

Stanford



Susan Athey

Economics of Technology Professor, Senior Fellow at the Stanford Institute for Economic Policy Research and Professor, by courtesy, of Economics

Bio

ACADEMIC APPOINTMENTS

- Professor, Economics
- Senior Fellow, Stanford Institute for Economic Policy Research (SIEPR)
- Professor (By courtesy), Economics
- Associate Director, Institute for Human-Centered Artificial Intelligence (HAI)
- Member, Institute for Computational and Mathematical Engineering (ICME)
- Member, Wu Tsai Neurosciences Institute

Teaching

COURSES

2023-24

- Research Fellows Practicum: GSBGEN 697 (Aut, Win, Spr)

2022-23

- Machine Learning and Causal Inference: ECON 293 (Spr)
- Machine Learning and Causal Inference: MGTECON 634 (Spr)
- Research Fellows Practicum: GSBGEN 697 (Aut, Win, Spr, Sum)

2021-22

- Designing Experiments for Impact: ALP 308 (Spr)
- Designing Experiments for Impact: ECON 281 (Spr)
- Machine Learning and Causal Inference: ECON 293 (Spr)
- Machine Learning and Causal Inference: MGTECON 634 (Spr)
- Research Fellows Practicum: GSBGEN 697 (Sum)

2020-21

- Data-Driven Impact: ALP 301 (Spr)
- Machine Learning and Causal Inference: ECON 293 (Spr)
- Machine Learning and Causal Inference: MGTECON 634 (Spr)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Qitong Cao, Jonas Metzger, Evan Munro

Postdoctoral Faculty Sponsor

Patricia Andrews Fearon, José Ramón Enríquez, Emil Palikot, Szymon Sacher, Erik Sverdrup

Doctoral Dissertation Advisor (AC)

Matias Cersosimo, Ayush Kanodia, Sanath Kumar Krishnamurthy

Doctoral (Program)

Ayush Kanodia

Postdoctoral Research Mentor

Emil Palikot

Publications

PUBLICATIONS

- **Can personalized digital counseling improve consumer search for modern contraceptive methods?** *Science advances*
Athey, S., Bergstrom, K., Hadad, V., Jamison, J. C., Ozler, B., Parisotto, L., Sama, J. D.
2023; 9 (40): eadg4420
- **Federated causal inference in heterogeneous observational data.** *Statistics in medicine*
Xiong, R., Koenecke, A., Powell, M., Shen, Z., Vogelstein, J. T., Athey, S.
2023
- **Semi-parametric estimation of treatment effects in randomised experiments** *JOURNAL OF THE ROYAL STATISTICAL SOCIETY SERIES B-STATISTICAL METHODOLOGY*
Athey, S., Bickel, P. J., Chen, A., Imbens, G. W., Pollmann, M.
2023
- **Machine-learning-based high-benefit approach versus conventional high-risk approach in blood pressure management.** *International journal of epidemiology*
Inoue, K., Athey, S., Tsugawa, Y.
2023
- **Digital public health interventions at scale: The impact of social media advertising on beliefs and outcomes related to COVID vaccines.** *Proceedings of the National Academy of Sciences of the United States of America*
Athey, S., Grabarz, K., Luca, M., Wernerfelt, N.
2023; 120 (5): e2208110120
- **Expanding capacity for vaccines against Covid-19 and future pandemics: a review of economic issues** *OXFORD REVIEW OF ECONOMIC POLICY*
Athey, S., Castillo, J., Chaudhuri, E., Kremer, M., Gomes, A., Snyder, C. M.
2022; 38 (4): 742-770
- **When Should You Adjust Standard Errors for Clustering?*** *QUARTERLY JOURNAL OF ECONOMICS*
Abadie, A., Athey, S., Imbens, G. W., Wooldridge, J. M.
2022
- **Offline Multi-Action Policy Learning: Generalization and Optimization** *OPERATIONS RESEARCH*
Zhou, Z., Athey, S., Wager, S.
2022
- **Uncovering interpretable potential confounders in electronic medical records.** *Nature communications*
Zeng, J., Gensheimer, M. F., Rubin, D. L., Athey, S., Shachter, R. D.

2022; 13 (1): 1014

- **Stable learning establishes some common ground between causal inference and machine learning** *NATURE MACHINE INTELLIGENCE*
Cui, P., Athey, S.
2022; 4 (2): 110-115
- **Design-based analysis in Difference-In-Differences settings with staggered adoption** *JOURNAL OF ECONOMETRICS*
Athey, S., Imbens, G. W.
2022; 226 (1): 62-79
- **Counterfactual inference for consumer choice across many product categories (Jun, 10.1007/s11129-021-09241-2, 2021)** *QME-QUANTITATIVE MARKETING AND ECONOMICS*
Donnelly, R., Ruiz, F. R., Blei, D., Athey, S.
2021
- **Synthetic Difference-in-Differences** *AMERICAN ECONOMIC REVIEW*
Arkhangelsky, D., Athey, S., Hirshberg, D. A., Imbens, G. W., Wager, S.
2021; 111 (12): 4088-4118
- **Counterfactual inference for consumer choice across many product categories** *QME-QUANTITATIVE MARKETING AND ECONOMICS*
Donnelly, R., Ruiz, F. R., Blei, D., Athey, S.
2021
- **Estimating experienced racial segregation in US cities using large-scale GPS data.** *Proceedings of the National Academy of Sciences of the United States of America*
Athey, S., Ferguson, B., Gentzkow, M., Schmidt, T.
2021; 118 (46)
- **Integrating explanation and prediction in computational social science.** *Nature*
Hofman, J. M., Watts, D. J., Athey, S., Garip, F., Griffiths, T. L., Kleinberg, J., Margetts, H., Mullainathan, S., Salganik, M. J., Vazire, S., Vespignani, A., Yarkoni, T.
2021
- **Alpha-1 adrenergic receptor antagonists to prevent hyperinflammation and death from lower respiratory tract infection.** *eLife*
Koenecke, A., Powell, M., Xiong, R., Shen, Z., Fischer, N., Huq, S., Khalafallah, A. M., Trevisan, M., Sparen, P., Carrero, J. J., Nishimura, A., Caffo, B., Stuart, et al
2021; 10
- **PRIVATE AND SOCIAL RETURNS TO R&D AND VACCINE DEVELOPMENT Preparing for a Pandemic: Accelerating Vaccine Availability**
Ahuja, A., Athey, S., Baker, A., Budish, E., Castillo, J., Glennerster, R., Kominers, S., Kremer, M., Lee, J., Prendergast, C., Snyder, C. M., Tabarrok, A., Tan, et al
*AMER ECONOMIC ASSOC.*2021: 331-335
- **Matrix Completion Methods for Causal Panel Data Models** *JOURNAL OF THE AMERICAN STATISTICAL ASSOCIATION*
Athey, S., Bayati, M., Doudchenko, N., Imbens, G., Khosravi, K.
2021
- **Confidence intervals for policy evaluation in adaptive experiments.** *Proceedings of the National Academy of Sciences of the United States of America*
Hadad, V., Hirshberg, D. A., Zhan, R., Wager, S., Athey, S.
2021; 118 (15)
- **Market design to accelerate COVID-19 vaccine supply.** *Science (New York, N.Y.)*
Castillo, J. C., Ahuja, A., Athey, S., Baker, A., Budish, E., Chipty, T., Glennerster, R., Kominers, S. D., Kremer, M., Larson, G., Lee, J., Prendergast, C., Snyder, et al
2021
- **Association of alpha1-Blocker Receipt With 30-Day Mortality and Risk of Intensive Care Unit Admission Among Adults Hospitalized With Influenza or Pneumonia in Denmark.** *JAMA network open*
Thomsen, R. W., Christiansen, C. F., Heide-Jorgensen, U., Vogelstein, J. T., Vogelstein, B., Bettgowda, C., Tamang, S., Athey, S., Sorensen, H. T.
2021; 4 (2): e2037053
- **Falling living standards during the COVID-19 crisis: Quantitative evidence from nine developing countries.** *Science advances*

- Egger, D., Miguel, E., Warren, S. S., Shenoy, A., Collins, E., Karlan, D., Parkerson, D., Mobarak, A. M., Fink, G., Udry, C., Walker, M., Haushofer, J., Larrebourg, et al
2021; 7 (6)
- **POLICY LEARNING WITH OBSERVATIONAL DATA** *ECONOMETRICA*
Athey, S., Wager, S.
2021; 89 (1): 133–61
 - **Off-Policy Evaluation via Adaptive Weighting with Data from Contextual Bandits**
Zhan, R., Hadad, V., Hirshberg, D. A., Athey, S., ASSOC COMP MACHINERY
ASSOC COMPUTING MACHINERY.2021: 2125-2135
 - **Ten Rules for Conducting Retrospective Pharmacoepidemiological Analyses: Example COVID-19 Study.** *Frontiers in pharmacology*
Powell, M., Koenecke, A., Byrd, J. B., Nishimura, A., Konig, M. F., Xiong, R., Mahmood, S., Mucaj, V., Bettgowda, C., Rose, L., Tamang, S., Sacarny, A., Caffo, et al
2021; 12: 700776
 - **Adapting to Misspecification in Contextual Bandits with Offline Regression Oracles**
Krishnamurthy, S., Hadad, V., Athey, S., Meila, M., Zhang, T.
JMLR-JOURNAL MACHINE LEARNING RESEARCH.2021
 - **Tractable contextual bandits beyond realizability**
Krishnamurthy, S., Hadad, V., Athey, S., Banerjee, A., Fukumizu, K.
MICROTOME PUBLISHING.2021
 - **The Association Between Alpha-1 Adrenergic Receptor Antagonists and In-Hospital Mortality From COVID-19.** *Frontiers in medicine*
Rose, L., Graham, L., Koenecke, A., Powell, M., Xiong, R., Shen, Z., Mench, B., Kinzler, K. W., Bettgowda, C., Vogelstein, B., Athey, S., Vogelstein, J. T., Konig, et al
2021; 8: 637647
 - **Local Linear Forests** *JOURNAL OF COMPUTATIONAL AND GRAPHICAL STATISTICS*
Friedberg, R., Tibshirani, J., Athey, S., Wager, S.
2020
 - **Peaches, lemons, and cookies: Designing auction markets with dispersed information** *GAMES AND ECONOMIC BEHAVIOR*
Abraham, I., Athey, S., Babaioff, M., Grubb, M. D.
2020; 124: 454–77
 - **The Allocation of Decision Authority to Human and Artificial Intelligence**
Athey, S. C., Bryan, K. A., Gans, J. S.
AMER ECONOMIC ASSOC.2020: 80–84
 - **SHOPPER: A PROBABILISTIC MODEL OF CONSUMER CHOICE WITH SUBSTITUTES AND COMPLEMENTS** *ANNALS OF APPLIED STATISTICS*
Ruiz, F. R., Athey, S., Blei, D. M.
2020; 14 (1): 1–27
 - **SAMPLING-BASED VERSUS DESIGN-BASED UNCERTAINTY IN REGRESSION ANALYSIS** *ECONOMETRICA*
Abadie, A., Athey, S., Imbens, G. W., Wooldridge, J. M.
2020; 88 (1): 265–96
 - **Stable Prediction with Model Misspecification and Agnostic Distribution Shift**
Kuang, K., Xiong, R., Cui, P., Athey, S., Li, B., Assoc Advancement Artificial Intelligence
ASSOC ADVANCEMENT ARTIFICIAL INTELLIGENCE.2020: 4485-4492
 - **The Association Between Alpha-1 Adrenergic Receptor Antagonists and In-Hospital Mortality from COVID-19.** *medRxiv : the preprint server for health sciences*
Rose, L. n., Graham, L. n., Koenecke, A. n., Powell, M. n., Xiong, R. n., Shen, Z. n., Kinzler, K. W., Bettgowda, C. n., Vogelstein, B. n., Athey, S. n., Vogelstein, J. T., Konig, M. F., Wagner, et al
2020

- **Preventing cytokine storm syndrome in COVID-19 using #-1 adrenergic receptor antagonists.** *The Journal of clinical investigation*
Konig, M. F., Powell, M. A., Staedtke, V. n., Bai, R. Y., Thomas, D. L., Fischer, N. M., Huq, S. n., Khalafallah, A. M., Koenecke, A. n., Xiong, R. n., Mensh, B. n., Papadopoulos, N. n., Kinzler, et al
2020
- **Computational social science: Obstacles and opportunities.** *Science (New York, N.Y.)*
Lazer, D. M., Pentland, A. n., Watts, D. J., Aral, S. n., Athey, S. n., Contractor, N. n., Freelon, D. n., Gonzalez-Bailon, S. n., King, G. n., Margetts, H. n., Nelson, A. n., Salganik, M. J., Strohmaier, et al
2020; 369 (6507): 1060–62
- **Economists (and Economics) in Tech Companies** *JOURNAL OF ECONOMIC PERSPECTIVES*
Athey, S., Luca, M.
2019; 33 (1): 209–30
- **Comment on: "The Blessings of Multiple Causes" by Yixin Wang and David M. Blei** *JOURNAL OF THE AMERICAN STATISTICAL ASSOCIATION*
Athey, S., Imbens, G. W., Pollmann, M.
2019; 114 (528): 1602–4
- **GENERALIZED RANDOM FORESTS** *ANNALS OF STATISTICS*
Athey, S., Tibshirani, J., Wager, S.
2019; 47 (2): 1148–78
- **Balanced Linear Contextual Bandits**
Dimakopoulou, M., Zhou, Z., Athey, S., Imbens, G., AAAI
ASSOC ADVANCEMENT ARTIFICIAL INTELLIGENCE.2019: 3445–53
- **Machine Learning Methods That Economists Should Know About** *ANNUAL REVIEW OF ECONOMICS, VOL 11, 2019*
Athey, S., Imbens, G. W., Aghion, P., Rey, H.
2019; 11: 685–725
- **Approximate residual balancing: debiased inference of average treatment effects in high dimensions** *JOURNAL OF THE ROYAL STATISTICAL SOCIETY SERIES B-STATISTICAL METHODOLOGY*
Athey, S., Imbens, G. W., Wager, S.
2018; 80 (4): 597–623
- **Estimating Heterogeneous Consumer Preferences for Restaurants and Travel Time Using Mobile Location Data**
Athey, S., Blei, D., Donnelly, R., Ruiz, F., Schmidt, T.
AMER ECONOMIC ASSOC.2018: 64–67
- **The Impact of Consumer Multi-homing on Advertising Markets and Media Competition** *MANAGEMENT SCIENCE*
Athey, S., Calvano, E., Gans, J. S.
2018; 64 (4): 1574–90
- **The value of information in monotone decision problems** *RESEARCH IN ECONOMICS*
Athey, S., Levin, J.
2018; 72 (1): 101–16
- **Exact p-Values for Network Interference** *JOURNAL OF THE AMERICAN STATISTICAL ASSOCIATION*
Athey, S., Eckles, D., Imbens, G. W.
2018; 113 (521): 230–40
- **Stable Prediction across Unknown Environments**
Kuang, K., Cui, P., Athey, S., Xiong, R., Li, B., ACM
ASSOC COMPUTING MACHINERY.2018: 1617–26
- **Learning in Games with Lossy Feedback**
Zhou, Z., Mertikopoulos, P., Athey, S., Bambos, N., Glynn, P., Ye, Y., Bengio, S., Wallach, H., Larochelle, H., Grauman, K., CesaBianchi, N., Garnett, R.
NEURAL INFORMATION PROCESSING SYSTEMS (NIPS).2018
- **Estimation and Inference of Heterogeneous Treatment Effects using Random Forests** *JOURNAL OF THE AMERICAN STATISTICAL ASSOCIATION*

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- Wager, S., Athey, S.
2018; 113 (523): 1228–42
- **Estimating Average Treatment Effects: Supplementary Analyses and Remaining Challenges** *AMERICAN ECONOMIC REVIEW*
Athey, S., Imbens, G., Pham, T., Wager, S.
2017; 107 (5): 278-281
 - **Yuliy Sannikov: Winner of the 2016 Clark Medal** *JOURNAL OF ECONOMIC PERSPECTIVES*
Athey, S., Skrzypacz, A.
2017; 31 (2): 237-255
 - **The State of Applied Econometrics: Causality and Policy Evaluation** *JOURNAL OF ECONOMIC PERSPECTIVES*
Athey, S., Imbens, G. W.
2017; 31 (2): 3-32
 - **Beyond prediction: Using big data for policy problems.** *Science (New York, N.Y.)*
Athey, S. n.
2017; 355 (6324): 483–85
 - **Context Selection for Embedding Models**
Liu, L., Ruiz, F. R., Athey, S., Blei, D. M., Guyon, Luxburg, U. V., Bengio, S., Wallach, H., Fergus, R., Vishwanathan, S., Garnett, R.
NEURAL INFORMATION PROCESSING SYSTEMS (NIPS).2017
 - **Structured Embedding Models for Grouped Data**
Rudolph, M., Ruiz, F., Athey, S., Blei, D., Guyon, Luxburg, U. V., Bengio, S., Wallach, H., Fergus, R., Vishwanathan, S., Garnett, R.
NEURAL INFORMATION PROCESSING SYSTEMS (NIPS).2017
 - **Recursive partitioning for heterogeneous causal effects** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Athey, S., Imbens, G.
2016; 113 (27): 7353-7360
 - **A Measure of Robustness to Misspecification** *AMERICAN ECONOMIC REVIEW*
Athey, S., Imbens, G.
2015; 105 (5): 476-480
 - **Machine Learning and Causal Inference for Policy Evaluation**
Athey, S., Assoc Comp Machinery
ASSOC COMPUTING MACHINERY.2015: 5-6
 - **Dynamics of Open Source Movements** *JOURNAL OF ECONOMICS & MANAGEMENT STRATEGY*
Athey, S., Ellison, G.
2014; 23 (2): 294-316
 - **AN EFFICIENT DYNAMIC MECHANISM** *ECONOMETRICA*
Athey, S., Segal, I.
2013; 81 (6): 2463-2485
 - **Set-Asides and Subsidies in Auctions** *AMERICAN ECONOMIC JOURNAL-MICROECONOMICS*
Athey, S., Coey, D., Levin, J.
2013; 5 (1): 1-27
 - **Designing efficient mechanisms for dynamic bilateral trading games** *119th Annual Meeting of the American-Economic-Association*
Athey, S., Segal, I.
AMER ECONOMIC ASSOC.2007: 131–36
 - **Identification and inference in nonlinear difference-in-differences models** *ECONOMETRICA*
Athey, S., Imbens, G. W.
2006; 74 (2): 431-497

- **The optimal degree of discretion in monetary policy** *ECONOMETRICA*
Athey, S., Atkeson, A., Kehoe, P. J.
2005; 73 (5): 1431-1475
- **Collusion and price rigidity** *REVIEW OF ECONOMIC STUDIES*
Athey, S., Bagwell, K., Sanchirico, C.
2004; 71 (2): 317-349
- **Identification of standard auction models** *ECONOMETRICA*
Athey, S., Haile, P. A.
2002; 70 (6): 2107-2140
- **The impact of information technology on emergency health care outcomes** *Conference on the Industrial-Organization-of-Medical-Care*
Athey, S., Stern, S.
BLACKWELL PUBLISHING.2002: 399-432
- **Monotone comparative statics under uncertainty** *QUARTERLY JOURNAL OF ECONOMICS*
Athey, S.
2002; 117 (1): 187-223
- **Optimal collusion with private information** *RAND JOURNAL OF ECONOMICS*
Athey, S., Bagwell, K.
2001; 32 (3): 428-465
- **Organizational design: Decision rights and incentive contracts** *113th Annual Meeting of the American-Economics-Association*
Athey, S., Roberts, J.
AMER ECONOMIC ASSOC.2001: 200-205
- **Information and competition in US forest service timber auctions** *JOURNAL OF POLITICAL ECONOMY*
Athey, S., Levin, J.
2001; 109 (2): 375-417