Max H. Farrell

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Current Positions

University of Chicago, Department of Economics & Becker Friedman Institute

Visiting Associate Professor, AY 2024 – 2025.

University of California Santa Barbara *(On leave AY 2024–2025)*

Associate Professor of Economics, 2023 – Present.

Duncan and Suzanne Mellichamp Chair in Mind and Machine Intelligence, 2023 – Present.

Co-Director, Mellichamp Initiative in Mind & Machine Intelligence at UCSB, 2023 – Present. [link]

Amazon.com, Inc

Scholar, 2021 – Present.

Previous Employment

University of Chicago Booth School of Business

Associate Professor of Econometrics and Statistics, 2018 – 2023.

Assistant Professor of Econometrics and Statistics, 2014 – 2018.

Visiting Scholar, Federal Reserve Bank of Philadelphia, Fall 2020.

Visiting Scholar, Federal Reserve Bank of New York, Fall 2014, Fall 2017.

Analyst, Center for Research on Health Care - Data Center, University of Pittsburgh. 2006-2008.

Analyst, Analysis Group, Inc. 2003, 2004-2005.

Education

Ph.D. Economics, University of Michigan, 2014.

M.A. Statistics, University of Michigan, 2012.

S.B. Mathematics, Massachusetts Institute of Technology, 2004.

S.B. Economics, Massachusetts Institute of Technology, 2004.

Teaching

University of Chicago, Department of Economics
Causal Machine Learning (ECMA 31380)

University of California, Santa Barbara
Introduction to Econometrics II (Econ 140B)
Graduate Econometrics I – Probability & Statistics (Econ 241A)
Causal Machine Learning (Econ 245N)

University of Chicago Booth School of Business
Applied Regression Analysis (BUS 41100)
Causal Machine Learning (BUS 41917)

University of Michigan
Introduction to Mathematical Statistics (ECON 405)
Graduate Econometric Analysis II (ECON 672, as TA)
Graduate Econometric Analysis I (ECON 671, as TA)

Editorial Positions

Associate Editor, *Journal of Econometrics*, 2025 – present.

Associate Editor, *Econometrics Reviews*, 2025 – present.

Associate Editor, *Econometrics Journal*, 2024 – present.

Associate Editor, *Journal of Applied Econometrics*, 2021 – present.

Editorial Board, *Journal of Machine Learning Research*, 2020 – present.

Guest Editor, *Review of Economics and Statistics*, 2022 – 2024.

Associate Editor, *Review of Economics and Statistics*, 2020 – 2023.

Editorial Board, *American Journal of Political Science*, 2018 – 2019.

Working Papers

15. "Deep Learning for Individual Heterogeneity," with Tengyuan Liang and Sanjog Misra.
New draft coming soon. [2021 version: arXiv:2010.14694 | cemmap working paper CWP29/21]

14. "Treatment Effect Heterogeneity in Regression Discontinuity Designs," with Sebastian Calonico, Matias Cattaneo, Filippo Palomba, and Rocío Titiunik.
March, 2025. [arXiv:2503.13696]

13. "Nonlinear Binscatter Methods," with Matias Cattaneo, Richard Crump, and Yingjie Feng.
July, 2024. [arXiv:2407.15276]

Main Publications

12. "Higher-order Refinements of Small Bandwidth Asymptotics for Density-Weighted Average Derivative Estimators," with Matias Cattaneo, Michael Jansson, and Ricardo Masini.
Journal of Econometrics, forthcoming. [arXiv:2301.00277]

11. "On Binscatter," with Matias Cattaneo, Richard Crump, and Yingjie Feng.
American Economic Review, 114(5) 1488–1514, 2024. [arXiv:1902.09608]

10. "Coverage Error Optimal Confidence Intervals for Local Polynomial Regression," with Sebastian Calonico and Matias Cattaneo.
Bernoulli, 28(4), 2998–3022, 2022. [arXiv:1808.01398]

9. "Deep Neural Networks for Estimation and Inference," with Tengyuan Liang and Sanjog Misra.
Econometrica, 89(1), 181–213, 2021. [arXiv:1809.09953]

8. "Large Sample Properties of Partitioning-Based Series Estimators," with Matias Cattaneo and Yingjie Feng.
Annals of Statistics, 48(3), 1718–1741, 2020. [arXiv:1804.04916]

7. "Optimal Bandwidth Choice for Robust Bias Corrected Inference in Regression Discontinuity Designs," with Sebastian Calonico and Matias Cattaneo.
Econometrics Journal, 23(2), 192–210, 2020. [arXiv:1809.00236]

6. "Characteristic-Sorted Portfolios: Estimation and Inference," with Matias Cattaneo, Richard Crump, and Ernst Schaumburg.
Review of Economics and Statistics, 102(3), 531–551, 2020. [arXiv:1809.03584]

5. "Regression Discontinuity Designs Using Covariates," with Sebastian Calonico, Matias Cattaneo, and Rocío Titiunik.
Review of Economics and Statistics, 101(3), 442–451, 2019. [arXiv:1809.03904]

4. "On the Effect of Bias Estimation on Coverage Accuracy in Nonparametric Inference," with Sebastian Calonico and Matias Cattaneo.
Journal of the American Statistical Association, 113(522), 767–779, 2018. [arXiv:1508.02973]

3. "Robust Inference on Average Treatment Effects with Possibly More Covariates than Observations"
Journal of Econometrics, 189(1), 1–23, 2015. [arXiv:1309.4686]

2. "Optimal Convergence Rates, Bahadur Representation, and Asymptotic Normality of Partitioning Estimators," with Matias Cattaneo.
Journal of Econometrics, 174(2), 127–143, 2013. [pdf]

1. "Efficient Estimation of the Dose Response Function under Ignorability using Subclassification on the Covariates," with Matias Cattaneo.
Advances in Econometrics: Missing-Data Methods, vol. 27A, 93–127, 2011. [pdf]

Publications on Statistical Software

"`rdhte`: Learning Conditional Average Treatment Effects in RD Designs," with Sebastian Calonico, Matias Cattaneo, Filippo Palomba, and Rocío Titiunik.
Working paper. [pdf | package website]

"Binscatter Regressions," with Matias Cattaneo, Richard Crump, and Yingjie Feng.
Stata Journal, 25(1), 3–50, 2025. [pdf | package website]

"`lspartition`: Partitioning-Based Least Squares Regression," with Matias Cattaneo and Yingjie Feng.
R Journal, 12(1), 172-187, June 2020. [pdf | package website]

"`nprobust`: Nonparametric Kernel-Based Estimation and Robust Bias-Corrected Inference," with Sebastian Calonico and Matias Cattaneo.
Journal of Statistical Software, 91(8), 1-33, 2019. [pdf | package website]

"`rdrobust`: Software for Regression Discontinuity Designs," with Sebastian Calonico, Matias Cattaneo, and Rocío Titiunik.
Stata Journal, 17(2), 372–404, 2017. [pdf | package website]

Publications on Public Health & Medicine

"The effect of race, sex and insurance status on time-to-listing decisions for liver transplantation," with Bryce C. L., C. H. Chang, D. C. Angus, R. M. Arnold, and M. S. Roberts.
Journal of Transplantation, vol. 2010, Article ID 467976, 13 pages.

"Physical Activity, Health status, Anxiety and Risk of Hospitalization in Patients with Severe Chronic Obstructive Pulmonary Disease," with Benzo R., C. H. Chang, et. al.
Respiration, 80, 10–18, 2010.

"Is Survival Better at Hospitals with Higher 'End-of-Life' Treatment Intensity?," with Barnato A.E., C. H. Chang, et al.
Medical Care, 48, 125–132, 2010.

"Development and validation of measures of hospital 'end-of-life' treatment intensity," with Barnato A.E., C. H. Chang, et al.
Medical Care, 47, 1098–1105, 2009.

"Integrating health status and survival data: the palliative effect of lung volume reduction surgery," with Benzo R., C. H. Chang, et al.
American Journal of Respiratory and Critical Care Medicine, 180, 239–246, 2009.

"Sociodemographic differences in early access to liver transplantation services," with Bryce C. L., D. C. Angus, R. M. Arnold, C. H. Chang, et al.
American Journal of Transplantation, 9, 2092–2101, 2009.

"Organizational Determinants of Hospital End-of-Life Treatment Intensity," with Lin C. Y., J. R. Lave, et al.
Medical Care, 47, 524–530, 2009.

"Factors Associated with Alcohol Use, Depression, and Their Co-occurrence during Pregnancy," with Rubio, D. M., K. L. Kraemer, and N. L. Day.

Alcoholism: Clinical and Experimental Research, 32, 1543–1551, 2008.

"Prevalence of Urinary Tract Infection in Childhood: A Meta-Analysis," with Nader S., N. Morone, and J. E. Bost.
The Pediatric Infectious Disease Journal, 27, 287–375, 2008.

"Relationship between staff perceptions of hospital norms and hospital-level end-of-life treatment intensity," with Barnato, A. E., J. E. Bost, J. R. Lave, R. M. Arnold, D. M. Rubio, and D. C. Angus.
Journal of Palliative Medicine, 10, 1093–1100, 2007.

"Mapping FACT-P and EORTC QLQ-C30 to the EQ-5D Health Utility in Metastatic Hormone-Refractory Prostate Cancer Patients," with Wu, E. Q., P. Mulani, and D. Sleep.
Value in Health, 10, 408–414, 2007.

"Lifetime Costs of Patients with Clinically-Detected Uterine Fibroids: An Employer's Perspective," with Wu, E. Q., R. Ben-Hamadi, H. Birnbaum, J. Spalding, P. Stang, and K. E. Hartmann.
Drug Benefit Trends, 18, 405–410, 2006.

"Annual costs associated with diagnosis of uterine leiomyomata," with Hartmann, K. E., H. Birnbaum, R. Ben-Hamadi, E. Q. Wu, et al.
Obstetrics and Gynecology, 108, 930–937, 2006.

Software Packages

`rdhte`: Heterogeneous Effects in Regression Discontinuity Designs, for R and Stata.
package website | software article | related research: paper #14

`binsreg`: Binscatter Regressions, for R, Python, and Stata.
package website | software article | related research: papers #11 & #13

`lspartition`: Partitioning-Based Least Squares Regression, for R.
package website | software article | related research: papers #2 & #8

`nprobust`: Kernel-Based Estimation and Robust Bias-Corrected Inference, for R and Stata.
package website | software article | related research: papers #4 & #10

`rdrobust`: Software for Regression Discontinuity Designs, for R, Python, and Stata.
package website | software article | related research: papers #5 & #7

Refereeing

Refereeing in Economics and Econometrics:
Advances in Econometrics, American Economic Review, Econometric Reviews, Econometric Theory, Econometrica, Econometrics Journal, Econometrics Reviews, Economics Letters, International Economic Review, Journal of Applied Econometrics, Journal of Business & Economic Statistics, Journal of Comments and Replications in Economics, Journal of Econometrics, Journal of Financial Econometrics, Journal of Political Economy, Oxford Bulletin of Economics & Statistics, Quantitative Economics, Quarterly Journal of Economics, Review of Economic Studies, Review of Economics and Statistics.

Refereeing in Statistics and Machine Learning:
Annals of Applied Statistics, Annals of Statistics, Biometrics, Biometrika, Computational Statistics and Data Analysis, Entropy, IEEE Transactions on Artificial Intelligence, Journal of the American Statistical Association, Journal of Casual Inference, Journal of Machine Learning Research, Journal of Nonparametric Statistics, Journal of the Royal Statistical Society Series A & Series B, Journal of Statistical Planning and Inference, Metrika, Scandinavian Journal of Statistics, Statistica Sinica, Statistical Methods & Applications, Statistical Science.

Refereeing in Other Areas:
American Journal of Political Science, Historical Methods, Journal of Politics, Management Science, Marketing Science, Northwestern University Law Review, Operations Research, Political Science Research and Methods, Psychometrika, Science Advances, Statistics in Medicine.

Grant Reviewing:
National Science Foundation, European Research Council, Swiss National Science Foundation.

Service Activities

Program committee member, Econometric Society World Congress 2020.

Conference co-organizer, "Interactions: Bringing Together Econometrics and Applied Microeconomics", University of Chicago, September 15–16, 2017. [website]

Econometrics and statistics seminar co-organizer, 2017 – 2020.

Presentations & Invited Conferences

2026: IAAE invited session at Annual ASSA meeting,

2025: American Causal Inference Conference, London School of Economics, University of Warwick.

2024: Conference in Applied Econometrics using Stata-France (Keynote Speaker), Arizona State University, Caltech, Indiana University, Notre Dame Statistics, Northwestern University, Purdue, UCSB Statistics, UC Los Angeles, UC San Diego,

2023: North Carolina State University, University of Illinois at Urbana-Champaign, University of Maryland.

2022: American Economic Association Annual Meeting, Canadian Economics Association Annual Meeting, Columbia University, Computational Social Science Workshop, Emory, Georgia Tech, New York University, North American Winter Meeting of the Econometric Society, Philadelphia Federal Reserve, University College London, UC Riverside, University of Colorado at Boulder, University of North Carolina, University of Pennsylvania.

2021: Alberta School of Business, Amazon Tech Talk, Arizona State research group, Bonn-Mannheim online econometrics seminar, Causal Data Science Meeting, Computational and Methodological Statistics (CMStatistics 2021), Cornell Tech research group, Cowles Foundation Conference on Econometrics, Institute for Statistics and Mathematics at Vienna University of Economics and Business, Latin American Meeting of the Econometric Society, Notre Dame, Stanford Institute of Theoretical Economics, Université du Québec à Montréal, University of Amsterdam Data Science Workshop, UC Santa Barbara.

2020: Econometric Society World Congress, Gary Chamberlain Online Seminar in Econometrics [video], Mind and Machine Intelligence Conference (UC Santa Barbara), Philadelphia Federal Reserve, University of Wisconsin.

2019: AI Innovations Forum (UNC Kenan Institute/SAS), CEME Conference for Young Econometricians (UCLA), CIREQ Conference on the Bootstrap, Harvard/MIT, Interactions (CEME/NSF), North American Summer Meeting of the Econometric Society (University of Washington), Northwestern University, Princeton Operations Research and Financial Engineering (ORFE) S. S. Wilks Memorial Seminar in Statistics, Stanford University, UC Berkeley.

2018: Conference of the International Association for Applied Econometrics (Montreal), Inference in Nonstandard Problems (CEME/NSF, Duke), UC Irvine, UC Los Angeles, UC San Diego, University of Michigan.

2017: ASSA/AEA Meetings (Chicago), Columbia University, Vanderbilt University.

2016: Advances in Econometrics (University of Michigan), Cowles Foundation Conference on Econometrics, Grinnell College, Iowa State, Inference in Nonstandard Problems (CEME/NSF, Duke), Interactions (CEME/NSF, Northwestern), Joint Statistical Meetings.

2015: CREST Statistics, Interactions (CEME/NSF, University of Chicago), London School of Economics, Ohio State University, Toulouse School of Economics, University of Bristol, University College London, University of Wisconsin.

2014: Boston University, University of Chicago, Chicago Booth, Cornell, Cowles Foundation Conference on Econometrics, Harvard Kennedy School, Interactions (CEME/NSF, University of Chicago), Michigan State University, Northwestern, Princeton, Stanford, UC Los Angeles.

2013 & prior: Advances in Econometrics (Southern Methodist University), Causal Inference in Education Research (University of Michigan), Econometric Society North American Summer Meeting (USC), University of Michigan, Midwest Econometrics Group (Indiana University), Notre Dame.

Awards & Honors

Society for Political Methodology's Best Statistical Software Award, 2017.

John E. Jeuck Faculty Fellow, 2016-2017.

Richard N. Rosett Faculty Fellow, 2015-2016.

Lawrence Klein Fellowship, Summer 2014.

Haber Fellowship, Fall 2013.

Rackham Graduate School Dissertation Fellowship, Winter 2013.

Rackham Graduate School Travel Grant: 2011, 2012, & 2013.

National Institute of Aging Graduate Student Traineeship, UofM Population Studies: 2008 & 2009.

Student Abstract Awardee, *Public Health Symposium*, University of Michigan, 2008.

Personal Information

United States Citizen.

Born 1981.

Married with two children (born 2011 and 2013).