

GRA 6845 – Syllabus

In the reading list below, required readings are marked with a star (**); recommended readings are marked with (*); [S] indicate student presentations; [G] indicate guest lectures, and those with [A] are assignments.

Lecture 1: Introduction

- * Athey, S. 2017. Beyond prediction: Using big data for policy problems. *Science*, 355(6324), 483-485.
- * Ashworth, S., Berry, C.R. and De Mesquita, E.B., 2015. All Else Equal in Theory and Data (Big or Small). *PS: Political Science & Politics*, 48(01), 89-94.
- * Einav, L., and Levin, J. 2014. Economics in the age of big data. *Science*, 346(6210), 1243089.
- ** Shiffrin, R.M., 2016. Drawing causal inference from Big Data. *Proceedings of the National Academy of Sciences*, 113(27), 7308-7309.
- ** Titiunik, R., 2015. Can big data solve the fundamental problem of causal inference? *PS: Political Science & Politics*, 48(01), 75-79.
- * Varian, H R. 2016. Causal inference in economics and marketing *Proceedings of the National Academy of Sciences*, 113(27), 7310-7315.
- * The Royal Swedish Academy of Science, 2021. Answering causal questions using observational data <https://www.nobelprize.org/uploads/2021/10/advanced-economicsciencesprize2021.pdf>

Lecture 2: The potential outcome framework

- ** Angrist, J.D. and Pischke, J.S., 2008. *Mostly harmless econometrics: An empiricist's companion*. Princeton university press. Chapter 2.
- * Cunningham, S., 2021. *Causal Inference: The Mixtape*. Yale University Press. Chapter 4, <https://mixtape.scunning.com/>
- ** Imbens, G.W. and Rubin, D.B. 2015 *Causal Inference for Statistics, Social, and Biomedical Sciences: An Introduction*. Chapter 1-2.

Lecture 3 & 4: Experimental design and analysis

- * Angrist, J.D. and Pischke, J.S., 2008. *Mostly harmless econometrics: An empiricist's companion*. Princeton university press. Chapter 3.
- [S] [A] Bertrand, M., and Mullainathan, S. 2004. Are Emily and Greg More Employable than Lakisha and Jamal? A Field Experiment on Labor Market Discrimination. *The American Economic Review*, 94(4), 991-1013.
- [S] Cappelen, A.W., Charness, G., Ekström, M., Gneezy, U. and Tungodden, B., 2023. Exercise improves academic performance. *Journal of Political Economy*, forthcoming.
- [S] Chattopadhyay, R. and Duflo, E., 2004. Women as policy makers: Evidence from a randomized policy experiment in India. *Econometrica*, 72(5), pp.1409-1443.
- * Deaton, A. and Cartwright, N., 2018. *Understanding and Misunderstanding Randomized Controlled Trials Social Science & Medicine*, 210, 2-21.

** Gerber, A.S. and Green, D.P., 2012. *Field experiments: Design, analysis, and interpretation*. WW Norton. Chapter 1-4.

[S] Gerber, A. S., Green, D. P., and Larimer, C. W. 2008. Social pressure and voter turnout: Evidence from a large-scale field experiment. *American Political Science Review*, 102(1), 33-48.

* Levitt, S.D. and List, J.A., 2009. Field experiments in economics: the past, the present, and the future. *European Economic Review*, 53(1), 1-18.

* Lewis, R.A. and Reiley, D.H., 2014. Online ads and offline sales: measuring the effect of retail advertising via a controlled experiment on Yahoo! *Quantitative Marketing and Economics*, 12(3), 235-266.

Lecture 5 & 6: Noncompliance

* Angrist, J. 1990. Lifetime Earnings and the Vietnam Era Draft Lottery: Evidence from Social Security Administrative Records. *The American Economic Review*, 80(3), 313-336.

[S][A] Angrist, J., and Evans, W. 1998. Children and Their Parents' Labor Supply: Evidence from Exogenous Variation in Family Size. *The American Economic Review*, 88(3), 450-477.

* Angrist, J.D. and Pischke, J.S., 2008. *Mostly harmless econometrics: An empiricist's companion*. Princeton university press. Chapter 4.

* Cunningham, S., 2021. *Causal Inference: The Mixtape*. Yale University Press. Chapter 7, <https://mixtape.scunning.com/>

** Gerber, A.S. and Green, D.P., 2012. *Field experiments: Design, analysis, and interpretation*. WW Norton. Chapter 5-6.

[S] Gonzalez-Navarro, M., and Quintana-Domeque, C. 2016. Paving streets for the poor: Experimental analysis of infrastructure effects. *Review of Economics and Statistics*, 98(2), 254-267.

* Imbens, G. W. 2010. Better LATE than nothing: Some comments on Deaton (2009) and Heckman and Urzua (2009). *Journal of Economic Literature*, 48(2), 399-423.

[S] Ketel, N., Leuven, E., Oosterbeek, H., and van der Klaauw, B. 2016. The Returns to Medical School: Evidence from Admission Lotteries. *American Economic Journal: Applied Economics*, 8(2), 225-254.

[S] Kling, J. R., Liebman, J. B., and Katz, L. F. 2007. Experimental analysis of neighborhood effects. *Econometrica*, 75(1), 83-119.

Lecture 7: Treatment effect heterogeneity

[S] Blake, T., Nosko, C., and Tadelis, S. 2015. Consumer heterogeneity and paid search effectiveness: A large-scale field experiment. *Econometrica*, 83(1), 155-174

* Cools, S., Fiva, J. H., and Kirkebøen, L. J. (2015). Causal effects of paternity leave on children and parents. *The Scandinavian Journal of Economics*, 117(3), 801-828.

** Gerber, A.S. and Green, D.P., 2012. *Field experiments: Design, analysis, and interpretation*. WW Norton. Chapter 9.

[S] Levitt, S.D., List, J.A., Neckermann, S. and Nelson, D., 2016. Quantity discounts on a virtual good: The results of a massive pricing experiment at King Digital Entertainment. *Proceedings of the National Academy of Sciences*, 113(27), 7323-7328.

* Taddy, M. 2019. Business Data Science: Combining Machine Learning and Economics to Optimize, Automate, and Accelerate Business Decisions. McGraw-Hill Education. Chapter 3.

Lecture 8: False positives, p-hacking and publication bias

* Brodeur, A., Cook, N., & Heyes, A. G. (2020). Methods matter: P-hacking and causal inference in economics, *American Economic Review*, 110(11), 3634-3660.

* Brodeur, A., Lé, M., Sangnier, M. and Zylberberg, Y., 2016. Star wars: The empirics strike back. *American Economic Journal: Applied Economics*, 8(1), 1-32.

* Camerer, C.F., Dreber, A., Forsell, E., Ho, T.H., Huber, J., Johannesson, M., Kirchler, M., Almenberg, J., Altmejd, A., Chan, T. and Heikensten, E., 2016. Evaluating replicability of laboratory experiments in economics. *Science*, 351(6280), 1433-1436.

[S] Fowler, A. and Montagnes, B.P., 2015. College football, elections, and false-positive results in observational research. *Proceedings of the National Academy of Sciences*, 112(45), 13800-13804.

* Fowler, A. and Montagnes, B.P., 2015. Reply to Healy et al.: Value of ex ante predictions and independent tests for assessing false-positive results. *Proceedings of the National Academy of Sciences*, 112(48), E6592-E6592.

** Gelman, A. and Loken, E., 2013. The garden of forking paths: Why multiple comparisons can be a problem, even when there is no "fishing expedition" or "p-hacking" and the research hypothesis was posited ahead of time. *Department of Statistics, Columbia University*.

* Gerber, Alan S., and Neil Malhotra. 2008. "Do Statistical Reporting Standards Affect What Is Published? Publication Bias in Two Leading Political Science Journals." *Quarterly Journal of Political Science* 3: 313-26.

[S] Healy, A.J., Malhotra, N. and Mo, C.H., 2010. Irrelevant events affect voters' evaluations of government performance. *Proceedings of the National Academy of Sciences*, 107(29), 12804-12809.

* Healy, A., Malhotra, N. and Mo, C.H., 2015. Determining false-positives requires considering the totality of evidence. *Proceedings of the National Academy of Sciences*, 112(48), E6591-E6591.

* Imbens, G.W., 2021. Statistical significance, p-values, and the reporting of uncertainty. *Journal of Economic Perspectives*, 35(3), pp.157-74.

** Simmons, J.P., Nelson, L.D. and Simonsohn, U., 2011. False-positive psychology undisclosed flexibility in data collection and analysis allows presenting anything as significant. *Psychological science*, 22(11), 1359-1366.

* Tong, C. 2019. Statistical Inference Enables Bad Science; Statistical Thinking Enables Good Science. *The American Statistician*, 73(sup1), 246-261.

Lecture 9: Regression discontinuity designs

[S][A] Buser, Thomas. 2015. "The Effect of Income on Religiousness." *American Economic Journal: Applied Economics*, 7 (3): 178-95.

* Cohen, P., Hahn, R., Hall, J., Levitt, S. and Metcalfe, R., 2016. *Using Big Data to Estimate Consumer Surplus: The Case of Uber* (No. w22627). National Bureau of Economic Research.

* Cunningham, S., 2021. *Causal Inference: The Mixtape*. Yale University Press. Chapter 6, <https://mixtape.scunning.com/>

* Dell, M., and Querubin, P. 2017. Nation building through foreign intervention: Evidence from discontinuities in military strategies. *The Quarterly Journal of Economics*, 133(2), 701-764.

* Fiva, J. H. and Røhr, H. L. 2018. Climbing the ranks: Incumbency effects in party-list systems. *European Economic Review* 101, 142-156.

[S] Hoekstra, Mark, Steven L. Puller, and Jeremy West. 2017. "Cash for Corollas: When Stimulus Reduces Spending." *American Economic Journal: Applied Economics*, 9(3): 1-35.

** Lee, D.S. and Lemieux, T., 2010. Regression discontinuity designs in economics. *Journal of economic literature*, 48(2), 281-355.

Lecture 10: Supplementary analysis and replication

** Athey, S, and Imbens, G. W. 2017. The State of Applied Econometrics: Causality and Policy Evaluation. *Journal of Economic Perspectives*, 31(2): 3-32.

* Egger, P. and Koethenbueger, M., 2010. Government spending and legislative organization: Quasi-experimental evidence from Germany. *American Economic Journal: Applied Economics*, 2(4), 200-212.

* Eggers, A.C., Freier, R., Grembi, V. and Nannicini, T., 2018. Regression discontinuity designs based on population thresholds: Pitfalls and solutions. *American Journal of Political Science*, 62 (1), 210-229.

[G] Kotsadam, A., Reme, B.-A., and Røgeberg, O. 2020. The Effects of Income Transparency on Well-Being: Evidence from a Natural Experiment: Comment. Unpublished manuscript.

[G] Kjelsrud, A., Kotsadam, A., and Røgeberg, O. (2023). Cooperative Property Rights and Development Evidence from Land Reform in El Salvador: A Comment. *Journal of Political Economy*, forthcoming.

[G] Montero, E. (2022). Cooperative property rights and development: Evidence from land reform in El Salvador. *Journal of Political Economy*, 130(1), 48-93.

[G] Perez-Truglia, R. 2020. The Effects of Income Transparency on Well-Being: Evidence from a Natural Experiment. *American Economic Review*, 110 (4): 1019-54.

Lecture 11 & 12: High-dimensional data: Measurement, prediction, and causal inference

[S] Altenburger, K. M.; Ho, D. E. 2019. Is Yelp actually cleaning up the restaurant industry? A re-analysis on the relative usefulness of consumer reviews. In: *The World Wide Web Conference*. p. 2543-2550.

[S] [A] Brie, E., and Dufresne, Y. 2020. Tones from a Narrowing Race: Polling and Online Political Communication during the 2014 Scottish Referendum Campaign. *British Journal of Political Science*, 50(2), 497-509.

[S] Borgschulte, M., Guenzel, M., Liu, C. and Malmendier, U., 2021. *CEO stress, aging, and death*. Unpublished manuscript.

<https://drive.google.com/file/d/1hyQuQ5qecltYE6LcKXPhpcR5ie5wldpA/view>

* Dietrich, B. J., Enos, R. D., and Sen, M. 2019. Emotional arousal predicts voting on the US Supreme Court. *Political Analysis*, 27(2), 237-243.

[S] Fiva, J.H., Nedregård, O. and Øien, N., 2023. Group Identities and Parliamentary Debates. Unpublished manuscript <https://www.jon.fiva.no/docs/FivaNedregardOien.pdf>

** Gentzkow, M., Kelly, B. T., and Taddy, M. 2019. Text as Data, *Journal of Economic Literature*, 57(3), 535-574.

* Gentzkow, M., Shapiro, J. M., and Taddy, M. 2019. Measuring Group Differences in High-Dimensional Choices: Method and Application to Congressional Speech. *Econometrica*, 87(4), 1307-1340.

* Ginsberg, J., Mohebbi, M. H., Patel, R. S., Brammer, L., Smolinski, M. S., and Brilliant, L. 2009. Detecting influenza epidemics using search engine query data. *Nature*, 457(7232), 1012.

* Henderson, J. V., Storeygard, A., and Weil, D. N. 2012. Measuring economic growth from outer space. *The American Economic Review*, 102(2), 994-1028.

[S] Kang, J.S., Kuznetsova, P., Luca, M. and Choi, Y., 2013. Where Not to Eat? Improving Public Policy by Predicting Hygiene Inspections Using Online Reviews. In *EMNLP* (1443-1448).

** Kleinberg, J., Ludwig, J., Mullainathan, S., and Obermeyer, Z. 2015. Prediction policy problems. *American Economic Review*, 105(5), 491-95.

* Lazer, D., Kennedy, R., King, G., and Vespignani, A. 2014. The parable of Google Flu: traps in big data analysis. *Science*, 343(6176), 1203-1205.

* Taddy, M. 2019. Business Data Science: Combining Machine Learning and Economics to Optimize, Automate, and Accelerate Business Decisions. McGraw-Hill Education.

* Torres, M. 2018. Give me the full picture: Using computer vision to understand visual frames and political communication. Working paper.