NATHANIEL BREG

Carnegie Mellon University, H. John Heinz III College, 5000 Forbes Ave., Pittsburgh, PA 15217 | 203-560-2774 | nwb@andrew.cmu.edu

EDUCATION

Carnegie Mellon University, Pittsburgh, PA
Ph.D. in Public Policy and Management (Applied economics concentration) 2016 – Current
Dissertation Chair: Martin Gaynor
Current Research:
- Hospital investment in and physician use of surgical robots
- Hospital expansion and medical labor demand, with Adam Pilny
- The impact of subsidies for hospital construction on mortality
- Does health care help regional economies weather recessions?, with Martin Gaynor and Brian Kovak

Tufts University, Medford, MA
B.A. in Economics, History 2012

RESEARCH INTERESTS

Health Economics, Labor Economics, Industrial Organization

AWARDS

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

CONFERENCE PRESENTATIONS AND INVITED TALKS

Boston University, Technology & Policy Research Initiative (Seminar Presentation) April 2021
American Society of Health Economists Conference (Session Presenter and Organizer) June 2020
University of Michigan, H2D2 Research Day (Poster, Virtual) March 2020
Western Economic Association International Annual Meeting (Session Presenter) June – July 2019
American Society of Health Economists Conference (Poster) June 2019
University of Michigan, H2D2 Research Day (Poster) March 2019
** indicates session accepted but cancelled due to Covid-19*

TEACHING ASSISTANT EXPERIENCE

Carnegie Mellon University, Heinz College
Basic Mathematics for Management and Basic Probability (Master's) Summer 2019 – 2020 (instructor)
Summer 2017 – 2018
Intermediate Microeconomic Analysis; Health Economics (Martin Gaynor – Master's) Fall semesters 2017 – 2019

COURSEWORK

Economics
- Microeconomics (*Brian Kovak*)
- Behavioral Economics (*George Loewenstein*)
- Game Theory (*Onur Kesten*)
- Contract Theory (*Onur Kesten*)
- Public Economics* (*Allison Shertzer*)
- Labor Economics* (*Rania Gihleb*)
- Industrial Organization (*Maryam Saeedi*)

Methods
- Structural Econometrics (*Robert Miller*)
- Machine Learning (*Tom Mitchell*)
- Advanced Econometrics: Time Series* (*J.F. Richard*)
- Econometrics I and II (*Edson Severnini, Akshaya Jha*)
- Statistical Theory (*Amelia Haviland*)
- Multivariate Statistics (*Alan Montgomery*)
- Computational Methods for Economics (*Yaroslav Kryukov*)
- Regression Analysis (*Valerie Ventura*)

** indicates course at University of Pittsburgh Economics Department, cross-registered with Carnegie Mellon.*

RELATED PROFESSIONAL EXPERIENCE

RTI International, Waltham, MA. Public Health Analyst 2013 – 2016

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

The Decision to Use Robotic Surgery and Its Effects in Hysterectomy

Robotically-assisted soft-tissue surgery has been increasingly prevalent in the United States. I investigate the effects of robotic surgery on patients and the decision to use robotic surgery as opposed to laparoscopic or abdominal surgery, using the complete set of Medicare inpatient claims from 2008 to 2012. Using the presence of robotic surgery in a Hospital Referral Region as an instrument for the decision to perform surgery robotically, I estimate that robotic surgery leads to a 90 percentage point reduction in the chance of a length of stay in the hospital exceeding 2 days and a 20 percentage point reduction in the chance of a readmission to the hospital among hysterectomy patients. (Results using another instrument – the difference between a patient's distance to her nearest hospital and the distance to her nearest hospital with a – are forthcoming.) Estimates from a multinomial logit model of approach choice suggests that many types of patients who underwent robotic surgery would have received abdominal surgery in the absence of the robotic option. This suggests that much of the robot's treatment effect is driven by its effect on patients who would have otherwise received abdominal surgery. Next, I look for evidence that physicians are sorting hysterectomy patients into the three surgical approaches according to patient characteristics. I propose a Roy model in which surgical technology has two attributes, invasiveness and maneuverability. Abdominal surgery is very maneuverable, laparoscopic surgery is minimally invasive, and robotic surgery is both. Patients in the model differ in the benefits they receive from more maneuverable and/or less invasive surgery. This model predicts how treatment choice and treatment effects on different margins vary by patient characteristics. In ongoing work, I test the hypotheses implied by the model.