MDs) to increasingly allow for non-doctors (NDs), such as nurse practitioners, as well. Because ND salaries are so much lower than MDs on average, the hope is to capitalize on their potential comparative advantage in providing routine care to low-risk patients. But there is also the logical possibility that average care quality declines because of the more limited training of NDs relative to MDs, and/or the possibility that ND caseloads wind up including non-routine cases or high-risk patients, which could create health complications and hence increase costs in the longer term. In this paper I study the effects of ND use on costs and patient outcomes using state law changes as a natural experiment, which provides difference-in-difference-type variation. This identification strategy is limited in the aggregate due to weak instrument bias. However, using modern machine learning methods, I am able to narrow in on the subgroup of patients where the first stage is sufficiently strong to produce accurate results in the second stage. These methods are very data intensive, but in health care (and increasingly throughout the social sciences) large enough data is becoming common, allowing researchers to increasingly capitalize on such methods and more effectively estimate heterogeneous treatment effects. I find that the patients who are most likely to be affected by the policy changes have increased rates of both preventable hospitalizations and total medical spending – that is, increased use of NDs on net has adverse effects for the most relevant sample of patients. Estimates for heterogeneous treatment effects in both the first and second stage equations for my instrumental variables analysis helps us understand why: I show that the patients who are predicted to benefit the most from ND care are not the same patients predicted to shift to NDs after the policy changes, suggesting that improved sorting of patients between provider types could fully exploit comparative advantages and result in improved patient outcomes overall.

"Pharmacy Deserts and Medication Adherence"

Abstract

Poor medication adherence is responsible for large health care costs. In this paper, I examine the extent to which medication adherence is influenced by pharmacy access. I use straightforward intent-to-treat measures of adherence in an event-study approach around two types of events: local pharmacy openings and closings, and network status variation of a major pharmacy chain in and out of the network of a major pharmacy benefits management (PBM) insurance company. I find that pharmacy openings cause roughly a 2 percent increase in local patients' measures of adherence, while removing local pharmacies from the PBM network causes a roughly 5 percent decrease.

"Crowding Out and Crowding In: Evidence from a Large Organization"
(with Garth Heutel and Michael Price)

Abstract

Using a unique and proprietary dataset that includes every private donation made to a large public university from 1938 to 2012 and demographic information on all alumni, we examine the effects of large public and private funding on individual donations. Our dataset allows us to examine crowding effects on a small time scale and to control for extensive donor characteristics. We estimate effects on the total number of donations (extensive margin) and on the average size of a donation (intensive margin). Large private gifts have a positive (crowd-in) effect on the extensive margin, while large public grants have a negative (crowd-out) effect on the intensive margin. Alumni, previous donors, and in-state residents exhibit a larger extensive margin crowding-in effect, and there is evidence that the crowding-in and crowding-out effects extend to between-unit comparisons within the university.

"Call the Midwife? Midlevel Providers and the Misallocation of Procedures"
(with Maya Lozinski)

Abstract

A commonly blamed culprit of high and increasing health care spending in the US is the overuse of medical care: care that provides little to no benefit to patients relative to the cost of the care. One frequently cited example of overuse is the decision to use C-Section as a method of birth, even when the method isn't wanted or needed by the mother. An increasingly popular policy aimed at giving mothers more control over their pregnancies is the shift of pre-natal care from Obstetricians (OBs) to Certified Nurse Midwives (CNMs). In this paper, we make three important findings regarding this policy change. First, we document an only weakly positive correlation between the riskiness of a birth and it's propensity for OBs to decide to C-Section. That is, predicted risk is an imperfect predictor of whether OBs will decide to C-Section. Second, we show that CNMs reduce C-Sections among the lowest risk pregnancies, without worsening outcomes. Finally, we show that CNMs increase the probability of weekend births (a measure of maternal control) among the pregnancies that are low-risk, but have a high predicted rate of C-Sections by OBs.

Works in Progress

"Risks vs Rules: Evidence from NP Mammogram Testing" (with Maya Lozinski)

Abstract

In this paper we study the responses of different medical provider types to medical guidelines and predicted medical risk. We use medical guidelines regarding recommended age at which to begin regular mammogram testing and we use a machine learning algorithm to predict risk of testing positive for breast cancer. We combine these with state level difference-in-difference variation around state scope of practice law changes which exogenously increase the probability a given patient receives treatment from a nurse practitioner instead of a medical doctor. Using the law change variation allows us to address concerns about patient selection into testing. We compare the discontinuity around the age cutoff between provider types as well as the relationship between testing and the predicted risk of having cancer.

"Medical Decision Making: Are there Practitioner-type Differences?"

Abstract

In this paper I examine practitioner-type differences in medical procedures performed. Mid-level practitioners (such as nurse practitioners) are often viewed as choosing procedures in different ways than physicians. This perceived difference contributes to the debate about quality differences between practitioner types. I use machine learning and a large scale claims database to study the frequency of differences in procedure choice and the consequences of those differences, within narrowly defined groups of medical encounters. First, I use a machine learning approach to predict the health outcomes from medical procedures given information available prior to the procedure. This partitions the data into similar groups based on extensive characteristics about the encounter. I require the partitions to be based on similar diagnoses, but to include variation in procedure performed. I document the accuracy of the prediction method. Then I estimate counterfactual predictions for performing different procedures within each partition by measuring the outcomes for each procedure within each partition. Next, I compare the rates at which different types of practitioners perform the procedure with the best predicted outcome in the partition and the rates at which they perform other procedures. Finally, I compare realized outcomes between types of practitioners given the practitioner chose a procedure other than the procedure with the best predicted outcomes. This gives an estimate for practitioner-specific "deviation" rates and differences in outcomes. I test the hypotheses that mid-level providers deviate more frequently than physicians and that deviations by mid-levels are more costly than deviations by physicians.

Pre-Doctoral Publication

Gannaway, Grant, Craig Palsson, Joseph Price, and David Sims. "Technological Change, Relative Worker Productivity, and Firm-Level Substitution: Evidence From the NBA." Journal of Sports Economics 15, no. 5 (2014): 478-496.