Hi everyone,

With the midpoint of the quarter approaching, I thought I'd clarify expectations about the final project. The purpose of the project is to make you think, on your own, about causal inference topics beyond those covered in class. I am not expecting you to solve a new problem in causal inference; I am expecting you to explore a problem not (fully) covered in class.

**Scope:**

Concretely, I see three broad categories of projects (in no particular order):

1) Research: You apply ideas from the class (or causal ideas beyond those studied in class) to your own research. Great. It doesn't need to be groundbreaking; just showing how to formulate your problem in a causal framework and thinking about ways you could potentially solve it would be a good project. Or perhaps you have an idea of a research project based on what we've learned in class, and you'd like to start exploring it as part of your course project. Also great. And once again, you don't need to actually solve the problem: preliminary work would already constitute a great project. Research is hard.

2) Re-analysis: You find a dataset from a randomized experiment or observational study and re-analyze it, or propose extended analyses or additional checks not performed by the authors. You should feel free to make certain simplifying assumptions. For instance, a lot of published randomized experiments provide surprisingly little information about the precise randomization mechanism used, or use somewhat sketchy randomization mechanisms: in that case, it's ok for you to analyze the experiment `as-if' it came from a `reasonable' randomization mechanism for which you are able to get results. A good source of data is the [Harvard Dataverse](https://dataverse.harvard.edu/). You may also look at the [ICPSR](https://www.icpsr.umich.edu/icpsrweb/ICPSR/).

3) Exploration and synthesis: A final option would be for you to consider established topics in causal inference that we did not cover in class, or consider extensions and refinements of topics we covered. This option can lead to very good projects but certain ground rules must be established. You must write things in your own words and, as much as possible, use the same notation used in the course. You should not just copy-paste something from a textbook or research paper. To give you concrete examples (based only on the core concepts covered so far -  you may, of course, go beyond those!):

* Summarizing the debate on causal inference with immutable characteristics
* Matching with re-fined balance
* Rerandomization with tiers of covariates
* Observational studies with continuous treatments
* Randomized experiments with a temporal component
* Randomized experiments with designs not covered in class (split-plot, factorial, cluster randomized, etc...)
* Handling missing data
* Conditional Fisher Randomization Tests
* etc...

Finally, if you want to check that your project idea falls within the scope laid out above, feel free to come to my or Evan's office hours, or to reach out by email.

**Nitty-gritty**

Grades will not be assigned proportionally to the length of the paper: you should say what you have to say in as few words as you need, but not fewer. I anticipate that you will need more than 5 pages (single spaced, 10pt font) to say what you have to say; I would be very surprised if you needed more than 10 pages. You may form teams of up to three people. If you do decide to team up, then everything your team has to say will probably not fit in less than 8 pages, but will most likely not exceed 13 pages. These rules are meant to be broken, in exceptional circumstances. I expect there will not be many such circumstances.

**Deadlines**

All  project reports are due on December 11, no later than 11pm PST. I ask that you fill in [this spreadsheet](https://docs.google.com/spreadsheets/d/17licRBNecNkffTUNV7-rTPD8vhs3cIkhSzNhVMv9JXU/edit?usp=sharing) with your team (it can be a team of one) by Sunday, October 27 no later than 11pm PST. You **do not** need to have a project title or description at the moment, but if you do, please write them down.