

Final Project Description

Due dates:

- Finalize groups (4 people, 5 if needed) (by Feb 11)
- Proposal for experiment approved by me (by Feb 17 at the latest)****
- Have you run a pilot study? (by Feb 24 at the latest)
- Have you run the experiment? (by Mar 1 at the latest)
- Presentation (March 6)
- Writeup (March 6 End of Day).

Project description

In your project groups, carry out an experiment that measures a causal effect of interest.

- The experiment should involve at least 30 observations per condition, meaning there will be at least 60 observations total. The data may be collected either online or offline. Students are encouraged to split data collection.
- The experiment should involve you gathering data about the impact of an intervention that you randomize. It should not involve pre-existing data.
- Your projects do not have to be business-related or serious. However, they do need to have a well-defined research question and experimental design. They also have to be analyzed correctly. See this folder for some example projects.
- The intention here is for you to learn what it's like to do an experiment in practice, not for you to have the perfect design or enough observations that your answer will be precise.
- It's a very good idea to run a pilot experiment with a small number of observations (think 2-4) to help you debug problems in execution before going ahead to collect all your data.
- You should do a power analysis before you begin your experiment. This will tell you how many observations you need to detect a given effect size with a given probability. You may use LLMs to think about plausible effect sizes. Note, given the small sample size, your experiment will likely be underpowered. That's okay. The point is to learn how to do an experiment, not to get a precise answer!
- If you collect data via survey, a common solution is to use Qualtrics, to which Boston University has a license. You can reach Qualtrics at <https://bostonu.qualtrics.com/>. If you are interested in this, let me know and I will set you up. You can also try to use Google Forms, Google Surveys, or something else.
- I expect you to talk to me before you begin any data collection. One thing we need to discuss is how to ensure your experiments do not break any university rules and otherwise hew to common sense that will not get you into trouble. I will also offer some advice on how to conduct your experiments more practically.

Deliverables:

Final Paper (70% of grade)

I expect the final paper to be about 7 pages single spaced / 14 pages double spaced, including tables and figures.

Please make sure to create publication-quality figures and tables. That means that figures must be labeled properly, tables must look good, and variables should be properly named. For example, while your code may have a variable called 'any_treatment', your figure should say 'Treatment'.

There is no template because your experiments are so different, what needs to be discussed at length in some cases won't need to be discussed at all in others, etc. Use your judgment about what it is important to describe: what you did, the academic literature, the conclusions you have drawn from the data, why these conclusions are justified, and potential limitations. Reviewing some of the academic papers we read this term may help remind you what it is typical to see in experimental write-ups. I am also happy to give you suggestions.

All writeups should answer the following.

- Your research question.
- What specific hypothesis you test.
- What your treatment was and how you randomized it.
- What your outcome was and how you collected it.
- How you analyzed the data.
- Your results and interpretations of the results.
- Any limitations you are aware of.

You don't need to use every concept we learned or will learn this semester. However, if you do not use at least one of the concepts in the list below, then please pick at least one and write one paragraph about why you did not need to use the concept or could not use the concept:

- Blocking
- Clustering
- Using covariates to increase precision
- Failure to treat
- Heterogeneous treatment effects

Presentation (30% of grade)

During the final class, I will ask each group to present their findings in 8 - 10 minutes and I will ask questions for a few minutes. Time limits will be enforced! The presentations should: Give:

- Your research question.
- What specific hypothesis you test.
- What your treatment was and how you randomized it.
- What your outcome was and how you collected it.
- How you analyzed the data.

- Your results and interpretations of the results.
- Any limitations you are aware of.
- Not everyone needs to speak, but everyone needs to contribute to creating the presentation.

Ways to do experiments

- You can ask people at Questrom or on the street.
- You can invite participants to a room or a Zoom.
- You can send a survey / instructions / website to people you know (family / friends).
- Mechanical Turk - You can pay people to participate in your experiment.
- Google surveys. You can pay Google users to answer your questions.
- You can experiment with your own social media feeds:
<https://medium.com/@natematias/how-anyone-can-audit-facebooks-newsfeed-b879c3e29015>
- You can do something similar to the "Tweetment Effect" paper in the assignment and create social media accounts to do an experiment.