DRAFT Syllabus — PS 292B: Research Design
Winter 2022

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Course description

Research design lies at the heart of the empirical social science enterprise. Researchers must make hundreds or thousands of decisions from conceiving the project to submitting the paper for publication and uploading the replication archive. Together, these decisions are the research design. It is your research question, the procedures you use to collect evidence, what you do to analyze the evidence to produce an answer to the question, and also your prior beliefs about the question that influence everything from the sample size you select to how you analyze your standard errors. What specific choices you make at each step determine whether you can provide good answers to the question you posed. In this course, we will explore research design through the Model-Inquiry-Data Strategy-Answer Strategy (MIDA) framework for "declaring" the features of a research design and the declare-diagnose-redesign algorithm for assessing research design quality and selecting from among feasible designs. The tools we will learn can be used to justify research design choices to peers, but more importantly, to make better choices before data collection begins when many of those choices are set in stone. The focus of examples will be on quantitative research, but we will also explore how these ideas translate to qualitative and mixed methods designs.

Learning objectives

-   How to conceptualize a research design *as a whole* and communicate about it to peers
-   How to assess research designs in terms of scientific, ethical, and logistical goals
-   How to select a research design from among alternatives that meet these goals
-   How to carry out practical research tasks before, during, and after data collection — including conducting power analyses and pilot studies, writing preanalysis plans, and reconciling plans with implemented designs

How we will meet these goals

Before each class. We will read methodological work and also applied research designs, and to promote active engagement with the readings we will use the [Perusall](#) reading discussion platform. There is growing evidence that live lectures are not effective learning tools for many students. Instead, in addition to readings, there will be a set of one or more short, 5-10 minute

videos to watch. You will engage with your classmates and me about the readings and videos in the days leading up to a class session.

In class: At the start of class, we will have a short Q&A session to discuss unresolved questions that came up while reading and watching the videos. Then, the primary in-class activity will be a team-based practicum to promote active learning: you will work in small groups on a structured activity about executing research or assessing the properties of a research design. In-class groupwork provides a first chance to try out ideas and tools in a structured environment (i.e., with me and the whole class around!).

After class: Problem sets are a chance to solidify your understanding without the guardrails. Group work on problem sets is encouraged, but you must turn in your own.

Throughout the quarter: You will work on a design journal on a project of your choosing throughout the quarter to apply the ideas we learn to your own research and to build understanding by working on a "real" design.

Assignments

Design journaling

In my experience, trying to develop a research design in one go is hard. Instead, "journaling" the design is more effective: writing down initial ideas, and then commenting and adding notes to yourself and updating the design as you read papers, attend seminars and courses, and talk with colleagues. The final design might take weeks or months to come to fruition. Your assignment in this course is to start a journal for a research project you are working on for your dissertation (not the whole dissertation, but one important empirical component) or for an important side project. Your journal should have three sections: (1) current "best idea" design, with a declaration of the design in code; (2) appealing ideas you have not yet implemented; (3) ideas that you think won't work. Ideas from (2) and (3) may ultimately make their way into (1)! We will talk about your design as it evolves three times during the quarter in a "design salon" (see below). You'll turn in your journal at the end of the quarter as the final project for one last set of comments.

Problem sets

There will be five short problem sets, including a cumulative set due during finals week.

Data replication

For four weeks during the quarter, there will be a data replication and a design replication, which you will work on in teams and present on at the end of the week.

We will get to know the authors' design first by replicating their findings. We hold the data they collected fixed and also their answer strategy. Exactly replicating the results helps hone in on the details of the data and answer strategy they used, which will be helpful for the design replication.

Create an RMarkdown document that loads their data in the original format where possible (the haven package may be helpful), describes in words the answer strategy, and then creates figures and tables that replicate the main findings of the study, i.e. those that appear in the main text of the paper and not in the appendix. If you cannot exactly replicate them (down to the hundredths place), discuss. If you cannot replicate them in R exactly and their code was run in Stata, provide a short Stata do file that exactly replicates the results and comment on the differences between R and Stata (you don't need to sort it out exactly, which is often pretty hard!).

Design replication

Your task is to plan a new data collection exercise to replicate the results of the study you choose. You have four tasks:
  (a) Declare the design of the study, using the exact details of the study (number of units, clusters, the effect size, and estimated standard deviation, etc.);
  (b) Define diagnosands in terms of the goals of your replication, and diagnose the design;
  (c) Declare your *replication* design: change details of the model to reflect your uncertainty, add inquiries that better test the theory or new implications, change data and answer strategy parameters to improve diagnosands; and
  (d) Diagnose the modified design and discuss the diagnosis.

For some designs with observational data, it doesn't make sense to think about collecting new data, such as administrative data from governments or private firms. In these cases, still take on all four steps, but your goals are a bit different. In the original design, declare a model using your best approximation of how the authors thought the world works — the expected effect sizes, but also how they thought the assignment variable was assigned where relevant. In your replication design, you won't focus on changing the data strategy, but you can explore the robustness of the design to their model assumptions. You can also consider alternative answer strategies that might improve the diagnosands.

Design salon

Instead of traditional office hours, each week I will hold a "design salon," in which I will meet with a group of students about the design they are journaling about. You will be assigned a design salon three times in the quarter. In your first session, you will present your research question and we will talk about possible data strategies, in the second you will propose a specific data strategy, and in the third, you will present the whole design.

Evaluation

I'll ask you to evaluate your performance in the course twice, in week five and after you turn in the final assignment. Your final grade will be the grade you give yourself at the end unless I strongly disagree (I reserve the right to move your grade up or down). In my experience with self-grading, the process of evaluating yourself halfway through knowing that you will do so again is a helpful way of tracking your own progress. At the midpoint, it provides us an opportunity to make sure we are on the same page about how you are doing. I have found that I usually agree with essentially every person's grade for themselves at the end.

We will also rely on peer evaluation because collaboration is both a key part of this class and increasingly in empirical work in the social sciences. You will evaluate your group teammates twice, again in the middle and at the end.

Computation

This course requires extensive use of R programming. If you are not comfortable with R and the tidyverse family of packages, contact the instructor before enrolling. Consider taking the sequence of courses PS 200A-200E before enrolling in this course.

Auditing_: in my experience, auditing a class like this without completing the assignments will not be productive for you, so auditors will not be permitted. I encourage you to take the course for credit!

Getting help

I encourage you to take advantage _early and often_ of my office hours and the Perusall discussions. I'm here to help, and want everyone to succeed in the course — and I think everyone can!

The Perusall discussion allows all students to benefit from the discussion and to help each other understand the materials. I will actively participate each week and I encourage you to participate in discussions and answer any questions that are posted. You should operate on the principle "if I have a question, everyone probably does too."

Your ethical responsibilities

You are subject in this class to UCLA's [academic honesty policies](#). You should not pass off others' work, words, or code as your own (you can avoid this by liberally citing and when relevant including quotation marks or notes indicating what is directly taken from others; our greatest virtue is building off the past work of others).

Reading

We will read together on the active reading platform Perusall. Check back in during the week after you complete the readings to continue to participate in the conversation. I'll generally chime in only after others have. If you experience accessibility issues with Perusall, please reach out to me and we can find a workable solution for you.

Main text: Blair, Coppock, and Humphreys, *[Research Design: Declaration, Diagnosis, Redesign](#)*. Forthcoming, Princeton University Press.

Other resources:
- Cunningham, *[Causal Inference: The Mixtape](#)*
- Gerber and Green, *Field Experiments*
- Ashworth and Bueno de Mesquita, *Theory and Credibility*
- Druckman and Green, *Advances in Experimental in Political Science*

Schedule

Wk	Class	Topic	Readings	Videos	Due dates
1	1	What is a research design?	Ch1-2, 5	MIDA; DDR	
	2	How to declare in code	Ch3	DeclareDesign	
2	1	Models, inquiries, and theories	Ch6-7	DAGs; models; inquiries	
	2	↳		Make M big	PS 1

3	1	Study units and sampling	Ch8 (8.1.1; 8.4)	Data strategy; sampling	
	2	Diagnosis and diagnosands	Ch10-11	Diagnosis	PS2
4	1	Observational-descriptive designs	Ch13-14		Replication 1
	2	↳			Design replication 1
5	1	Treatment conditions and assignment	Ch8 (8.1.2; 8.2; 8.3); 21.3	Treatment assignment	
	2	↳	Ch 21.5	Pilot studies	
6	1	Observational-causal designs	Ch15		Replication 2
	2	↳			Design replication 2
7	1	Experimental-causal designs	Ch17		Replication 3
	2	↳			Design replication 3
8	1	Outcomes and measurement	Ch8 (8.1.3)	Measurement; repeated measures	
	2	Threats to inference	Ch8 (8.3)		
9	1	Answer strategies and M:I::D:A parallelism	Ch9	Answer strategy; plug-in principle; analyze-as-you-collect	
	2	↳	Ch21.7	PAPs	PS 4
10	1	Experimental-descriptive designs	Ch16		Replication 4

	2	↳			Design replication 4
Finals					PS 5

Suggested designs for replication and declaration

Design: observational-descriptive
- TBD

Design: difference-in-differences
- American politics (AP): Paglayan, Agustina. 2019. "Public-Sector Unions and the Size of Government." *American Journal of Political Science* 63(1): 21-36.
- Comparative politics (CP): Carreri, Maria, and Oeindrila Dube. 2017. "Do natural resources influence who comes to power, and how?" *The Journal of Politics* 79 (2): 502–518.
- International relations (IR): Lee, Melissa M., and Melina Platas Izama. "Aid externalities: evidence from PEPFAR in Africa." *World Development* 67 (2015): 281-294.
- Race and ethnic politics (REP): Fraga, Bernard L., and Hans J. G. Hassell. "Are minority and women candidates penalized by party politics? Race, gender, and access to party support." *Political Research Quarterly* (2020).

Design: experimental-causal
- TBD

Design: audit experiments
- AP: Lowande, Kenneth, and Andrew Proctor. "Bureaucratic Responsiveness to LGBT Americans." *American Journal of Political Science* 64, no. 3 (2020): 664-681.
- CP: Gaikwad, Nikhar, and Gareth Nellis. "Do politicians discriminate against internal migrants? Evidence from nationwide field experiments in India." *American Journal of Political Science* (2020).
- IR: Terechshenko, Zhanna, Charles Crabtree, Kristine Eck, and Christopher J. Fariss. "Evaluating the influence of international norms and shaming on state respect for rights: an audit experiment with foreign embassies." *International Interactions* 45, no. 4 (2019): 720-735.
- REP: Lajevardi, Nazita. "Access denied: exploring Muslim American representation and exclusion by state legislators." *Politics, Groups, and Identities* (2018).