

# Dean Knox

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| CONTACT INFORMATION          | Operations, Information, and Decisions Department<br>500 Jon M. Huntsman Hall<br>3730 Walnut St.<br>Philadelphia, PA 19104   | dcknox@upenn.edu<br><a href="http://www.dcknox.com">www.dcknox.com</a>  |
| EDUCATION                    | <b>Massachusetts Institute of Technology</b><br>Ph.D., Political Science<br>Committee: Adam Berinsky, Fotini Christia, Danny Hidalgo, Teppei Yamamoto (chair)  | Cambridge, MA<br>August 2011–May 2017   |
|                              | <b>University of Illinois at Urbana-Champaign</b><br>B.S., Nuclear Engineering   | Urbana-Champaign, IL<br>August 2004–May 2008  |
| POSITIONS                    | <b>Wharton School, University of Pennsylvania</b><br>Assistant Professor<br>Operations, Information, and Decisions Department; Statistics and Data Science (secondary)<br>Affiliations: Wharton AI & Analytics; Quattrone Center for the Fair Administration of Justice  | Philadelphia, PA<br>July 2020–  |
|                              | <b>Princeton University</b><br>Assistant Professor, Department of Politics<br>Affiliations: Center for Statistics & Machine Learning; Center for the Study of Democratic Politics  | Princeton, NJ<br>July 2018–July 2020  |
|                              | <b>Microsoft Research</b><br>Postdoctoral Researcher, Computational Social Science group   | New York, NY<br>July 2017–June 2018   |
| AWARDS, HONORS & FELLOWSHIPS | Wharton School, University of Pennsylvania<br><i>Science</i> & NOMIS Foundation<br>Carnegie Corporation of New York<br>American Association for the Advancement of Science<br>Society for Political Methodology<br>Society for Political Methodology<br>Society for Political Methodology<br>National Science Foundation<br>Massachusetts Institute of Technology<br><i>Foreign Policy</i> magazine  | Teaching excellence award, 2024–2025<br>Early career award for interdisciplinary research, 2021<br>Andrew Carnegie fellow, 2021<br>Annual meeting featured paper, 2021<br>Gosnell prize for excellence in political methodology, 2020<br>John T. Williams dissertation prize, 2016<br>Best poster at annual meeting, 2015<br>Graduate research fellowship, 2013–2016<br>Presidential graduate fellowship, 2012–2013<br>Best writing in global political economy, 2010 |
| STATISTICAL CONSULTING       | American Civil Liberties Union<br>Department of Justice Civil Rights Division<br>NAACP Legal Defense Fund<br>Philadelphia Police Advisory Commission   | 2020–<br>2020–2024<br>2021–2022<br>2019–2022  |
| JOURNAL ARTICLES             | 20. Dean Knox and Jonathan Mummolo. 2025. “New data fill longstanding gaps in the study of policing.” <i>Science</i> (Perspective), Vol. 387, Iss. 6741.<br>19. Naijia Liu, Xinlan Emily Hu, Yasemin Savas, Matthew Baum, Adam Berinsky, Alison Chaney, Christopher Lucas, Rei Mariman, Justin de Benedictis-Kessner, Andy Guess, Dean Knox, and Brandon Stewart. 2025. “Short-term exposure to filter-bubble recommendation systems has limited polarization effects: Naturalistic experiments on YouTube.” <i>Proceedings of the National Academy of Sciences</i> (Research Report), Vol. 122, Iss. 8. |   |
|                              | <b>Author contributions:</b> “NL, XEH, YS, JdBK, AMG, <b>DK</b> , and BMS developed the research designs... NL, XEH, and YS gathered, classified, and experimentally manipulated recommendation networks, with support from RM and <b>DK</b> . . . NL and <b>DK</b> designed the video platform. . . NL, XEH, YS, CL, JdBK, AMG, <b>DK</b> , and BMS performed research. . . NL, XEH, YS, JdBK, AMG, <b>DK</b> , and BMS analyzed data”  |   |

18. Taylor Damann, Dean Knox, and Christopher Lucas. 2025. “A framework for studying causal effects of speech style: Application to U.S. presidential campaigns.” *Journal of the Royal Statistical Society: Series A*.

17. Bocar Ba, Haosen Ge, Jacob Kaplan, Dean Knox, Mayya Komisarchik, Gregory Lanzalotto, Rei Mariman, Jonathan Mummolo, Roman Rivera, and Michelle Torres. 2025. “Political diversity in U.S. police agencies.” *American Journal of Political Science*.

**Author contributions:** “**DK** and JM designed the project with support from RM and JK . . . JK conducted data processing and statistical analysis with support from **DK** and JM, with additional contributions from RR, GL and HG . . . JM wrote the paper with support from JK, **DK**, and RM . . .”

16. Guilherme Duarte, Noam Finkelstein, Dean Knox, Jonathan Mummolo, and Ilya Shpitser. 2024. “An automated approach to causal inference in discrete settings.” *Journal of the American Statistical Association (Theory & Methods)*, Vol. 119, Iss. 547.

15. Justin Grimmer, Dean Knox, and Brandon Stewart. 2023. “Naïve regression requires weaker assumptions than factor models to adjust for multiple cause confounding.” *Journal of Machine Learning Research*, Vol. 24, Iss. 182.

14. Andrew Reece, Gus Cooney, Peter Bull, Christine Chung, Bryn Dawson, Casey Fitzpatrick, Tamara Glazer, Dean Knox, Alex Liebscher, and Sebastian Marin. 2023. “The CANDOR corpus: Insights from a large multimodal dataset of naturalistic conversation.” *Science Advances* (Research Article), Vol. 9, Iss. 13.

**Author contributions:** “Apart from AR and GC, the remaining authors are listed alphabetically . . . **DK** and GC designed the section “Characteristics of good and bad conversationists,” with support from AR; **DK** also performed the analyses and wrote the Supplementary Materials, with support from GC, AR, AL, and PB. **DK**, GC, and AR are responsible for the section “A qualitative glance at the corpus—Topical, relational, and demographic diversity.” AL and **DK** created the pipeline to process the raw data into analysis-ready data, with support from AR, SM, and GC . . . GC drafted the initial manuscript. AR and **DK** provided edits to the initial manuscript . . . GC handled the peer review process, with support from **DK** and AR.”

13. Courtney Hilton, Cody Moser, Mila Bertolo, Harry Lee-Rubin, Dorsa Amir, Constance Bainbridge, Jan Simson, Dean Knox, Luke Glowacki, Andrzej Galbarczyk, Grazyna Jasienska, Cody Ross, Mary Beth Neff, Alia Martin, Laura Cirelli, Sandra Trehub, Jinqi Song, Minju Kim, Adena Schachner, Tom Vardy, Quentin Atkinson, Jan Antfolk, Purnima Madhivanan, Anand Siddaiah, Caitlyn Placek, Gul Deniz Salali, Sarai Keestra, Manvir Singh, Scott Collins, John Patton, Camila Scuff, Jonathan Stieglitz, Cristina Moya, Rohan Sagar, Brian Wood, Max Krasnow, Samuel Mehr. 2022. “Acoustic regularities in infant-directed speech and song across cultures.” *Nature Human Behavior* (Article), Vol. 6.

**Author contributions:** “CBH and SAM led analyses, with additional contributions from CJM, MB, **DK**, and MMK . . . **DK** conducted code review.”

**Selected coverage:** *New York Times*, *The Guardian*, *NPR*

12. Fotini Christia, Elizabeth Dekeyser, and Dean Knox. 2022. “Evidence on the nature of sectarian animosity from a geographically representative survey of Iraqi and Iranian Shia pilgrims.” *Nature Human Behavior* (Article), Vol. 6.

11. Dean Knox, Christopher Lucas, and Wendy K. Tam Cho. 2022. “Testing causal theories with learned proxies.” *Annual Review of Political Science* (Invited), Vol. 25.

10. Dean Knox. 2021. “Revealing racial bias: Causal inference can make sense of imperfect policing data.” *Science* (Essay), Vol. 374, Iss. 6568.

**Selected coverage:** *AAAS*, *Science News*, *Penn Today*

9. Dean Knox and Christopher Lucas. 2021. “A dynamic model of speech for the social sciences.” *American Political Science Review* (Manuscript), Vol. 115, Iss. 2.

**Recognition:** Gosnell Prize for Excellence in Political Methodology, “awarded for the best work in political methodology presented at any political science conference during the preceding year”

8. Bocar Ba, Dean Knox, Jonathan Mummolo, and Roman Rivera. 2021. “The role of officer race and gender in police-civilian interactions in Chicago.” *Science* (Research Article), Vol. 371, Iss. 6530.

**Recognition:** *Science* print edition cover article; featured paper, AAAS Annual Meeting

**Discussion:** Phillip Atiba Goff. 2021. “Asking the right questions about race and policing.” *Science* (Perspective), Vol. 371, Iss. 6530.

**Selected coverage:** Associated Press (*Washington Post*, *L.A. Times*, *New York Post*, *U.S. News*, *NBC News*), *Scientific American*, *Science* (news), *USA Today*, *The Guardian*, *CNN*, *Science News*

7. Dean Knox, Will Lowe, and Jonathan Mummolo. 2020. “Administrative records mask racially biased policing.” *American Political Science Review* (Manuscript), Vol. 114, Iss. 3.

**Selected coverage and impact:** *City of Chicago Office of Inspector General*, *Scientific American*, *FiveThirtyEight*

6. Fragile Families Challenge Team. 2020. “Measuring the predictability of life outcomes with a scientific mass collaboration.” *Proceedings of the National Academy of Sciences* (Research Report), Vol. 117, Iss. 15.

**Author contributions:** “... MJS, IL, ATK, **DK**, and SM wrote the paper.”

5. Dean Knox and Jonathan Mummolo. 2020. “Making inferences about racial disparities in police violence.” *Proceedings of the National Academy of Sciences* (Letter), Vol. 117, Iss. 3.

**Related:** public statement (endorsed by 871 researchers across 20 disciplines); PNAS editorial statement; retraction of Johnson et al. (2019)

4. Dean Knox and Jonathan Mummolo. 2020. “Toward a general causal framework for the study of racial bias in policing.” *Journal of Political Institutions and Political Economy*, Vol. 1 (Invited).

3. Samuel Mehr, Manvir Singh, Dean Knox, Daniel Ketter, Daniel Pickens-Jones, Stephanie Atwood, Christopher Lucas, Nori Jacoby, Alena Egner, Erin Hopkins, Rhea Howard, Joshua Hartshorne, Mariela Jennings, Jan Simson, Constance Bainbridge, Steven Pinker, Timothy O’Donnell, Max Krasnow, and Luke Glowacki. 2019. “Universality and diversity in human song.” *Science* (Research Article), Vol. 366, Iss. 6468.

**Author contributions:** “... **DK** designed and implemented all analyses, with support from SAM and CL ... SAM, **DK**, and MS designed the static figures and SAM and **DK** created them...”

**Discussion:** W. Tecumseh Fitch and Tudor Popescu. 2019. “The world in a song.” *Science* (Perspective), Vol. 366, Iss. 6468.

**Selected coverage:** *Reuters*, *Newsweek*, *Wall Street Journal*, *Forbes*, *Nature* (news), *Scientific American*, *Popular Science*, *The Times of London*, *El País*, *Le Monde*

2. Dean Knox, Teppei Yamamoto, Matthew Baum, and Adam Berinsky. 2019. “Design, Identification, and Inference in Patient Preference Trials.” *Journal of the American Statistical Association* (Applications and Case Studies), Vol. 114, Iss. 528.

1. Dean Knox. 2012. “Nuclear security and nuclear emergency response in China.” *Science & Global Security*, Vol. 20, Iss. 1.

SUBMITTED

21. Kai Cooper, Guilherme Duarte, Luke Keele, Dean Knox, and Jonathan Mummolo. “Learning from imperfect research designs: Automating causal inference when classic assumptions fail.”
22. Justin Grimmer, Dean Knox, and Sean Westwood. “Assessing the reliability of probabilistic U.S. presidential election forecasts may take decades.”

- IN PROGRESS**
23. Bocar Ba, Jacob Kaplan, Dean Knox, Gregory Lanzalotto Rachel Mariman, Jonathan Mummolo, and Arantxa Rodriguez-Uribe. "Management of police misconduct investigations."
  24. Claire Kelling, Gregory Lanzalotto, Tarak Shah, Dean Knox, Jacob Kaplan, Jonathan Mummolo, Jamell Dacon, and Adam Wolsky. "Future directions in statistical research in the analysis of police use of force."
  25. Kai Cooper, Haosen Ge, Jacob Kaplan, Gregory Lanzalotto, Dean Knox, and Jonathan Mummolo. "Assessing fairness in policing with imperfect proxies of civilian behavior."
  26. Dean Knox, Luke Keele, and Ilya Shpitser. "A causal ablation framework for evaluating identification assumptions."
- OTHER WRITING**
- Jennifer Bourgeois, Anna Haensch, Saatvik Kher, Dean Knox, Gregory Lanzalotto, Tian An Wong. 2024. "How to Use Causal Inference to Study Use of Force." *CHANCE*, Vol. 37, Iss. 4.
- Bocar Ba, Dean Knox, Rachel Mariman, Jonathan Mummolo and María Aránzazu Rodríguez Uribe. 2021. "Analysis of Philadelphia Police Department Civilian Complaint Process." Featured in Philadelphia Police Advisory Commission, *Collaborative Review and Reform of the PPD Police Board of Inquiry*.
- Selected coverage:** *Philadelphia Inquirer*, *NBC Philadelphia*
- Dean Knox and Jonathan Mummolo. 2020. "A widely touted study found no evidence of racism in police shootings. It's full of errors." *Washington Post*, 15 July.
- Dean Knox and Jonathan Mummolo. 2020. "It took us months to contest a flawed study on police bias. Here's why that's dangerous." *Washington Post*, 28 January.
- Fotini Christia, Elizabeth DeKeyser and Dean Knox. 2016. "To Karbala: Surveying religious Shi'a from Iran and Iraq." Translated as "Ila Karbalā: dirāsa mashiyya 'an Shi'iat Iran Wāl-Iraq" *Dirāsat Fikriyya, Dirasat Fikriya*. Nasr Al-Husaini, Aya Al-Raoof, Hasan Al-Asadi (trans.); Hasan Nadhem, Ali Hakam Saleh (eds.). Kufa University Press. 2018. Beirut, Lebanon.
- Christia, Fotini, Elizabeth Dekeyser, and Dean Knox. 2016. "Shiites are participating in the world's largest pilgrimage today. Here is how they view the world." *Monkey Cage (Washington Post)*, 21 November 2016.
- Christia, Fotini, Elizabeth Dekeyser, and Dean Knox. 2016. "Mapping Shiite opinion: Insights from the Arba'een pilgrimage." *Foreign Affairs*, 24 October 2016.
- Jakobson, Linda and Dean Knox. 2010. "New foreign policy actors in China." Stockholm: SIPRI. Translated as "Chuugoku no atarashii taigai seisaku: Darega donoyouni kettei shite irunoka." 2011. Tokyo: Iwanami Shoten.
- Jakobson, Linda, Paul Holtom, Dean Knox, and Peng Jingchao. 2011. "China's energy and security relations with Russia." Stockholm: SIPRI.
- BOOK CHAPTERS**
- Fotini Christia, Elizabeth Dekeyser, and Dean Knox. 2022. "Piety and religious communalism among Shiites in Iraq and Iran." *The Oxford Handbook of Politics in Muslim Societies*, eds. Melani Cammett and Pauline Jones. Oxford University Press.
- Dean Knox. 2012. "The Comprehensive Test Ban Treaty: Foundations, context, and outlook." In *Handbook of Nuclear Proliferation*, ed. Harsh V. Pant. Routledge.
- GRANTS**
- Claire Kelling, Dean Knox, Gregory Lanzalotto, and Tarak Shah. 2023. "National Institute of Statistical Sciences forum on police use of force." National Science Foundation. \$20,000. Principal investigator.
- Guilherme Duarte, Haosen Ge, Jacob Kaplan, Dean Knox, Gregory Lanzalotto, Rachel Mariman, and Jonathan Mummolo. 2022. "Statistical methodology for measuring racial bias in police traffic enforcement with incomplete information." Arnold Ventures. \$1,205,813. Principal investigator.

- Dean Knox. 2021. "Eliminating statistical barriers to evidence-based policing reforms." Andrew Carnegie Fellowship. \$200,000. Principal investigator.
- Christopher Lucas and Dean Knox. 2021. "Computational methods for speech analysis." National Science Foundation, Division of Social and Economic Sciences (Methodology, Measurement, and Statistics). \$249,318. Principal investigator.
- Dean Knox, Rachel Mariman, Jonathan Mummolo, Olga Russakovsky, and Brandon Stewart. 2021. "Computational analysis of police body-worn camera footage." Microsoft. \$200,000. Principal investigator.
- Dean Knox, Rachel Mariman, Jonathan Mummolo, Olga Russakovsky, and Brandon Stewart. 2021. "Computational analysis of police body-worn camera footage." Princeton Data-driven Social Science Initiative. \$74,525. Principal investigator.
- Guilherme Duarte, Dean Knox, and Jonathan Mummolo. 2021. "An automated solution to causal inference in discrete settings." Analytics at Wharton, The Wharton School of the University of Pennsylvania. \$22,575. Principal investigator.
- Dean Knox, Rachel Mariman, Jonathan Mummolo, Olga Russakovsky, and Brandon Stewart. 2021. "Making police-civilian interactions safer." Microsoft Azure Credits for Racial Equity Research. \$75,000. Principal investigator.
- Dean Knox, Rachel Mariman, Jonathan Mummolo, and María Aránzazu Rodríguez. 2020. "Reforming police misconduct investigations." Analytics at Wharton, The Wharton School of the University of Pennsylvania. \$31,000. Principal investigator.
- Naijia Liu, Matt Baum, Adam Berinsky, Justin de Benedictis-Kessner, Andy Guess, Dean Knox, Christopher Lucas, and Brandon Stewart. 2020. "Do online video recommendation algorithms increase affective polarization?" Facebook Foundational Integrity Research: Misinformation and Polarization Research Award. \$100,000. Principal investigator.
- Dean Knox, Jonathan Mummolo, Olga Russakovsky, and Brandon Stewart. 2020. "Making Police-Citizen Interaction Safer: Large-Scale Computational Analysis of Visual Law Enforcement Records." School of Engineering and Applied Science Innovation Research Grant, Princeton University. \$150,000. Principal investigator.
- Dean Knox. 2019. "A toolkit for the quantitative analysis of audiovisual speech data." Schmidt DataX Research Award. \$100,000. Principal investigator.
- Dean Knox and Andy Guess. 2019. "Do video personalization algorithms polarize users?" Innovative Ideas in the Social Sciences, Dean for Research, Princeton University. \$50,000. Principal investigator.

## TEACHING

- Wharton STAT/OIDD 4770/7770: Introduction to Data Science in Python. Fall 2022.
- Princeton POL574: Statistical Machine Learning. Spring 2019, Spring 2020.
- Princeton POL571: Probability. Fall 2018, Fall 2019.
- Institute for Political Methodology summer camp. Summer 2015. Teaching assistant.
- MIT 17.806: Machine Learning. Spring 2015. Teaching assistant.
- MIT 17.802: Causal inference. Spring 2014. Teaching assistant.

## INVITED TALKS

- |   |      |
|---|------|
| London School of Economics (Policing & Crime Workshop)                | 2024 |
| University of Michigan (Statistics)                                   | 2023 |
| University of California, Berkeley (Public Policy, Information)       | 2023 |
| Stanford University (GSB Organizational Behavior)                     | 2023 |
| Massachusetts Institute of Technology (Sloan Organizational Behavior) | 2023 |
| École Polytechnique Fédérale de Lausanne (Biostatistics)              | 2023 |
| ETH Zurich (Economics & Data Science)                                 | 2023 |
| University of Maryland (AI & Analytics for Social Good Workshop)      | 2023 |

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| Harvard University (Applied Statistics)  | 2023 |
| New York University (Politics)   | 2022 |
| University of California, Los Angeles (Political Science)                        | 2022 |
| University of Washington (Center for Statistics and the Social Sciences)         | 2022 |
| Stanford University (Political Science)  | 2022 |
| University of Michigan (Data Science/Computational Social Science)               | 2021 |
| Microsoft Research   | 2021 |
| National Institute of Statistical Sciences (Police Use of Force Forum)           | 2021 |
| Yale University (Political Science)  | 2021 |
| Facebook   | 2021 |
| New York University (Center for Data Science)                                    | 2021 |
| Harvard University (Applied Statistics)  | 2021 |
| Massachusetts Institute of Technology (Political Science)                        | 2020 |
| Stanford University (Political Science)  | 2020 |
| University of California, Berkeley (Political Science)                           | 2020 |
| American Civil Liberties Union   | 2020 |
| Japanese Society for Quantitative Political Science                              | 2020 |
| Wharton School, University of Pennsylvania (Operations, Information & Decisions) | 2019 |
| University of California, San Diego (Political Science)                          | 2019 |
| New York University (Politics)   | 2017 |
| University of Southern California (Political Science)                            | 2017 |
| Brown University (Political Science)   | 2016 |
| Duke University (Network Analysis)   | 2016 |
| Emory University (Quantitative Theory & Methods)                                 | 2016 |
| Michigan University (Political Science)  | 2016 |
| New York University, Shanghai (Data Science)                                     | 2016 |
| Pennsylvania State University (Political Science)                                | 2016 |
| Princeton University (Politics)  | 2016 |
| Rochester University (Political Science)   | 2016 |
| University of California, San Diego (Political Science)                          | 2016 |

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| SERVICE | National Institute of Statistical Science, Police Use of Force Forum | Co-organizer, 2023                     |
|         | Society of Political Methodology                                     | Annual Meeting Program Committee, 2023 |
|         | Wharton Decision Processes Seminar                                   | Co-organizer, 2022–2023                |
|         | UPenn Computational and Data-Dependent Research Working Group        | Core Faculty, 2022–2023                |
|         | Wharton Undergraduate Data Analytics Club                            | Faculty Advisor, 2020                  |
|         | Princeton Fellowship of Woodrow Wilson Scholars                      | Acting Director, 2019–2020             |
|         | Princeton Quantitative Social Science Colloquium                     | Faculty Co-coordinator, 2018–2020      |
|         | MIT Political Methodology Research Seminar                           | Student Coordinator, 2015              |
|         | MIT Political Methodology Workshop Series                            | Organizer, 2014                        |
|         | MIT Political Economy Breakfast Series                               | Student Co-coordinator, 2014           |
|         | MIT Political Science Graduate Student Research Design Group         | Co-organizer, 2013–2014                |
|         | Harvard-MIT-BU Chinese Politics Research Workshop                    | Co-organizer, 2012–2013                |

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| ADVISING | Guilherme Duarte (2025 Ph.D. expected, OID Department, Wharton).<br>Assistant Professor, Department of Government, Harvard University. |
|          | Naijia Liu (2022 Ph.D., Department of Politics, Princeton).<br>Assistant Professor, Department of Government, Harvard University.      |

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| REFEREE SERVICE | <i>Science, Proceedings of the National Academy of Sciences (PNAS), PNAS Nexus, Nature Human Behavior, Science Advances, Journal of the American Statistical Association, Annals of Applied Statistics, Journal of the Royal Statistical Society: Series C, Journal of Causal Inference, American Political Science Review, American Journal of Political Science, Journal of Politics, Political</i> |
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*Analysis, Political Science Research and Methods, Management Science, Manufacturing and Service Operations Management, Journal of Marketing Research, Economics & Politics, Sociological Methods and Research, Journal of Quantitative Criminology, PLOS One, National Science Foundation (Methodology, Measurement, and Statistics)*