Carol Xiaomiao Gao

(+1)732-858-4251 ⋄ carolgao@mit.edu

Education

Smith College   May 2022
B.A. Quantitative Economics and Mathematics (High Honors)   Overall GPA: 3.99/4.00

Relevant Courses

Econometrics (ECO 240)	Applied Market Design (ECO 258)
Real Analysis (MTH 281)	Measure Theory (MTH 400)
Mathematical Economics (ECO 255)	Dynamical Systems and Chaos (MTH 364)
Optimization Methods (15.093)	Robust Modeling, Optimization, and Computation (15.094)

Research Experience

MIT Blueprint Labs   June 2022 - Present
Research Assistant for *Prof. Parag Pathak* and *Prof. Joshua Angrist*   *Cambridge, MA*

- Leveraged randomization in the Deferred-Acceptance (DA) mechanism and used offered schools travel time as instrument to estimate the causal effect of student travel on academic achievement.
- Evaluated school value-added using school assignments as instruments for enrollment and formed empirical Bayes posteriors using obtained IV estimates to further explore the minimal effect on achievement.
- Estimated individual preference for travel using rank-ordered mixed logit model to analyze heterogeneous effect of travel across families with difference travel preferences.

Smith College, Department of Economics   August 2021 - May 2022
Research Assistant for *Prof. Lucie Schmidt*   *Northampton, MA*

- Selected and created variables from the Survey of Low-Income Aged & Disabled (SLIAD), then employed difference-in-differences design to examine the effect of food stamp eligibility on family security of SSI recipients.
- Explored the newly released Children Development Supplement (CDS) data and extracted information on family structure to perform analyses on the effect of Social Security income on children's academic performance.

Smith College, Department of Economics   February 2021 - August 2021
Research Assistant for *Prof. Mariyana Zapryanova*   *Northampton, MA*

- Cleaned and merged policing and crime data in Chicago, then selected and created variables that proxy for parameters in the theoretical model.
- Used spatial polygon data to identify adjacent police districts in Chicago and created visualizations of spatial distributions of policing and crime rates in R.
- Employed spatial durbin model to examine the spillover effect of policing and vigilance.
- Utilized difference-in-differences and event study designs to analyze the changes in police arrest behavior following a BLM protest by comparing between crime incidents closer and farther from a protest.
- *Honors thesis:* "The Effect of Black Lives Matter Protests on Crime and Arrest Rates: Evidence from Chicago".

Smith College, Department of Economics   December 2019 - February 2021
Research Assistant for *Prof. Jorge Vásquez*   *Northampton, MA*

- Created a model of optimal criminal search and solved for the optimal allocations of policing that minimize total crime rates in the cases of observed and unobserved policing.
- Theoretically examined the effect of increasing policing and penalty on crime reduction, accounting for search behavior, and provided policy implications.

- Simulated and visualized the model in MATLAB and Mathematica to analyze the model numerically.
- *Working paper (under review):* "Optimal Policing with (and without) Criminal Search" with Jorge Vásquez.

Smith College, Department of Mathematics   February 2020 - May 2020
Research Assistant for *Prof. Tian An Wong*   *Northampton, MA*

- Developed discrete definition of compactness scores in the context of dual graphs of district maps.
- Compared and tested different scores and evaluated how they mitigate the four main issues associated with gerrymandering.

CONFERENCES

"The Effect of Black Lives Matter Protests on Crime and Arrest Rates: Evidence from Chicago"
Issues in Political Economy 28th Annual Conference, New York   February 2022
Promoting Inclusion in Economic Research (PIER) Conference, Williams College   May 2022

"Criminal Displacement and Optimal Policing"
PIER Conference, Williams College   May 2021

HONORS AND AWARDS

Samuel Bowles Prize for the best thesis on an economics subject   May 2022
Sidney S. Cohen Prize for outstanding work in the field of economics   May 2022
Ann Kirsten Pokora Prize to a senior with a distinguished academic record in Mathematics   May 2022
Suzan Rose Benedict Prize to a sophomore for excellence in Mathematics   May 2020
Dean's list   2019-2022

TEACHING EXPERIENCE

Smith College, Department of Economics   September 2020 - December 2020
Teaching Assistant for *Intro to Macroeconomics* and *Intermediate Macroeconomics*

- Held weekly tutoring hours for assignments and review sessions before exams
- Graded and prepared solutions for problem sets

WORKSHOPS AND PIPELINE

Harvard/MIT Economics Application Assistance and Mentorship Program (AAMP)
Economics Pre-Doc Workshop for Underrepresented Minorities, Texas A&M University
UC Berkeley Pipeline to Grad School Bootcamp, Office for Graduate Diversity

SKILLS AND LANGUAGES

Programming	Stata, R, Python, Julia, MATLAB, HTML, CSS
Software	LaTeX, Mathematica, Gurobi, JuMP, TensorFlow
Languages	Native proficiency in English and Chinese, working proficiency in Japanese