John Ruf

Research Professional at The University of Chicago
Github: github.com/JohnCRuf

Email: Jcruf@uchicago.edu
Mobile: 708-334-5741
Website: johncruf.github.io/

Education

- **Michigan Technological University** — Houghton, MI
  Bachelor of Science - Mechanical Engineering — Engineering Mechanics; GPA: 3.84 — *Aug 2016 - June 2021*
- **The University of Chicago** — Chicago, IL
  Master of Arts - Social Sciences, Focus in Economics; GPA: 3.74 — *Sept 2021 - Aug 2022*

MA Thesis

- **The Political Economy of Municipal Spending: Evidence from Chicago's Menu Program**:
  - **Theoretical justification**: I employed a simple variation on a standard career concerns model in political economy to demonstrate the effect that conspicuous public spending, inefficient spending that creates a signal of competence, can have on voter welfare and develop a simple comparative statics exercise. This exercise shows that one would generally expect inexperienced politicians to spend public funds more conspicuously.
  - **Empirical methods**: I then tested the implications of this simple model with two-way-fixed-effects, regression discontinuity, and differences-in-differences methods using the context of Chicago's Aldermanic Infrastructure Menu Program, which allows city councilors to allocate up to $1.3 M in funds to a variety of infrastructure projects as well as local beautification through public art and park improvement programs.
  - **Results**: I found that conspicuous expenditures in the year leading up to an election increase the incumbent's vote share, and I found that new aldermen spend approximately $100,000 more on conspicuous items in their first year in office, and then the effect dies off thereafter, indicating non-electoral reasons for these kinds of expenditures in contrast to the theoretical model presented.

Work Experience

- **University of Chicago Booth School of Business — Macroeconomics Group** — Chicago, IL
  Research Professional under Dr. Jonathan Dingel — *Jan 2022 - Aug 2024*

  Spatial Economics for Granular Settings Working Paper:
  - **Model variations**: Coded and simulated dozens of variations of quantitative commuting models for the project. Including deploying increasing returns models, using different baseline data to fit the models, and changing model parameters such as the elasticity of substitution.
  - **Ad-hoc solver development**: I used my knowledge of engineering controls to develop a specialized ad-hoc solver for the paper based off a traditional PID controller and used the Ziegler-Nichols tuning algorithm to set the hyper-parameters. The ad-hoc method solves for 83 productivity parameters simultaneously in only 79 iterations.
  - **Jensen's inequality simulations**: Developed a set of Monte-Carlo simulations that tested if the prices computed using the mean modelled quantities was close to the mean prices.

  Quantifying Social Interactions Working Paper:
  - **Code base overhaul**: Worked with private data and a secure computing cluster to update core figures, adjust and re-run estimation specifications, and to make the code base more user friendly.
- **Oshkosh Corporation** — Oshkosh, WI
  Defense Cost Engineering Intern & Co-op — *July 2018 - Jan 2019, June 2020 - Aug 2020*
  - **Wire harness estimation project**: Extracted data from engineering drawings for correct wire harness lengths to develop a multiple regression-based cost estimation model.
  - **Time-based costing**: Created time-based cost models for manufacturing subcomponents of military logistics vehicles to identify cost savings opportunities.
  - **Supplier cost reviews**: Traveled to over 40 locations across the Midwest to evaluate supplier manufacturing practices.
- **Michigan Technological University** — Houghton, MI
  Brewing Economics Research Assistant under Dr. Jenny Apriesnig — *July 2018 - Aug 2019*
  - **Brewing survey project**: Developed a survey of craft beer brewing production practices and costs for firms across Michigan.
- **Michigan Technological University** — Houghton, MI
  Regional Economics Research Assistant under Dr. Emanuel Oliveira — *July 2018 - Aug 2019*
  - **Regional sentiment project**: Helped write a survey to measure Houghton residents' economic sentiments and cleaned and classified email survey response data from 500 Residents.
  - **Western Upper Peninsula Outlook Report (WUPOR)**: Developed simple VAR forecasts of local industry trends from NAICS data, noting declines in base manufacturing and increases in local services.

Honors and Awards

- Awarded Quadrangle Research Scholarship, University of Chicago - 2021
- Data Science in Public Policy Summer Scholar, University of Chicago Harris School of Public Policy - 2020
- Awarded National Excellence Scholarship, Michigan Technological University - 2016 - 2020
- iOme Policy Essay Award, Women's Institute for a Secure Retirement - 2019

Programming Languages

- Python
- R
- Julia
- Matlab (& Dynare)
- Stata
- Bash
- GNU-Make
- LaTeX