



# Ivan P. Anich

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(708)752-3172

301 Woodlawn Pike, Apt E8  
Knoxville, TN 37920

## EDUCATION

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### University of Tennessee

*Doctor of Philosophy, Economics*

Knoxville, Tennessee

*Aug. 2019 – Present*

- J. Fred and Wilma Holly Award for Excellence in Research, awarded for best second year research paper.
- Sponsored by department to present at '22 SEA conference and '23 WEAI International conference.

### University of Colorado

*Bachelor of Arts, Physics*

Boulder, Colorado

*Aug. 2009 – May 2014*

## QUANTITATIVE RESEARCH EXPERIENCE

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### Amazon

***Econ. Intern – Improving Average Treatment Effect Estimates for RCTs***

Bellevue, Washington

*May 2023 – July 2023*

- Accelerated discovery of features that significantly affect the world's largest supply chain by reducing standard errors of ATE estimates by 10% without increasing mean sq. error. Invited to return full-time.
- Adopted cutting-edge cross-validation technique to measure mean squared error of ATEs with observational data, leveraging +600 GB of randomized controlled trial data, analyzed with Pandas.
- Developed new expertise in causal machine learning and XGBoost to test the ability of double/debiased machine learning and non-linear fitted values to increase the precision of ATE estimates.

### University of Tennessee

***PhD Research – How Achieving Grid Reliability Affects Electricity Prices***

Knoxville, Tennessee

*Jan. 2023 – Present*

- Estimated how achieving a reliability standard (N-1) affects wholesale electricity prices by applying microeconomic theory to find multiple sources of quasi-experimental variation.
- Processed +3.5 TB of data to generate a sample of California's full network model of the electrical grid from 2021 to 2023. Pulled and cleaned using Pandas and Parquet files. Quality controlled with unit tests.
- Investigated how an aggregate effect on a network could be broken down into effects on nodes by analyzing data at both the grid-level and the plant-level while controlling for network dependencies.
- Improved precision of estimates by controlling for the state of the grid via principal components of forward market prices (costs) of energy, congestion, and line losses at each node in the grid network.

***PhD Research – Trade and the Adoption of Pollution Control Technology*** *Sept. 2021 – Present*

- Performed survival analysis to describe the relationship between exporter status and timing of adoption of abatement technologies by estimating a hazard model with Indian industrial data.
- Extended optimization model of the timing of technology adoption to model how international trade affects the adoption of pollution control equipment in the presence of environmental regulations.
- Solved analytically unsolvable system of non-linear equations using numerical methods via SciPy's fsolve.

***PhD Research – Optimizing Cost Sharing to Finance a Public Good***

*Jan. 2021 – July 2021*

- Designed mechanism capable of providing an optimal amount of a public good in a competitive game with imperfect information, such that competing agents achieve a desired level of equity.
- Established how costs charged to agents should change based upon how their and others' preferences change across units of consumption by analytically solving calculus of variations problem.

***Research Assistant – How Solar Adoption Affects Electricity Prices***

*Sept. 2020 – Oct. 2021*

- Modelled how the decreasing cost of residential solar would affect the pricing behavior of a public electricity utility by solving a dynamic optimization problem.
- Built Roth-Erev reinforcement learning algorithm for an agent-based model of the electrical grid that simulated how a public electricity utility would learn to change its pricing behavior.



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## COMMUNICATION EXPERIENCE

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### University of Tennessee

Knoxville, Tennessee

#### *Teacher/Instructor*

*Aug. 2021 – July 2022*

- Educated students by publicly speaking on economics for 150 minutes each week of the semester.
- Selected as PhD math camp TA out of all economics, finance, and accounting PhD students to help introduce and review calculus, static and dynamic optimization, linear algebra, and probability theory.

### Code for Denver Volunteer Community

Denver, Colorado

#### *Volunteer Project Founder – Academic Social Work Web App*

*Aug. 2018 – July 2019*

- Pitched project to community to build web app to assist non-profit with academic data collection.
- Led team of 2-6 volunteers by communicating purpose, needs, and expectations of project.

### The18.com

Boulder, Colorado

#### *Staff Writer*

*Jan. 2015 – June 2016*

- Wrote articles that drove +50% of the 16.8 million pageviews the website accrued during time with company, out of a team of 6 writers, by strategically covering topics that generated interest.
- First full-time hire by founders, part of team that raised \$1 million in seed funding.
- Reduced cost-per-click of traffic by 25-75% per article by creating metric that ad spend optimized for.

## PYTHON CODING EXPERIENCE

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### Quantitative Retail Trading

*Nov. 2020 – June 2022*

- Automated execution of a trading strategy using Selenium web-driver and BeautifulSoup libraries to manipulate and scrape a stock screener, and Alpaca library to handle trade HTTP requests.
- Backtested strategies with various limit and stop-loss structures, and predicted performance with Monte Carlo simulations and quantile regression, using Pandas, NumPy, and StatsModels packages.

### Instrumental Variable Regression Tool

*Nov. 2019 – Dec. 2019*

- Created a class for instrumental variable regression using linear algebra and econometric first principles, with NumPy. Included methods for F-tests, p-values, and clustered standard errors.

### Code for Denver Volunteer Community

Denver, Colorado

#### *Volunteer Project Founder – Academic Social Work Web App*

*Aug. 2018 – July 2019*

- Contributed to development of Django backend for web app by writing a parser that converted CSV uploads to JSON for database updates, checking user permissions and tracking exceptions due to errors.

## SKILLS & INTERESTS

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**Technical Skills:** Econometrics, Theoretical Optimization, Simulation, Machine Learning, A/B Testing

**Non-technical skills:** Writing, Presenting, Motivating, Emotional Intelligence, Teaching, Tutoring

**Interests:** Salsa Dancing, Soccer, Journaling, Reading, Science Fiction, Cars, Cooking, Kettle Bells, Hiking