

Curriculum Vitae

Jasjeet Singh Sekhon

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Academic Positions

Eugene Meyer Professor, Yale University

Department of Statistics & Data Science

Department of Political Science

July 2020 –

Robson Professor of Political Science and Statistics, UC Berkeley, July 2014 – June 2021

Senior Fellow, Berkeley Institute of Data Science, 2014 – 2021

Professor, Travers Department of Political Science and Department of Statistics, UC Berkeley

July 2012 – June 2014

Associate Professor, Department of Statistics, UC Berkeley

Sept. 2011 – July 2012

Associate Professor, Travers Department of Political Science, UC Berkeley

July 2005 – July 2012

Associate Professor, Department of Government, Harvard University

Jan. 2004 – July 2005

Assistant Professor, Department of Government, Harvard University

Jan. 1999 – Dec. 2003

Education

Ph.D. Cornell University, Ithaca, NY, 1999.

B.A. (Honours). University of British Columbia, Vancouver, Canada, 1993.

Other Employment

Chief Scientist and Head of AI/ML, Bridgewater Associates, 2023–

Head of Advanced Data Science and Machine Learning, Bridgewater Associates, 2019– 2023

Publications

Articles

- “Same Root Different Leaves: Time Series and Cross-Sectional Methods in Panel Data” (with Dennis Shen, Peng Ding, and Bin Yu). *Econometrica* (2023).
- “ACTION++: Improving Semi-supervised Medical Image Segmentation with Adaptive Anatomical Contrast.” (with Chenyu You, Weicheng Dai, Yifei Min, Lawrence Staib, and James S. Duncan). MICCAI 2023.
- “Linear aggregation in tree-based estimators” (with Künzel, Sören R., Theo F. Saarinen, and Edward W. Liu) *Journal of Computational and Graphical Statistics* (2022): 1-48.
- “Time-uniform, Nonparametric, Nonasymptotic Confidence Sequences” (with Howard, Steven R., Aaditya Ramdas, and Jon McAuliffe). *Annals of Statistics*. 49.2 (2021): 1055-1080.
- “Inference on a New Class of Sample Average Treatment Effects” (with Yotam Shem-Tov). *Journal of the American Statistics Association*. 116.534 (2021): 798-804.
- “Time-uniform Chernoff Bounds via Nonnegative Supermartingales” (with Howard, Steven R., Aaditya Ramdas, and Jon McAuliffe). *Probability Surveys*. 17: 257–317. 2020.
- “Overlap in High-Dimensional Observational Studies” (with Alex D’Amour, Peng Ding, Avi Feller, and Lihua Lei). *Journal of Econometrics*. 2020.
- “Active Matrix Factorization for Surveys” (with Chelsea Zhang, Sean Taylor, and Curtiss Cobb). *Annals of Applied Statistics*. 1182-1206. 2020
- “Generalized Full Matching” (with Fredrik Sävje and Michael Higgins). *Political Analysis*. forthcoming
- “Shrinkage Estimators in Online Experiments” (with Drew Dimmery and Eytan Bakshy). *KDD*. 2019.
- “Meta-learners for Estimating Heterogeneous Treatment Effects using Machine Learning” (with Peter Bickel, Sören Künzel, and Bin Yu). *Proceedings of the National Academy of Sciences*. 116 (10) 4156–4165. 2019.
- “Transfer Learning for Estimating Causal Effects using Neural Networks” (with Sören Künzel, Bradly Stadie, Nikita Vemuri, Varsha Ramakrishnan, and Pieter Abbeel). *INFORMS*. 2019.
- “Meta-learners for Estimating Heterogeneous Treatment Effects using Machine Learning” (with Peter Bickel, Sören Künzel, and Bin Yu). *INFORMS*. 2019.
- “CausalToolBox: Estimator Stability for Heterogenous Treatment Effects” (with Sören Künzel and Simon Walter). *Observational Studies*. Forthcoming.
- “Worth Weighting? How to Think About and Use Sample Weights in Survey Experiments” (with Luis Campos, Luke Miratrix, and Alexander Theodoridis). *Political Analysis*. 26(3): 275–291. 2018. Winner of the *Warren Miller Prize*.

- “The Design of Field Experiments with Survey Outcomes: A framework for selecting more efficient, robust, and ethical designs” (with David Broockman and Josh Kalla). *Political Analysis*. 25(4): 435-464. 2017.
- “On Interpreting the Regression Discontinuity Design as a Local Experiment” (with Rocío Titiunik). *Advances in Econometrics*. 1–28. 2017.
- “Improving Massive Experiments with Threshold Blocking” (with Mike Higgins and Fredrik Sävje). *Proceedings of the National Academy of Sciences*. 113 (27) 7369–7376. 2016.
- “Cause or Effect? Turnout in Majority-Minority Districts” (with John A. Henderson and Rocío Titiunik). *Political Analysis*. 24 (3): 404–412. 2016.
- “Lasso Adjustments of Treatment Effect Estimates in Randomized Experiments” (with Adam Bloniarz, Hanzhong Liu, Cun-Hui Zhang, and Bin Yu). *Proceedings of the National Academy of Sciences*. 113 (27) 7383–7390. 2016.
- “Estimating Causal Effects: Considering Three Alternatives to Difference-in-Differences Estimation” (with O’Neill, Stephen, Noémi Kreif, Richard Grieve, and Matthew Sutton). *Health Services and Outcomes Research Methodology*. 16 1–21. 2016.
- “Understanding Regression Discontinuity Designs As Observational Studies” (with Rocío Titiunik). *Observational Studies*. 2: 174-182. 2016.
- “Reliance on ‘Real World’ Data Threatens Patient Outcomes: The Reform of the Cancer Drugs Fund” (with Richard Grieve et al.). *British Medical Journal*. 354. 2016.
- “A Comparison of Alternative Strategies for Choosing Control Populations in Observational Studies” (with Adam Steventon and Richard Grieve). *Health Services and Outcomes Research Methodology*. 15 (3) 157—181. 2015.
- “From Sample Average Treatment Effect to Population Average Treatment Effect on the Treated: Combining experimental with observational studies to estimate population treatment effects” (with Erin Hartman, Richard Grieve, and Roland Ramsahai). *Journal of the Royal Statistical Society, Series A*. 178 (3) 757–778. 2015
- “Evaluating Treatment Effectiveness under Model Misspecification: A Comparison of Targeted Maximum Likelihood Estimation with Bias-Corrected Matching” (with Noémi Kreif, Susan Gruber, Rosalba Radice, and Richard Grieve). *Statistical Methods in Medical Research*. doi:10.1177/0962280214521341. 2014.
- “Adjusting Treatment Effect Estimates by Post-Stratification in Randomized Experiments” (with Luke W. Miratrix and Bin Yu). *Journal of the Royal Statistical Society, Series B (Methodology)*. 75 (2): 369–396. 2013.
- “Genetic Matching for Estimating Causal Effects: A General Multivariate Matching Method for Achieving Balance in Observational Studies” (with Alexis Diamond). *Review of Economics and Statistics*. 95 (3): 932–945. 2013. Winner of the *Gosnell Prize for Excellence in Political Methodology*.

- “Cemented, Cementless and Hybrid Prostheses for Total Hip Replacement: A Cost-Effectiveness Analysis” (with Pennignton, Grieve, Gregg, Black, and vanderMeulen). *British Medical Journal*. 346 (2). 2013.
- “Regression-Adjusted Matching and Double-Robust Methods for Estimating Average Treatment Effects in Health Economic Evaluation” (with Noémi Kreif, Richard Grieve, and Rosalba Radice). *Health Services and Outcomes Research Methodology* 13 (2–4): 174–202. 2013.
- “When Natural Experiments Are Neither Natural Nor Experiments” (with Rocío Titiunik). *American Political Science Review*. 106 (1): 35–57. 2012. Winner of the *Robert H. Durr Award*.
- “Methods for Estimating Subgroup Effects in Cost-Effectiveness Analyses that use Observational Data” (with Noemi Kreif, Richard Grieve, Zia Sadique, Rosalba Radice, and Roland Ramsahai). *Medical Decision Making*. 32 (6): 750–763. 2012.
- “A Matching Method for Improving Covariate Balance in Cost-Effectiveness Analyses” (with Richard Grieve). *Health Economics*. 21 (6): 695–714. 2012.
- “Evaluating Treatment Effectiveness in Patient Subgroups: A Comparison of Propensity Score Methods with an Automated Matching Approach” (with Radice, Ramsahai, Grieve, Kreif, and Sadique). *International Journal of Biostatistics*. 8 (1): 2012. DOI: 10.1515/1557-4679.1382
- “Elections and the Regression-Discontinuity Design: Lessons from Close U.S. House Races, 1942–2008” (with Devin Caughey). *Political Analysis*. 19 (4): 385–408. 2011. *Editors’ Choice Article*. Winner of the *Warren Miller Prize*.
- “Referral to an Extracorporeal Membrane Oxygenation Center and Mortality Among Patients With Severe 2009 Influenza A (H1N1)” (with Moronke Noaha, Giles Peek, et al.). *Journal of the American Medical Association*. 306 (15): 1659–1668. 2011.
- “Extending Iterative Matching Methods: An Approach to Improving Covariate Balance that Allows Prioritisation” (with Roland Ramsahai and Richard Grieve). *Health Services and Outcomes Research Methodology*. 11 (3–4): 95–114. 2011.
- “The Relative Performance of Targeted Maximum Likelihood Estimators” (with Kristin Porter, Susan Gruber, and Mark J. van der Laan). *International Journal of Biostatistics* 7 (1). 2011.
- “Multivariate and Propensity Score Matching Software with Automated Balance Optimization: The Matching package for R.” *Journal of Statistical Software* 42 (7): 1–52. 2011.
- “Genetic Optimization Using Derivatives: The rgenoud package for R” (with Walter R. Mebane, Jr.). *Journal of Statistical Software* 42 (11): 1–26. 2011. Winner of the *Society for Political Methodology Software Award*.
- “Propensity-Score-Based Estimators and C-TMLE” (with Susan Gruber, Kristin Porter, and Mark J. van der Laan). In M. J. van der Laan and S. Rose, eds., *Targeted Learning: Prediction and Causal Inference for Observational and Experimental Data*, Chapter 21. Springer: New York. 2011.
- “Endogeneity in Probit Response Models” (with David A. Freedman). *Political Analysis* 18 (2): 138–150. 2010

- “Opiates for the Matches: Matching Methods for Causal Inference.” *Annual Review of Political Science* 12: 487–508. 2010.
- “Evaluating Health Care Programmes by Combining Cost with Quality of Life Measures: A Case Study Comparing Capitation and Fee for Service” (with Richard Grieve, Teh-wei Hu and Joan Bloom). *Health Services Research* 43 (4): 1204–1222. 2008.
- “The Neyman-Rubin Model of Causal Inference and Estimation via Matching Methods.” In Box-Steffensmeier, Janet, Henry Brady, and David Collier, eds., *The Oxford Handbook of Political Methodology* pages 271–299. 2008.
- “Black Candidates and Black Voters: Assessing the Impact of Candidate Race on Uncounted Vote Rates” (with Michael C. Herron). *Journal of Politics* 67 (1). 2005.
- “Steroid-Responsive (Autoimmune?) Sclerosing Cholangitis” (with Raymond T. Chung, Mark Epstein, and Marshall M. Kaplan). *Digestive Diseases and Sciences* 50 (10): 1838–1843. 2005.
- “Quality Meets Quantity: Case Studies, Conditional Probability and Counterfactuals.” *Perspectives on Politics* 2 (June): 281-293. 2004.
- “Robust Estimation and Outlier Detection for Overdispersed Multinomial Models of Count Data” (with Walter R. Mebane, Jr.). *American Journal of Political Science* 48 (April): 391–410. 2004.
- “Overvoting and Representation: An Examination of Overvoted Presidential Ballots in Broward and Miami-Dade Counties” (with Michael C. Herron). *Electoral Studies* 22 (1): 21-47. 2003.
- “Coordination and Policy Moderation at Midterm” (with Walter R. Mebane, Jr.). *American Political Science Review* 96 (1): 141-157. 2002.
- “The Butterfly Did It: The Aberrant Vote for Buchanan in Palm Beach County, Florida” (with Jonathan N. Wand, Kenneth W. Shotts, Walter R. Mebane, Jr., Michael C. Herron, and Henry E. Brady). *American Political Science Review* 95 (4): 793-810. 2001.
- “Law and Data: The Butterfly Ballot Episode” (with Henry E. Brady, Michael C. Herron, Walter R. Mebane, Jr., Kenneth W. Shotts, and Jonathan N. Wand). *PS: Political Science & Politics* 34 (1): 59-69. 2001. A revised version of this paper appears in *The Longest Night: Polemics and Perspectives on Election 2000*, Arthur J. Jacobson and Michel Rosenfeld, eds. Berkeley: University of California Press. 2002.
- “Genetic Optimization Using Derivatives: Theory and Application to Nonlinear Models” (with Walter R. Mebane, Jr.). *Political Analysis* 7: 189-213. 1998.
- “Ethnicity or Class? The Canadian Communist Party’s Electorate” (with Jean A. Laponce). *Nationalism and Ethnic Politics* Summer: 270-283. 1995.

Books

Editor along with David Collier and Philip Stark of *Statistical Models and Causal Inference: David Freedman’s Dialogue with the Social Sciences*. Cambridge University Press. 2010.

Other Publications

“Causality” (with F. Daniel Hidalgo). In Bertrand Badie, Dirk Berg-Schlosser, Leonardo Morlino, eds., *International Encyclopedia of Political Science*. Sage Publications, Inc. 2011.

“Statistics, False Inferences, and Unacknowledged Uncertainties in Health Care Reform.” *Significance* September, 2010.

“Data Troubles: Explaining Discrepancies between Official Votes and Exit Polls in the 2004 Presidential Election.” *Chance* 19(4). 2006

“Queuing to Vote in Franklin County, Ohio in 2004.” *Chance* 19(4). 2006

“The Art of Benchmarking: Evaluating the Performance of R on Linux and OS X.” *The Political Methodologist* 14(1). 2006.

Correspondence: “Costs of Health Care Administration in the United States and Canada.” *New England Journal of Medicine* 349 (Dec 18): 2461-2462. 2003.

Correspondence: “Harnois et al.: Study of High-Dose Ursodeoxycholic Acid.” *American Journal of Gastroenterology* 97 (1): 202-203. 2002.

Statistical Software

forestry: Random Forests, Linear Trees, and Gradient Boosting for Inference and Interpretability. 2018–ongoing.

<https://github.com/forestry-labs/Rforestry>

causalToolbox: Provides functions for estimating heterogeneous treatment effects. 2018–ongoing.

<https://github.com/forestry-labs/causalToolbox>

Matching: Multivariate and Propensity Score Matching with Balance Optimization. 2004–ongoing.

<http://cran.r-project.org/package=Matching>

rgenoud: R GENetic Optimization Using Derivatives (with Walter R. Mebane, Jr.). 2002–ongoing.

<http://cran.r-project.org/package=rgenoud>

quickmatch: Quick Generalized Full Matching in R 2018.

<http://cran.r-project.org/package=quickmatch>

quickblock: Quick Threshold Blocking 2018.

<http://cran.r-project.org/package=quickblock>

MultinomRob: Multinomial Robust Estimation (with Walter R. Mebane, Jr.).

2004–2013.

<http://cran.r-project.org/package=multinomRob>

GENetic optimization and Bootstrapping of Linear Structures (GENBLIS) (with Walter R. Mebane, Jr.).

1997.

Grants, Honors, and Awards

Fellow of the American Statistics Association, 2021.

Fellow of the Society for Political Methodology, 2019.

The 2019 *Warren Miller Prize* for “Worth Weighting? How to Think About and Use Sample Weights in Survey Experiments.”

NSF RTG: Advancing Machine Learning - Causality and Interpretability, 2018–

Office of Naval Research: Mathematical Data Science Program, 2018–

Office of Naval Research: Mathematical Data Science Program, 2015–2018

BIDS Co-PI for Moore/Sloan Data Science Environment, 2013–

The 2012 *Society for Political Methodology Software Award* for “Genetic Optimization Using Derivatives.”

The 2012 *Warren Miller Prize* for “Elections and the Regression-Discontinuity Design: Lessons from Close U.S. House Races, 1942–2008.”

Co-PI National Science Foundation, #1155104, 2012. Project title: “The American Mass Public in the Early Cold War Years.”

The 2009 *Robert H. Durr Award* for “the best paper applying quantitative methods to a substantive problem” for “Exploiting Tom DeLay: A New Method for Estimating Incumbency Advantage and the Effect of Candidate Ethnicity on Turnout.”

The 2005 *Gosnell Prize for Excellence in Political Methodology* which is awarded for the best work in political methodology presented at any political science conference during the preceding year by the Political Methodology Section of the American Political Science Association. Awarded for the paper entitled “Genetic Matching for Estimating Causal Effects.”

The 2004 *Robert H. Durr Award* for “the best paper applying quantitative methods to a substantive problem” for “The Varying Role of Voter Information Across Democratic Societies.”

Co-PI National Science Foundation, #0214965, June 2002–April 2005. Project title: “Strategic Coordination Among American Voters.”.

Esman prize for the best Ph.D. dissertation, Cornell University (Department of Government), 1999.

Canadian Social Sciences and Humanities Research Council Doctoral Fellowship, 1995-1998. Grant number 752-95-0380.

Mellon Graduate Fellowship, 1997, 1996, 1993-1994.

Wesbrook Scholar of the University of British Columbia, 1993.

Professional Activities

Associate Editor: *Journal of the American Statistical Association* T&M (2014–2017), *Statistics and Public Policy* (2014–2018), and *Political Analysis* (2012–2015).

Founding co-editor of *Journal of Causal Inference* with Judea Pearl, Maya Petersen, and Mark van der Laan

Reviewer (partial list): *American Journal of Political Science*, *American Politics Research*, *American Political Science Review*, *Annals of Applied Statistics*, *Annals of Statistics*, *Artificial Intelligence and Statistics*, *Biometrics*, *Biometrika*, Cambridge University Press, Chapman & Hall/CRC Press, *Conference on Neural Information Processing Systems*, *Electoral Studies*, *IEEE Transactions on Information Forensics and Security*, *International Journal of Biostatistics*, *Journal of the American Statistical Association*, *Journal of Business and Economic Statistics*, *Journal of Politics*, *Journal of Machine Learning*, *Journal of Royal Statistical Society*, *Journal of Statistical Software*, John Wiley & Sons, *Legislative Studies Quarterly*, *Medical Decision Making*, National Science Foundation, *Operations Research*, *Perspectives on Politics*, *Political Analysis*, *Political Behavior*, *Public Opinion Quarterly*, *Review of Economics and Statistics*, *Quarterly Journal of Political Science*, Sage Publications, *Social Networks*, *Social Science Quarterly*, *Sociological Methods and Research*, Springer, *Statistics in Biopharmaceutical Research*, *Statistics in Medicine*, *Statistics and Public Policy*, *Statistical Science*