PATRICK H. POWER

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EDUCATION

Ph.D., Economics, Boston University, Boston MA, Jan 2024 (expected)
Dissertation Title: *Applications of Deep Learning to Microeconomics*
Dissertation Committee: Ivan Fernandez-Val, Hiroaki Kaido, and Kevin Lang

B.A., Economics, University of Notre Dame, South Bend, Indiana, 2016

FIELDS OF INTEREST

Public Economics, Housing Economics, Applied Econometrics

PUBLICATIONS

Evans, William N., Ethan MJ Lieber, and Patrick Power. "How the Reformulation of OxyContin Ignited the Heroin Epidemic." *Review of Economics and Statistics* 101, no. 1 (2019): 1-15.

WORKING PAPERS

"The Right to Counsel at Scale" September 2023. Job Market Paper. With Shomik Ghosh and Markus Schwedeler

WORKS IN PROGRESS

"Regularizing the Forward Pass" September 2023. With Shomik Ghosh and Markus Schwedeler

TEACHING EXPERIENCE

Instructor, EC970: Sophomore Seminar on Housing & Homelessness, Department of Economics, Harvard University, Fall 2023

Instructor, Intermediate Microeconomic Analysis, Department of Economics, Boston University, Fall 2021 & 2022

PROGRAMMING LANGUAGES: Python (JAX & PyTorch), Haskell

CITIZENSHIP/VISA STATUS: USA

REFERENCES

Professor Ivan Fernandez-Val
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How the Reformulation of OxyContin Ignited the Heroin Epidemic

We attribute the recent quadrupling of heroin death rates to the August 2010 reformulation of an oft-abused prescription opioid, OxyContin. The new abuse-deterrent formulation led many consumers to substitute an inexpensive alternative, heroin. Using structural break techniques and variation in substitution risk, we find that opioid consumption stops rising in August 2010, heroin deaths begin climbing the following month, and growth in heroin deaths was greater in areas with greater pre-reformulation access to heroin and opioids. The reformulation did not generate a reduction in combined heroin and opioid mortality: each prevented opioid death was replaced with a heroin death.

The Right to Counsel at Scale

We assess how the Right to Counsel affects housing stability. The Right to Counsel ensures that low-income tenants facing eviction have access to free legal representation. We exploit the recent adoption of this policy in some, but not all, zip codes in Connecticut. We show that legal representation improves court & housing outcomes for those currently housed but adversely effects those currently unhoused. We use linear regression analysis for the intent-to-treat and IV estimates. We confirm our results using fine-tuned large language models and cluster regularized neural networks. We also provide insight about the type of tenants most likely to respond to the policy and how lawyers' strategies affect their clients housing outcomes.

Regularizing the Forward Pass

We introduce an estimation framework for partialing out cluster effects in a non-parametric manner using neural networks. This is important in settings where we are interested in estimating the conditional average treatment effect and the treatment is assigned at a level above the unit of interest. Notable examples of this setting include Miguel, E. & Kremer, M. (2004) (Deworming Kenya Study) and Kreuger, A. B (1999) (Project STAR). We provide an accompanying GitHub repository written in Python: https://github.com/pharringtonp19/rfp.