Nathaniel Breg

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CURRENT POSITION

Stanford University and U.S. Department of Veterans Affairs — Palo Alto, CA
Postdoctoral Scholar in Health Policy — 2022 –
Big Data Scientist Training Enhancement Program

EDUCATION

Carnegie Mellon University — Pittsburgh, PA
Ph.D., Public Policy and Management (Applied Economics concentration) — 2022
Dissertation: "Three Essays on the Economics of Health Care Providers"

Carnegie Mellon University — Pittsburgh, PA
M.Phil., Public Policy and Management — 2020

Tufts University — Medford, MA
B.A., Economics and History — 2012

Universität Tübingen — Tübingen, Germany
Study Abroad, Economics and History — 2010 – 2011

RESEARCH INTERESTS

Health economics: labor economics and industrial organization applied to health care

WORKING PAPERS

"Medical Technologies with Comparative Advantages on Different Dimensions: Evidence from Hysterectomy" (*Job Market Paper*)

WORK IN PROGRESS

"What Matters to Public Managers: Evidence from Changing Capitated Payments in the Veterans Health Administration"

"Substitution when a Technology with Wider Scope of Purpose Becomes Available: Evidence from Robotic Hysterectomy"

"Mortality Effects of Public Financing of Hospitals: Evidence from the Hill-Burton Program"

"Does Health Care Protect Local Economies from Recessions?"
with Martin Gaynor and Brian Kovak

AWARDS

Fellowship in Digital Health 2020 – 2021
Center for Machine Learning and Health at Carnegie Mellon University
Outstanding Teaching Assistant Award 2020
Heinz College, Carnegie Mellon University
Presidential Fellowship 2016 – 2017
Carnegie Mellon University

INVITED TALKS, CONFERENCES, AND WORKSHOPS

2023	ASHEcon Conference (*Poster*)
	APPAM Conference (*Presenter – scheduled*)
	National Tax Association Conference (*Presenter, Chair, Discussant – scheduled*)
2022	Stanford University, Department of Surgery (*Presenter*)
	Electronic Health Economics Colloquium (*Presenter*)
	U.S. Congressional Budget Office, Health Analytics Division (*Presenter*)
	U.S. Department of Justice, Antitrust Division, Economic Analysis Group (*Presenter*)
	APPAM Spring Conference (*Presenter, Discussant*)
	ASHEcon Conference (*Presenter, Discussant*)
2021	Center for Machine Learning and Health at Carnegie Mellon University (*Presenter*)
	NBER Doctoral Student Workshop on Economics of Artificial Intelligence (*Participant*)
	Boston University, Technology & Policy Research Initiative (*Seminar Presenter*)
2020	ASHEcon Conference (*Session Organizer and Presenter – Canceled due to Covid-19*)
	University of Michigan, H2D2 Research Day (*Poster, Virtual*)
2019	Western Economic Association International Annual Meeting (*Presenter*)
	ASHEcon Conference (*Poster*)
	University of Michigan, H2D2 Research Day (*Poster*)

PROFESSIONAL EXPERIENCE

RTI International, Public Health Analyst — Waltham, MA
CMS, HHS ASPE, and CDC contracts — 2013 – 2016

Watertown Town Manager's Office, Public Administration Intern — Watertown, CT
2012 – 2013

TEACHING EXPERIENCE – CARNEGIE MELLON UNIVERSITY, HEINZ COLLEGE

Instructor
Basic Probability for Management (Master's) — Summers 2019 – 2020

Teaching Assistant
Intermediate Microeconomic Analysis (Master's – Prof. Martin Gaynor) — Fall semesters 2017 – 2019
Health Economics (Master's – Prof. Martin Gaynor) — Fall semesters 2017 – 2019
Basic Mathematics and Probability for Management (Master's) — Summers 2017 – 2018
Data Visualization in R (Master's – Prof. David Choi) — Spring 2022

SERVICE

Reviewer: *Management Science*
Carnegie Mellon Graduate Student Assembly, Federal Affairs Committee, 2018 – 2021
Carnegie Mellon University Faculty-Student Working Group on Doctoral Mentoring, 2019

REFERENCES

David Chan
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DISSERTATION ABSTRACT

Medical Technologies with Comparative Advantages on Different Dimensions
(Job Market Paper)

This paper investigates why old and new medical technologies coexist. I show that the use of different technologies across heterogeneous patients can be attributed to the existence of tradeoffs between multiple dimensions of health. I develop a Roy model of surgical procedure choice in which physicians and their patients with different health conditions consider two clinical outcomes affected by the choice. Patients experience shorter lengths of stay under laparoscopic surgery, due to its minimally invasive nature, than under abdominal (open) surgery, yet not all patients are treated laparoscopically. The model shows that marginal patients must experience greater readmission risk under laparoscopic than abdominal surgery. I find evidence consistent with these predictions among Medicare-covered hysterectomy patients by estimating the local average treatment effects and marginal treatment effects, using patients' distance to laparoscopic surgery-performing hospitals relative to hospitals not performing laparoscopic surgery as an instrumental variable for choosing laparoscopic surgery. I use these estimated effects to calculate the revealed preference for a shorter length of stay over a lower readmission risk, which in the absence of hospital influence over the choice could be considered a marginal rate of substitution.

Does Health Care Protect Local Economies from Recessions?
with Martin Gaynor & Brian Kovak

I show preliminary evidence that counties with larger health care shares of employment had attenuated effect of the 2006-2009 housing crisis on employment in local goods and services, i.e., nontradable employment. I construct a model of regional economies which shows that the relationship between an income shock and labor demand is attenuated by larger health care shares of employment. When health care is implicitly subsidized through a wider insurance pool such as Medicare, a larger baseline health care share of employment implies that a larger share of a region's income comes from this outside pool, causing an income shock such as the U.S. mortgage crisis to have a lesser impact on labor demand.

Preliminary evidence is consistent with this. For a county with average health care share of employment (15% of employment), the employment drop associated with a 20 percentage point net wealth drop is 5.65 percentage points greater than the employment drop associated with a mere 1 percentage point net wealth shock. However, a county with 20% of its employment in health care (an additional standard deviation) experiences only a 4.35 percentage point greater employment drop under a large net wealth shock than under a very small net wealth shock. This means an additional standard deviation of health care's share of employment causes a 1.30 percentage point decline in the employment drop associated with the net wealth shock moving from the 10th percentile to the 90th percentile. These results should be interpreted with caution: the data do not confirm two side hypotheses of the model. This work contributes to health economists' understanding of the opportunity cost of health care spending. It also contributes to economists' understanding of local labor markets by suggesting that health care subsidized by a wider insurance pool might play a role similar to that played by exporting industries, by bringing outside money into a region.

Mortality Effects of Public Financing of Hospitals

I examine the role of hospital capacity in determining local health. Prior literature established that the Hill-Burton hospital expansion subsidy program (1948 – 1972) resulted in more hospital beds per capita in counties that received funding, but it remained to be studied whether these allocations impact health. Most cohorts of subsidized counties had mortality rates declining relative to later-subsidized counties, which I use as comparison groups in event studies. Graphical analysis suggests that differential post-trends in mortality may be greater than the pre-trends but is yet inconclusive. In the first three years of the program, I use an instrumental variable and estimate a significant local effect of the program on mortality among complier counties whose early subsidy-timing was due to objective measures of perceived need of the county but unrelated to local health care industry effort or political connections. These mixed results cast some doubt on the health productivity of broadly increasing hospital bed rates across midcentury America.