

POL 8160: Causal Inference and Experimental Methods

Friday, 1:25 PM – 3:20 PM. Social Sciences 1383

Instructor: C. Daniel Myers (cdmyers@umn.edu)

Office: 1409 Social Science

Office Hours:

- **Monday 2:30-4:15 (1309 Social Sciences or Zoom)**
- **Tuesday 12:30-1:30 (Zoom Only)**
- **Friday 3:45-4:45 (1309 Social Sciences or Zoom)**

Course and Class Structure

Why are experiments useful for making causal inferences about the social world? This course will explore the statistical basis for randomized experiments and provide students with a deeper understanding of how this affects experimental design and the interpretation of results from experiments. We will start by introducing the counterfactual approach to thinking about causality and the potential outcomes framework that formalizes this approach. We will then use this framework to describe the unique statistical properties of experiments and the implications of these properties for the design of experiments. We then will build on this framework to discuss issues related to choosing samples and designing experimental treatments. The class will end with a discussion of replication, pre-registration, and the central importance of statistical power in the design of experiments.

Each class will open with lecture about the key statistical concepts covered in that week's readings. We will then take a brief break and return to discuss an applied paper that draws on the concepts covered. Class will close with a general discussion of the statistical and substantive issues raised in the week's readings.

Books

This class has two required books:

Morgan, Stephen L, and Christopher Winship. 2015. *Counterfactuals and Causal Inference: Methods and Principles for Social Research*. Second edition.. New York, NY: Cambridge University Press.

Gerber, Alan and Donald P. Green. 2012. *Field Experiments: Design, Analysis, and Interpretation*. New York: W.W. Norton.

All other course readings will be journal articles and chapters from books. When these are not easily available online, I will post copies to Canvas.

Assignments and Evaluation

Problem Sets

Every other class, starting with the second class, will have an assigned problem set. Problem sets are due the Wednesday before the next problem set is assigned so that I can review them and discuss common mistakes at the start of the next class. You can, and indeed are expected to, work together on the problem sets. However, you must write out the answer to each question on your own and are responsible for understanding the material yourself.

Teaching an Applied Paper

Each student will be assigned one class session in which they will teach an applied paper of their choosing to the class. This is different from leading discussion in a substantive graduate seminar, where you might arrive with a few discussion questions to start conversation in the class. Instead, you will be expected to lecture briefly on the statistical issues underlying the paper, how the paper's research design illuminates these issues, and how this connects to other issues in the class. You may also incorporate class discussion on the statistical or substantive issues raised by the paper, software demonstrations illustrating in practical terms how the analysis was conducted, or whatever other pedagogical elements you think will maximize your fellow students' learning. In addition to teaching the paper, you must write one problem set question that helps your fellow students apply the lessons from your class.

You will have 30-40 minutes to teach your assigned paper. In the 3rd class session, I will teach the Ho and Imai ballot order effect paper as an example of how one might teach an applied paper. Each subsequent class will have an applied paper taught either by me, or by a student.

After our second meeting, please send me a list of three classes that you would like to be assigned, in preference order. I will then assign each student to a class. Once you receive your assignment, you must find a paper that applies the (or one of the) statistical technique(s) covered in that class – ideally, this will also be a paper that overlaps with a substantive or statistical interest of your own. You must run your chosen article by me at least one week before your assigned class. We will also meet the Wednesday or Thursday before your assigned class to go over how you plan to teach the paper.

Final Paper

The final paper assignment requires you to complete all of the steps in a research project necessary to pre-register an experiment, including a “mock-report” based on “fake” data (see the readings for DATE). The experiment should be something that you might actually run – ideally, it will be an experiment that you will actually run as part of your dissertation research. More details on this paper will follow.

Each student will give a brief presentation of a draft of their research design on April 26th. These will not be graded directly, but my and your classmates' comments will hopefully improve your final paper.

Grades

The conventions of syllabus writing compel me to assign a percentage value to each of the above elements, so here goes:

20% Class Participation

20% Teaching an Applied Paper

30% Problem Sets

30% Final Paper

No one cares about your grades in graduate school. You should strive to master the material in this course to the extent that doing so will help you to write a good dissertation, publish high-quality research, get a good job, and make important contributions to our understanding of politics. Letter grades should be interpreted as one of many forms of feedback that I will provide throughout the semester on the quality of your work.

Course Policies

Attendance, Preparation, and Participation

You should read all course readings before the class for which they are assigned. In general, read the chapter(s) from the textbooks first, followed by the other readings, which will usually expand on the issues discussed by the textbooks.

Reading for a methodology course is generally more intensive than reading for a substantive seminar. You should plan to spend several hours reading each paper, and work through the proofs, derivations, and equations presented by hand with the goal of understanding the statistical logic that underlies them. Burying oneself in the math is important but be sure to take a step back at the end of a chapter or article to think about the broader implications, practical and theoretical, of the statistical argument.

This course meets only fourteen times so your presence, mental as well as physical, is absolutely necessary in each class meeting. As with most methodology courses, class material is cumulative, so missing a class will make understanding subsequent material difficult. If an emergency occurs and you must miss a class, please contact me immediately so that we can figure out how you can catch up.

Statistical Programming

This course will be conducted entirely in R. I assume that students have completed the department's R Camp and are familiar with basic data manipulation and statistical programming in R. The ebook *R for Data Science*, 2nd edition (<https://r4ds.hadley.nz/>) and the book *Political Analysis Using R* by James E. Monogan III (Springer, 2015) are useful references; I also recommend the website Quick-R (<https://www.statmethods.net/>) as a resource that is particularly useful for people making the transition from Stata or SPSS to R. Working through challenges in R is part of the learning process, but I will also be available to answer questions or help if you are stuck on a particular problem.

Contact Policy

In an effort to hold in-class announcements to a minimum, I will be using e-mail to relay most of the nuts and bolts of the course. I will respond to all email within 24 hours, except on weekends. Though I will respond as quickly as possible, I cannot guarantee that I will respond to any email faster than 24 hours of it being sent.

I list office hours above, but please do not wait for these times to come talk to me about a problem or issue you are having with the course material. Email me to set up an appointment or just stop by to see if I'm in. I am generally around the department on Monday, Wednesday, and Friday afternoons, but with advanced planning can meet on Tuesday or Thursday as well.

Department and University Policies

Scholastic Dishonesty

You are expected to do your own academic work and cite sources as necessary. Failing to do so is scholastic dishonesty. Scholastic dishonesty means plagiarizing; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; altering, forging, or misusing a University academic record; or fabricating or falsifying data, research procedures, or data analysis. If it is determined that a student has cheated, he or she may be given an "F" or an "N" for the course, and may face additional sanctions from the University.

For additional information, please see: policy.umn.edu/Policies/Education/Education/INSTRUCTORRESP.html

Student Conduct Code

The University seeks an environment that promotes academic achievement and integrity, that is protective of free inquiry, and that serves the educational mission of the University. Similarly, the University seeks a community that is free from violence, threats, and intimidation; that is respectful of the rights, opportunities, and welfare of students, faculty, staff, and guests of the University; and that does not threaten the physical or mental health or safety of members of the University community.

As a student at the University you are expected adhere to Board of Regents Policy: *Student Conduct Code*. To review the Student Conduct Code, please see: regents.umn.edu/sites/default/files/policies/Student_Conduct_Code.pdf.

Note that the conduct code specifically addresses disruptive classroom conduct, which means "engaging in behavior that substantially or repeatedly interrupts either the instructor's ability to teach or student learning. The classroom extends

to any setting where a student is engaged in work toward academic credit or satisfaction of program-based requirements or related activities."

Sexual Harassment

"Sexual harassment" means unwelcome sexual advances, requests for sexual favors, and/or other verbal or physical conduct of a sexual nature. Such conduct has the purpose or effect of unreasonably interfering with an individual's work or academic performance or creating an intimidating, hostile, or offensive working or academic environment in any University activity or program. Such behavior is not acceptable in the University setting. For additional information, please consult Board of Regents Policy: regents.umn.edu/sites/default/files/policies/SexHarassment.pdf

Equity, Diversity, Equal Opportunity, and Affirmative Action

The University provides equal access to and opportunity in its programs and facilities, without regard to race, color, creed, religion, national origin, gender, age, marital status, disability, public assistance status, veteran status, sexual orientation, gender identity, or gender expression. For more information, please consult Board of Regents Policy: http://regents.umn.edu/sites/default/files/policies/Equity_Diversity_EO_AA.pdf.

Academic Freedom and Responsibility

Academic freedom is a cornerstone of the University. Within the scope and content of the course as defined by the instructor, it includes the freedom to discuss relevant matters in the classroom. Along with this freedom comes responsibility. Students are encouraged to develop the capacity for critical judgment and to engage in a sustained and independent search for truth. Students are free to take reasoned exception to the views offered in any course of study and to reserve judgment about matters of opinion, but they are responsible for learning the content of any course of study for which they are enrolled.

Reports of concerns about academic freedom are taken seriously, and there are individuals and offices available for help. Contact the instructor, the Department Chair, your adviser, the associate dean of the college, or the Vice Provost for Faculty and Academic Affairs in the Office of the Provost.

Students are responsible for class attendance and all course requirements, including deadlines and examinations. The instructor will specify if class attendance is required or counted in the grade for the class.

Students with Disabilities

I, and the University of Minnesota, are committed to providing equitable access to learning opportunities for all students. The Disability Resource Center is the campus office that collaborates with students who have disabilities to provide and/or arrange reasonable accommodations. If you have, or think you may have, a disability (e.g., mental health, attentional, learning, chronic health, sensory, or

physical), please contact DS at 612.626.1333 to arrange a confidential discussion regarding equitable access and reasonable accommodations.

If you are registered with DS and have a current letter requesting reasonable accommodations, please contact me as early in the semester as possible to discuss how the accommodations will be applied in the course. I will generally request that we meet briefly to discuss these accommodations.

For more information, please see the DS website, diversity.umn.edu/disability/.

University Resources

As a student, you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance and may reduce your ability to participate in daily activities. University of Minnesota services are available to assist you. You can learn more about the broad range of confidential mental health services available on campus via the Student Mental Health website: www.mentalhealth.umn.edu.

Course Schedule

Each day is listed along with the assigned readings. Readings available on Canvas are marked with a (C). Readings from Gerber and Green (2012) are listed as “G&G,” from Morgan and Winship (2015) as “M&W,” and from Druckman as “Druckman.”

In general, the readings are listed in order that they should be read. I will almost certainly change some readings as the semester proceeds – I will announce changes via email at least a week in advance and post an updated syllabus to Canvas.

January 19: Causality in the Social Sciences

Reading:

- Holland, Paul. 1986. Statistics and Causal Inference. *Journal of the American Statistical Association*, 81(396), 945-960. doi:10.2307/2289064.
- M&W Chapters 1-3

January 26: Experiments for Causal Inference

Reading:

- Replies to Holland, 1986 (Rubin, Cox, Granger, and Glymour) and Holland’s rejoinder.
- G&G Chapters 1 and 2.
- Keele, Luke. 2015. The Statistics of Causal Inference: A View from Political Methodology. *Political Analysis*, 23(3), 313-335. doi:10.1093/pan/mpv007

- Sen, Maya, and Omar Wasow. 2016. “Race as a Bundle of Sticks: Designs That Estimate Effects of Seemingly Immutable Characteristics.” *Annual Review of Political Science* 19(1): 499–522.

February 2: Statistical Inference and Hypothesis Testing

Reading:

- G&G Chapter 3. Skip 3.6.1 (section on blocking) and appendix on power calculations
- Keele, Luke., McConnaughy, Corrine and White, Ismail. 2012. “Strengthening the Experimenter’s Toolbox: Statistical Estimation of Internal Validity.” *American Journal of Political Science*, 56: 484–499. doi:10.1111/j.1540-5907.2011.00576.x
- **Application:** Daniel E Ho & Kosuke Imai. 2006. “Randomization Inference With Natural Experiments.” *Journal of the American Statistical Association*, 101:475, 888-900, DOI: 10.1198/016214505000001258

February 9: Blocking, Clustering, and Covariate Adjustment

Reading:

- G&G Section 3.6.1 (section on blocking), and Chapter 4
- Mutz, Diana. 2011. *Population Based Survey Experiments*. Princeton: Princeton University Press. Ch 7. (C)
- Exchange between Mutz and Pemantle and the Experimental Research Section Standards Committee
 - Gerber, A., K. Arceneaux, C. Boudreau, C. Dowling, S. Hillygus, T. Palfrey, D. R. Biggers and D. J. Hendry. 2014. “Reporting Guidelines for Experimental Research: A Report from the Experimental Research Section Standards Committee.” *Journal of Experimental Political Science* 1(1): 81–98.
 - Mutz, Diana C. and Robin Pemantle. 2015. “Standard for Experimental Research: Encouraging a Better Understanding of Experimental Methods.” *Journal of Experimental Political Science* 2(2): 192–215.
 - Gerber, A., Arceneaux, K., Boudreau, C., Dowling, C., & Hillygus, D. (2015). Reporting Balance Tables, Response Rates and Manipulation Checks in Experimental Research: A Reply from the Committee that Prepared the Reporting Guidelines. *Journal of Experimental Political Science*, 2(2), 216-229. doi:10.1017/XPS.2015.20

February 16: Imperfect Treatments and Non-Compliance

Readings:

- G&G Chapters 5 & 6

- **Applied Paper:** Enos, Ryan D., and Anthony Fowler. 2014. "Pivotality and Turnout: Evidence from a Field Experiment in the Aftermath of a Tied Election." *Political Science Research and Methods* 2(2): 309–19. <https://doi.org/10.1017/psrm.2014.5>

February 23: Power Analysis, Pre-Registration, and Ethical Experimentation

Readings:

- G&G Chapter 3 Appendix
- Gelman, Andrew, and David Weakliem. "Of Beauty, Sex and Power: Too Little Attention Has Been Paid to the Statistical Challenges in Estimating Small Effects." *American Scientist* 97, no. 4 (2009): 310-16. <http://www.jstor.org/stable/27859361>.
- Gelman, Andrew, and David Carlin. 2014. "Beyond Power Calculations." *Perspectives on Psychological Science* 9(6): 641-651
- Shrout, Patrick E., and Joseph L. Rodgers. 2018. "Psychology, Science, and Knowledge Construction: Broadening Perspectives from the Replication Crisis." *Annual Review of Psychology* 69(1): 487–510.
- Nelson, Leif D., Joseph Simmons, and Uri Simonsohn. 2018. "Psychology's Renaissance." *Annual Review of Psychology* 69(1): 511–34.
- Political Analysis Symposium on Research Preregistration
 - Humphreys, Macartan, Raul Sanchez de la Sierra, and Peter van der Windt. 2013. "Fishing, Commitment, and Communication: A Proposal for Comprehensive Nonbinding Research Registration." *Political Analysis* 21(1): 1–20.
 - Monogan, James E. 2013. "A Case for Registering Studies of Political Outcomes: An Application in the 2010 House Elections." *Political Analysis* 21(1): 21–37.
 - Anderson, Richard G. 2013. "Registration and Replication: A Comment." *Political Analysis* 21(1): 38–39.
 - Gelman, Andrew. 2013. "Preregistration of Studies and Mock Reports." *Political Analysis* 21(1): 40–41.
 - Laitin, David D. 2013. "Fisheries Management." *Political Analysis* 21(1): 42–47.

March 1: Heterogeneous Treatment Effects

Reading:

- G&G Chapter 9

- Kam, Cindy D. and Marc J. Trussler. 2017. “At the Nexus of Observational and Experimental Research: Theory, Specification, and Analysis of Experiments with Heterogeneous Treatment Effects.” *Political Behavior*. 39(4): 789-815. <https://doi.org/10.1007/s11109-016-9379-z>

March 15: Mediation Analysis

Reading:

- G&G Chapter 10
- Bullock, John G. and Shang E. Ha. 2010. “Enough Already about “Black Box” Experiments: Studying Mediation Is More Difficult than Most Scholars Suppose.” *The ANNALS of the American Academy of Political and Social Science* 628(1): 200-208.
- Imai, Kosuke, Keele, Luke, Tingley, Dustin, & Yamamoto, Teppei. 2011. Unpacking the Black Box of Causality: Learning about Causal Mechanisms from Experimental and Observational Studies. *American Political Science Review*, 105(4), 765-789. doi:10.1017/S0003055411000414
- Acharya, Avidit, Matthew Blackwell, and Maya Sen. 2018. “Analyzing Causal Mechanisms in Survey Experiments.” *Political Analysis* 26(4): 357–78.

March 22: Subject Pools and Lab Experiments

Readings:

- Henrich, Joseph, Steven J. Heine, and Ara Norenzayan. 2010. “The Weirdest People in the World?” *Brain and Behavior Science* 33(61-83). doi:10.1017/S0140525X0999152X
- Coppock, Alexander, Thomas J. Leeper, and Kevin J. Mullinix. 2018. “Generalizability of Heterogeneous Treatment Effect Estimates across Samples.” *Proceedings of the National Academy of Sciences* 115(49): 12441–46.
- Mallinson, Daniel J. 2018. “Lessons on Running a Laboratory Experiment (in Graduate School).” *PS: Political Science & Politics* 51(2): 406–9.
- **Applied Paper:** Boas, Taylor C., Dino P. Christenson, and David M. Glick. 2018. “Recruiting Large Online Samples in the United States and India: Facebook, Mechanical Turk, and Qualtrics.” *Political Science Research and Methods*: 1–19.
- **Applied Paper:** Coppock, Alexander, and Oliver A. McClellan. 2019. “Validating the Demographic, Political, Psychological, and Experimental Results Obtained from a New Source of Online Survey Respondents.” *Research & Politics* 6(1): 2053168018822174.

March 29: Measurement and Survey Experiments

Readings:

- Dafoe, Allan, Baobao Zhang, and Devin Caughey. 2018. “Information Equivalence in Survey Experiments.” *Political Analysis* 26(4): 399–416.
- Montgomery, Jacob M., Brendan Nyhan, and Michelle Torres. 2018. “How Conditioning on Posttreatment Variables Can Ruin Your Experiment and What to Do about It.” *American Journal of Political Science* 62(3): 760–75.
- Dickson, Erik S. 2010. “Economics vs. Psychology Experiments: Stylization, Incentives, and Deception.” In *The Cambridge Handbook of Experimental Political Science*
- Krupnikov, Yanna, and Adam Seth Levine. 2011. “Expressing vs. Revealing Preferences in Experimental Research.” In *Sourcebook for Political Communication Research: Methods, Measures, and Analytical Techniques*, eds. Erik Bucy and R. Lance Holbert. Routledge, 149–64. (C)
- **Applied Paper:** Gerber, Alan S., Gregory A. Huber, and Ebonya Washington. 2010. “Party Affiliation, Partisanship, and Political Beliefs: A Field Experiment.” *American Political Science Review* 104(4): 720–44.

April 5: Control, Ethics, and Field Experiments

Problem Set 4 Due Nov 11

Readings:

- Calfano, Brian Robert. 2018. “Phoning It In: Overcoming Implementation Challenges in Field-Experiment Partnerships.” *PS: Political Science & Politics* 51(2): 410–15.
- Johnson, Jeremy B. 2018. “Protecting the Community: Lessons from the Montana Flyer Project.” *PS: Political Science & Politics* 51(3): 615–19.
- G&G Appendix A
- **Applied Paper: TBD by Ashley**

April 12: Special Types of Experiments: Conjoint Experiments

Readings:

- Druckman, James N. 2022. *Experimental Thinking: A Primer on Social Science Experiments*. Cambridge: Cambridge University Press. Pages 96-104 (Section on Conjoint Experiments)
- Hainmueller, Jens, Daniel J. Hopkins, and Teppei Yamamoto. 2014. “Causal Inference in Conjoint Analysis: Understanding Multi-Dimensional Choices via Stated Preference Experiments” *Political Analysis*. 22 (1): 1-30.
- Ham, Dae Woong, Kosuke Imai, and Lucas Janson. 2024. “Using Machine Learning to Test Causal Hypotheses in Conjoint Analysis.” *Political Analysis*: 1–16. doi:10.1017/pan.2023.41.

- **Applied Paper:** Teele, Dawn Langan, Joshua Kalla, and Frances Rosenbluth. 2018. “The Ties That Double Bind: Social Roles and Women’s Underrepresentation in Politics.” *American Political Science Review* 112(3): 525–41. doi:10.1017/S0003055418000217.

Further Readings:

- Abramson, Scott F., Korhan Kocak, and Asya Magazinnik. 2022. “What Do We Learn about Voter Preferences from Conjoint Experiments?” *American Journal of Political Science* 66(4): 1008–20. doi:10.1111/ajps.12714.
- Bansak, Kirk, Jens Hainmueller, Daniel J. Hopkins, and Teppei Yamamoto. 2023. “Using Conjoint Experiments to Analyze Election Outcomes: The Essential Role of the Average Marginal Component Effect.” *Political Analysis* 31(4): 500–518. doi:10.1017/pan.2022.16.
- Cuesta, Brandon de la, Naoki Egami, and Kosuke Imai. 2022. “Improving the External Validity of Conjoint Analysis: The Essential Role of Profile Distribution.” *Political Analysis* 30(1): 19–45. doi:10.1017/pan.2020.40.
- Goplerud, Max, Kosuke Imai, and Nicole E. Pashley. 2023. “Estimating Heterogeneous Causal Effects of High-Dimensional Treatments: Application to Conjoint Analysis.” doi:10.48550/arXiv.2201.01357.
- Hanretty, Chris, Benjamin E. Lauderdale, and Nick Vivyan. 2020. “A Choice-Based Measure of Issue Importance in the Electorate.” *American Journal of Political Science* 64(3): 519–35. doi:10.1111/ajps.12470.
- Robinson, Thomas, and Raymond Duch. 2023. “How to Detect Heterogeneity in Conjoint Experiments.” *The Journal of Politics*. doi:10.1086/727597.
- Liu, Guoer, and Yuki Shiraito. 2023. “Multiple Hypothesis Testing in Conjoint Analysis.” *Political Analysis* 31(3): 380–95. doi:10.1017/pan.2022.30.
- Myers, C. Daniel, Kirill Zhirkov, and Kristin Lunz Trujillo. 2022. “Who Is ‘On Welfare’? Validating the Use of Conjoint Experiments to Measure Stereotype Content.” *Political Behavior*. doi:10.1007/s11109-022-09815-0.
- Bansak, Kirk, Jens Hainmueller, Daniel J. Hopkins, and Teppei Yamamoto. 2018. “The Number of Choice Tasks and Survey Satisficing in Conjoint Experiments.” *Political Analysis* 26(1): 112–19. doi:10.1017/pan.2017.40.
- Bansak, Kirk, Jens Hainmueller, Daniel J. Hopkins, and Teppei Yamamoto. 2021. “Beyond the Breaking Point? Survey Satisficing in Conjoint Experiments.” *Political Science Research and Methods* 9(1): 53–71. doi:10.1017/psrm.2019.13.

April 19: Special Types of Experiments: Experiments as Measurements

Readings:

- Blair, Graeme and Kosuke Imai. 2012. “Statistical Analysis of List Experiments.” *Political Analysis*, 20(1): 47-77.
- Krupnikov, Yanna, and Adam Seth Levine. 2011. “Expressing vs. Revealing Preferences in Experimental Research.” In *Sourcebook for Political Communication Research: Methods, Measures, and Analytical Techniques*, eds. Erik Bucy and R. Lance Holbert. Routledge, 149-64.
- Wilson, Rick K. 2011. “The Contribution of Behavioral Economics to Political Science.” *Annual Review of Political Science* 14(1): 201. doi:10.1146/annurev-polisci-041309-114513.
- Application: Iyengar, Shanto, and Sean J. Westwood. 2015. “Fear and Loathing across Party Lines: New Evidence on Group Polarization.” *American Journal of Political Science* 59(3): 690-707. doi:10.1111/ajps.12152.

Further Readings:

Techniques for Asking Sensitive Questions

- Blair, Graeme, Kosuke Imai, and Yang-Yang Zhou. 2015. “Design and Analysis of the Randomized Response Technique.” *Journal of the American Statistical Association* 110(511): 1304-19. doi:10.1080/01621459.2015.1050028.
- Rosenfeld, B., Imai, K. and Shapiro, J. N. 2016. “An Empirical Validation Study of Popular Survey Methodologies for Sensitive Questions.” *American Journal of Political Science*, 60: 783-802.
- Bullock, Will, Kosuke Imai, and Jacob N. Shapiro. 2017. “Statistical Analysis of Endorsement Experiments: Measuring Support for Militant Groups in Pakistan.” *Political Analysis* 19(4): 363-84. doi:10.1093/pan/mpr031.
- Blair, Graeme, Alexander Coppock, and Margaret Moor. 2020. “When to Worry about Sensitivity Bias: A Social Reference Theory and Evidence from 30 Years of List Experiments.” *American Political Science Review* 114(4): 1297-1315. doi:10.1017/S0003055420000374.

Use of Behavioral Measures

- MORE EXPERIMENTAL ECON HERE
- Glaeser, Edward L., David I. Laibson, Jose A. Scheinkman, and Christine L. Soutter. 2000. “Measuring Trust.” *The Quarterly Journal of Economics* 115(3): 811-46.
- Aksoy, Billur, Haley Harwell, Ada Kovaliukaite, and Catherine Eckel. 2018. “Measuring Trust: A Reinvestigation.” *Southern Economic Journal* 84(4): 992-1000.
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IAT

- DEBATE OVER IAT HERE, INCLUDING THAT BRAIN AND BEHAVIOR SCIENCE ARTICLE

April 26: Draft Research Design Presentations

May 8: Final Papers Due

Validity and Treatment Design Part 1

Readings:

- Druckman, James N. 2022. *Experimental Thinking: A Primer on Social Science Experiments*. Cambridge: Cambridge University Press. Pages 51-70 (Sections on Realism and Validity).
- Brutger, Ryan et al. 2023. “Abstraction and Detail in Experimental Design.” *American Journal of Political Science* 67(4): 979–95. doi:10.1111/ajps.12710.
- McDonald, Jared. 2020. “Avoiding the Hypothetical: Why ‘Mirror Experiments’ Are an Essential Part of Survey Research.” *International Journal of Public Opinion Research* 32(2): 266–83. doi:10.1093/ijpor/edz027.
- Application (Lauren): Edwards, Pearce, and Daniel Arnon. 2021. “Violence on Many Sides: Framing Effects on Protest and Support for Repression.” *British Journal of Political Science* 51(2): 488–506. doi:10.1017/S0007123419000413.

Further Readings:

Validity and Treatment Design Part 2

Readings:

- Dafoe, Allan, Baobao Zhang, and Devin Caughey. 2018. “Information Equivalence in Survey Experiments.” *Political Analysis* 26(4): 399–416.
- Fong, Christian, and Justin Grimmer. 2023. “Causal Inference with Latent Treatments.” *American Journal of Political Science* 67(2). doi:10.1111/ajps.12649.
- Esterling, Kevin M., David Brady, and Eric Schwitzgebel. 2024. “The Necessity of Construct and External Validity for Deductive Causal Inference.” doi:10.31219/osf.io/2s8w5.
- Application (Taylor): Blumenau, Jack, and Benjamin E. Lauderdale. 2024. “The Variable Persuasiveness of Political Rhetoric.” *American Journal of Political Science* 68(1). doi:10.1111/ajps.12703.

Further Reading:

On Latent Qualities of Texts-as-Treatments

- Egami, Naoki et al. 2022. “How to Make Causal Inferences Using Texts.” *Science Advances* 8(42): eabg2652. doi:10.1126/sciadv.abg2652.

- Sridhar, Dhanya, and David M. Blei. 2022. “Causal Inference from Text: A Commentary.” *Science Advances* 8(42): eade6585. doi:10.1126/sciadv.ade6585.

Non-Experimental Causal Designs:

Readings:

- Ho, Daniel E., Kosuke Imai, Gary King, and Elizabeth A. Stuart. 2007. “Matching as Nonparametric Preprocessing for Reducing Model Dependence in Parametric Causal Inference.” *Political Analysis* 15(3): 199–236. doi:10.1093/pan/mpl013.
- Cattaneo, Matias D., Nicolás Idrobo, and Rocío Titiunik. 2019. *A Practical Introduction to Regression Discontinuity Designs: Foundations*. Cambridge University Press. <https://doi.org/10.1017/9781108684606> CHAPTERS 1 AND 2
- Sekhon, Jasjeet S., and Rocío Titiunik. 2012. “When Natural Experiments Are Neither Natural nor Experiments.” *American Political Science Review* 106(1): 35–57. doi:10.1017/S0003055411000542.
- Berinsky, Adam J., and Sara Chatfield. 2015. “An Empirical Justification for the Use of Draft Lottery Numbers as a Random Treatment in Political Science Research.” *Political Analysis* 23(3): 449–54. doi:10.1093/pan/mpv015.
- Applied (Kevin):