

Kai R. D. Cooper

PHD CANDIDATE · OPERATIONS, INFORMATION AND DECISIONS DEPARTMENT

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Education

The Wharton School of the University of Pennsylvania

PH.D. OPERATIONS, INFORMATION AND DECISIONS

Philadelphia, PA

Expected 2027

- Advisor: Dr. Dean Knox

Imperial College London

MSCI MATHEMATICS

London, UK

2019-2023

- Classification: First Class

École Polytechnique fédérale de Lausanne (EPFL)

EXCHANGE YEAR IN MATHEMATICS

Lausanne, Switzerland

2021-2022

Working Papers

[†] Authors listed alphabetically.

Cooper, K. R. D., Outcome Tests.

Cooper, K. R. D., Lanzalotto, G., Ge, H., Kaplan, J., Desposato, S., Knox, D., Mummolo, J. A Principled Approach to Benchmarking in Studies of Racial Discrimination in Traffic Enforcement.

Cooper, K. R. D., Duarte, G., Keele, L., Knox, D., Mummolo, J. Learning From Imperfect Identification Strategies: Automating Causal Inference When Assumptions Fail.[†] *R&R at American Journal of Political Science*.

Cooper, K. R. D., Ma, L., Graham, D. J. Quantifying the causal effects of major engineering interventions using a temporal regression discontinuity design: Air quality impacts of the Elizabeth Line in London.

Research in Progress

[†] Authors listed alphabetically.

Cooper, K. R. D., Kowlaski, A. The Welfare Costs of Discrimination.

Cooper, K. R. D. Does AI Have A Taste for Discrimination?

Cooper, K. R. D. Towards More Credible Mediation Analyses.

Cooper, K. R. D., Duarte, G., Keele, L., Knox, D., Mattes, K., Mummolo, J. Evaluating the Validity and Robustness of Instrumental-Variable Analyses.[†]

Government Research Projects

[†] Authors listed alphabetically.

Kai Cooper, Jacob Kaplan, Dean Knox, Gregory Lanzalotto, and Jonathan Mummolo. 2024. "Analysis of Phoenix Police Department Data." Report prepared for the U.S. Department of Justice Civil Rights Division.[†]

Presentations

INVITED TALKS AND WORKSHOPS

- “Using Causal Inference to Unmask Racial Discrimination in Traffic Enforcement via Proxies”. Invited talk. University of Washington Causal Reading Group, November 2025, online.
- “Learning From Imperfect Identification Strategies: Automating Causal Inference When Assumptions Fail.” Invited talk and interactive workshop. Data Science Frontiers (Society and Politics), NYU, October 2025, New York, NY.

CONTRIBUTED PRESENTATIONS

- “Monitoring Racial Bias in Traffic Enforcement Using Noisy Proxies of Driver Behavior”. Talk. PolMeth, Michigan State University, July 2026.
- “A Formal Causal Perspective on Outcome Tests for Discrimination”. Poster. PolMeth, Michigan State University, July 2026.
- “Monitoring Racial Bias in Traffic Enforcement Using Noisy Proxies of Driver Behavior”. Talk. American Causal Inference Conference, May 2026, Salt Lake City, UT.
- “A Formal Causal Perspective on Outcome Tests for Discrimination”. Poster. American Causal Inference Conference, May 2026, Salt Lake City, UT.
- “Using Causal Inference to Unmask Racial Discrimination in Traffic Enforcement via Proxies”. Poster. Foundations of Causal Inference Workshop, Isaac Newton Institute, January 2026, Cambridge, United Kingdom.
- “Did the Elizabeth Line Improve Air Quality in London? A Causal Study with a Temporal Regression Discontinuity Design”. Oral. Joint Statistical Meetings, August 2025, Nashville, TN.
- “Using Causal Inference to Unmask Racial Discrimination in Traffic Enforcement via Proxies”. Oral. 11th International Conference on Computational Social Science, July 2025, Norrköping, Sweden.
- “Using Causal Inference to Unmask Racial Discrimination in Traffic Enforcement via Proxies”. Poster. American Causal Inference Conference, May 2025, Detroit, MI.
- “Synthesis of Ingram Olkin Forum on Statistical Challenges in the Analysis of Police Use of Force”. Oral. Joint Statistical Meetings, August 2024, Portland, OR.

Awards & Achievements

2026	John T. Williams Dissertation Prize , PolMeth	Winner
2026	Best Poster Prize (Methods) , PolMeth	Winner
2026	Tom Ten Have Best Poster Award , ACIC	Winner
2023	Derek Moore Prize , Imperial Mathematics. <i>Awarded to a final year UG student for excellence in applied mathematics or mathematical physics.</i>	
2021	Winton Capital Award , Imperial Mathematics. <i>Awarded to second year UG students for the best group project paper and presentation.</i>	

Grants

2026	Wharton AI & Analytics Initiative , <i>Does AI Have A Taste for Discrimination?</i>	\$ 7500
2023	Co-Investigator, Arnold Ventures Grant , <i>Statistical Methodology for Measuring Racial Bias in Police Traffic Enforcement with Incomplete Information</i> . PIs: Dean Knox, Jonathan Mummolo	1,205,813

Professional Service

SERVICE

- 2026- **Political Analysis**, Reviewer.

OUTREACH

- 2021 - 2024 **Zero Gravity**, Volunteer Mentor. Guide first-generation students to attend university through the process and initial stages upon embarking on that journey. *Remote*

PROFESSIONAL MEMBERSHIPS

Member. Society for Causal Inference.
e-Student Member. Royal Statistical Society.

Teaching Experience

Spring '26 OIDD(4/7)770 Introduction to Python for Data Science, Head TA
Spring '25 OIDD7770 Introduction to Python for Data Science, Teaching Assistant
AY '22-'23 Imperial Mathematics Year 1, Peer Tutor
Autumn '22 MATH-352 Causal Thinking, Teaching Assistant

Wharton
Wharton
Imperial
EPFL

Mentoring

2022-present Riyaadh Gani, High School Student, Johannesburg, South Africa. Currently an undergraduate at University College London in Robotics and AI.
2022-present Ruhan, High School Student, London, UK. Currently an undergraduate student in Mathematics at Imperial College London.
2022-2025 Iraklis Kantzelis, High School Student, Milan, Italy. Currently an undergraduate at UCLA in Applied Mathematics and Economics.

Prior Work Experience

Crimson Education

INDEPENDENT TUTOR; MENTOR

Remote
Aug 2021 - Aug 2024

- Designed online tutoring lessons for international students aiming for top UK and US institutions.
- Developed a suite of entry exam (MAT) questions to be used across the Crimson platform for students applying to Oxford, Imperial or Warwick Mathematics.
- Created tailored resources using LaTeX, R and Python for personalised learning and supercurricular exploration.
- Destinations of my former students include: Stanford, UCL, LSE and UCLA.

Covéa Insurance

LIFE ACTUARIAL INTERN

West Malling, Kent, UK
July 2022 - Sep 2022

- Analysed insurance quotes data in R, producing a report and a presentation on its focal points and shortcomings.
- Automated reserving calculations, experience analyses, budgeting and catastrophic claims analysis in Excel.

His Majesty's Ministry of Defence, Imperial College London

UNDERGRADUATE RESEARCH ASSISTANT, WITH DR ANDREW DUNCAN

London, UK
July 2021 - Sep 2021

- Adapted shape-constrained additive models, to predict probabilities in the data-sparse lower tail of a binary testing experiment.
- Conducted intensive simulations in R, applying the packages `mgcv`, `scam`, and `mlrMBO`, as well as the Bayesian inference software Stan.
- Engaged in a regular feedback-improvement loop with the client in my role as a consultant.

Global PE Alliance

PRIVATE EQUITY INTERN

Remote, UK
Apr 2021 - Jun 2021

- Researched investment strategies, such as impact investing, producing a written report and presentation.
- Progressed the firm's digital maturity by evaluating the corresponding performance of their competitors.
- Managed younger interns to build character and deliver projects in a team.

Bartley Green School

VOLUNTEER TEACHING ASSISTANT

Birmingham, UK
Jan 2018 - Mar 2019

- Assisted in the delivery of science lessons to groups of twenty high-school students or more.
- Planned and delivered one-hour lessons to groups of thirty students.
- Delivered revision sessions to smaller groups to boost attainment.