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Education

Ph.D. in Economics, Duke University, 2022 (expected).

Dissertation Committee: Professors Patrick Bayer (chair), Robert Garlick, Seth Sanders, Christopher Timmins

M.L.S., University of Chicago Law School, 2020.

B.A. in Economics-Mathematics, Columbia University, 2013.

Research & Teaching Fields

Public Economics, Labor Economics, Applied Microeconomics, Law and Economics

Working Papers

“Algorithmic Policing” (Job Market Paper)

Predictive policing algorithms are increasingly used by law enforcement agencies in the United States. These algorithms use past crime data to generate predictive policing boxes, specifically the highest crime risk areas where law enforcement is instructed to patrol every shift. I collect a novel dataset on predictive policing box locations, crime incidents, and arrests from a large urban jurisdiction where predictive policing is used. Using institutional features of the predictive policing policy, I isolate quasi-experimental variation to examine the causal impacts of algorithm-induced police presence. I find that algorithm-induced police presence decreases serious property and violent crime. At the same time, I also find disproportionate racial impacts on arrests for serious violent crimes as well as arrests in traffic incidents i.e. lower-level offenses where police have discretion. These results highlight that using predictive policing to target neighborhoods can generate a tradeoff between crime prevention and equity.

“When Does Crime Respond to Punishment?: Evidence from Drug-Free School Zones”, with Robert Gonzalez and Sarah Komisarow, revisions requested at *The Review of Economics and Statistics*

Economic theory suggests that crime should respond to punishment severity. However, empirical evidence on this link is ambiguous. We propose one explanation for this discrepancy: Punishments deter crime but only when the probability of detection is moderate. Using increases in punishment severity in drug-free school zones along with changes in the probability of detection resulting from a community crime-monitoring program, we demonstrate that drug-related crime drops in blocks just within the drug-free school zones, where punishments are more severe, but only if the monitoring intensity—and hence the probability of detection—is at intermediate levels.

“Predictive Power at What Cost? Economic and Racial Justice of Data-driven Algorithms”

This paper studies how algorithms use variables to maximize predictive power at the cost of group equity. Group inequity arises if variables enlarge disparities in risk scores across groups. I develop a framework to examine a recidivism risk assessment tool using risk score and novel pretrial defendant case data from 2013-2016 in Broward County, Florida. I find that defendants’ neighborhood data only negligibly improve predictive power, but substantially widen disparities in defendant risk scores and false positive rates across race and economic status. Higher risk scores may lead to longer pretrial incarceration and downstream consequences, by impacting labor market outcomes. These findings underscore that machine learning objectives tuned to maximize predictive power can be in conflict with racial and economic justice.

Work in Progress

“The Evolution of Racial Differences in the Economic Well-being of Women: 1940-2020”, with Patrick Bayer and Kerwin Charles

We study the evolution of racial differences in the economic well-being of women, investigating the role of household structure, incarceration rates and earnings in driving these differences. We document racial differences in the propensity to be married for women across the distribution of Black and white economic well-being of women. We show that household structure does not explain racial differences in economic well-being of women.

“The Impacts of a Rule to Eliminate Racial Bias in Jury Selection”

The Equal Protection Clause of the US Constitution guarantees that potential jurors cannot be excluded on the basis of race (*Batson*). However, a race-neutral reason can explain an exclusion. A new court rule aims to address racial bias in jury selection by making race-neutral reasons historically associated with discriminatory jury selection invalid reasons for a peremptory challenge, e.g. prior contact with law enforcement or living in a high-crime neighborhood. I examine the effect of this new court rule on racial compositions of juries and racial differences in conviction rates.

Invited Seminars and Conferences Presentations

2021: Stanford Economics Gender Coffee, Southern Economic Association Annual Meeting (scheduled)

2020: ASSA/American Economic Association Annual Meeting, UChicago Crime Lab Seminar, UPenn Young Economist Symposium, American Economics and Law Association Annual Meeting (accepted, canceled due to pandemic), APPAM Virtual Fall Research Conference

2019: Duke “Economics of Crime” course guest lecture, UChicago HCEO Summer School on Socioeconomic Inequality (poster), Conference on Empirical Legal Studies, Southern Economic Association Annual Meeting

2018: Urban Economics Association Summer School

Research Experience

Graduate Assistant to Prof. Patrick Bayer (Duke), 2018 - 2019, 2020-2021

Research Assistant to Prof. Erica Field (Duke), 2017 - 2018

Research Analyst, International Monetary Fund, July 2013-June 2015

Teaching Experience

Intermediate Microeconomics, Teaching Assistant, Fall 2016, Spring 2017

Debt Sustainability Analysis, International Monetary Fund on edX, Staff, 2014

Financial Programming and Policies, Part 1: Macroeconomic Accounts & Analysis, International Monetary Fund on edX, Staff, 2014

Responsibilities: Assisted in creating course content and monitored discussion forums to answer questions

Awards, Fellowships, and Grants

Duke University

Katherine Goodman Stern Fellowship, 2021-2022

Summer Research Fellowship for Research on Racism and Systemic Inequalities, 2021

Dissertation Research Travel Award: Domestic, 2019-2020

Competitive Summer Research Fellowship, 2019, 2020

Conference Travel Award, 2018, 2019, 2021

Global Issues Grant for Challenges in International Development Working Group, Center for International and Global Studies, 2017-2018, 2018-2019

Summer Research Fellowship, 2016, 2017, 2018

Economics First Year PhD Fellowship, 2015-2016

International Monetary Fund

International Monetary Fundwide Award for Innovation and Creative Impact (Group), 2015

Columbia University

John Jay Scholar, Columbia University, 2010-2013

Thomas and Nancy Cornacchia Family Scholarship, Columbia University, 2012-2013

Sanford S. Parker Summer Research Prize, Economics Department, Columbia University, 2011

C.P. Davis Scholar, Columbia University, 2009-2010

Columbia Undergraduate Scholars Program Summer Enhancement Fellowship, 2010, 2011

Professional Service

Referee Service: Annals of Economics and Statistics

Duke University

Co-founder & member, Economics Student Committee on Diversity and Inclusion, 2020 - 3/2021

Co-founder & co-organizer, Duke Women in Economics group, 2018- 2019

Duke Representative, Graduate Student Summit for Diversity in Economics, September 2018

Co-organizer of Challenges in International Development, a research working group for Ph.D. Students in Development Economics at Duke University, 2017-2019

First-year student mentor, Duke Economics Department, 2016-2019, 2020-2021

Attended Workshops

UChicago HCEO Summer School on Socioeconomic Inequality, 2019; NBER Young Scholars Workshop on the Economics of Artificial Intelligence, 2018; UChicago Becker-Friedman Price Theory Summer Camp, 2018; Urban Economics Association Summer School, 2018

Other Information and Skills

Programming: Matlab, Python, Stata

Languages: English (native), French (fluent; immersion elementary-middle school), Mandarin Chinese (heritage speaker), German (intermediate), Spanish (intermediate)

Citizenship: Australia, United States

References

Patrick Bayer

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Robert Garlick

Assistant Professor of Economics
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Seth Sanders

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Christopher Timmins

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