Alexander Toy
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EDUCATION

Arizona State University, Ph.D. in Economics Expected May 2026
Fields: Applied Microeconomics, Education, Industrial Organization, and Health Economics
Arizona State University, M.S. in Economics December 2022
University of Wisconsin-Madison, M.S. in Economics May 2020
University of Wisconsin-Madison, B.S. in Economics with Mathematics Emphasis May 2018

SELECTED RESEARCH

Tuition, Transfer, and Turmoil: Understanding the Dynamics of For-Profit College Shutdowns, **Job Market Paper**

- Modeled >500k student-level choices using a dynamic discrete-choice framework to quantify switching costs and simulate counterfactual policies; showed that reducing transfer frictions improves student welfare more than tuition caps.
- ***Methods****:* Python, structural estimation, causal inference (Difference-in-Differences, event study), counterfactual simulation.

Difference in Physician Responses to New Technology and New Information by Patient Race: Evidence from Drug-Eluting Stents (with Ketcham & Stecher)

- Applied Random Forests and LASSO regression to millions of patient encounters to study heterogeneous physician adoption of medical technologies; found persistent racial disparities independent of provider experience.
- ***Methods****:* Machine learning, causal inference, heterogeneous treatment effects.

Does Success Beget Success? The Impact of Arizona's Results-Based Funding Program on Student Achievement

- Exploited a state policy cutoff in a regression discontinuity design using student-level administrative data; found funding gains improve achievement more in low-income and charter schools.
- ***Methods****:* Causal inference (RDD, IV), quasi-experimental design, data visualization.

Impact of Medication Adherence on Healthcare Utilization – Evidence from a Randomized Trial *(with Stecher & Williams)*

- Analyzed a behavioral RCT (Randomized Control Trial) using over one million Medicare claims to test a verified adherence app; increased prescription fills and reduced acute healthcare utilization.
- ***Methods****:* Experimentation, randomized control trial, statistical inference, health analytics.

EXPERIENCE

Instructor – Business Statistics **Summer 2024, 2025**
Arizona State University, Tempe, AZ

- Developed and taught an introductory statistics course for business majors. (Average evaluation: 6.7/7)
- 2024 Distinguished Economics Graduate Instructor Award for highest student evaluation among graduate instructors.

Research Assistant – Professors Villacis, Kostol, and Stecher **July 2022 – August 2025**
Arizona State University, Tempe, AZ

- Utilized causal inference techniques (difference-in-differences, regression discontinuity, instrumental variables) and RCT design to aid in labor, health, and agricultural economics projects.
- Assisted in the design and implementation of a large-scale randomized control trial for an NIH R01 grant.
- Built data cleaning and analysis pipelines in Python, Stata, and SQL for multi-million-record administrative datasets.

Teaching Assistant – Microeconomics, Macroeconomics, Labor Economics **September 2021 – May 2024**
Arizona State University, Tempe, AZ

- Led recitation sections and built Python modules for simulation and empirical exercises in undergraduate economics courses.

Project Assistant – UW – Madison Center for Health Enhancement Systems Studies **April 2017 – August 2020**
University of Wisconsin-Madison, Madison, WI

- Coauthored an RCT across 75 clinics showing external coaching more than doubled growth in buprenorphine treatment capacity (6.1% vs 3.0% monthly) and utilization (5.3% vs 2.4%) over 30 months.
- Published in *International Journal of Telemedicine and Applications, Implementation Science* (x2), *Addiction Science & Clinical Practice,* and *Psychiatric Services*

SKILLS

- **Programming & Tools:** Python (pandas, numpy, scikit-learn, matplotlib), SQL, R, Stata
- **Statistical & ML Methods:** Causal Inference, Experimentation, A/B Testing, Machine Learning (Random Forests, Lasso, Clustering, Gradient Boosting, Decision Trees), Regression Modeling
- **Econometrics & Modeling:** Structural Estimation, Dynamic Programming, Simulation, Policy Evaluation