Social Science Inquiry III

Week 1: Course introduction

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Overview

This course:

- ► Part of a sequence
  - ► Fall: research design
  - ► Winter: methods
  - ► Spring: practical applications

Did you take SOSC 13200 in winter quarter?

Main take-aways from winter quarter?

Course objectives

▶ Students will approach a research question thinking like a social scientist;

▶ Builds on foundations of descriptive and causal inference introduced in fall SSI I, with respect to both experimental and observational data

▶ and the statistical methods, software introduced in winter SSI II.

▶ Further exploration of how to design a study;

▶ Present results;

▶ Use data visualization effectively.

Course objectives

By the end of the quarter, you should be able to . . .

▶ Apply the tools you have learned so far in this sequence (data analysis, programming, research design, hypothesis testing)

▶ Use those tools and additional writing skills in producing a polished piece of research

▶ Design and conduct an original experiment and analyze the results

▶ Understand better the differences between observational and experimental research

▶ Discuss some important issues in climate change policy and politics

Software

Stata or R?

- ▶ Discuss.

Overview

▶ High level: how to answer questions with data

▶ Summarizing univariate and multivariate data numerically and visually, data exploration

▶ Probability as a model of the world

▶ Formalizing our uncertainty about that model, using statistics

▶ What it requires to infer causal relationships

▶ Linear regression (and inference with)

▶ Beyond linear regression: other statistical methods

What we do with data

We'll get started on working with data, and we'll also get started on thinking critically about how you use data to answer questions.

What data would you need to make the argument in the article below?

Inferential questions

▶ What can the data you *do* have tell you about data you *don't* have?

▶ What data would you need to answer questions about *what would have happened*?

▶ What can we say about our *uncertainty* about estimates or predictions?

Statistical software

Programming in R.

- ▶ Assuming you're starting from scratch.
- ▶ But if you do have some programming skills, with statistical software, python, or other languages, there can be a lot of carryover.
- ▶ If you don't have any baseline skills, focus on the rstudio primers https://rstudio.cloud/learn/primers

Reference texts

[See syllabus]

Asking and answering questions

▶ Google!

▶ Ask on our course StackOverflow team:
  `https://stackoverflowteams.com/c/sosc13200-w24-6` [I'll
  send invites shortly]

▶ Use general StackOverflow (`https://stackoverflow.com/`) for R
  questions or CrossValidated
  (`https://stats.stackexchange.com/`) for stats.

Class participation includes asking and *answering* questions on the class
StackOverflow.

Assessment

▶ Homework: 60%
▶ Final project: 30%
▶ Participation: 10%

Homework

- ▶ Solution sets will be posted *at the same time* as problem sets.
- ▶ Do as much as you can on the problem set before checking the solutions.
- ▶ Check your work, and then fill out a form on how you did, what you understood and didn't.
- ▶ You get marked both on completion of the problem set, **AND** filling out the form.
- ▶ (If you find errors in the solution set, post them on the class StackOverflow and you will get extra credit)
- ▶ For homework assignments, always submit *both* your .R file showing your work, and and a compiled .pdf file on Canvas.

Homework grading

check(+/-)

- ▶ Check: You fully completed the assignment, and submitted all components. (A)
- ▶ Check plus: You went above and beyond, your solutions were clear and detailed. (A+)
- ▶ Check minus: You made an attempt, but it wasn't complete. Maybe you didn't submit all components, or didn't fully answer some of the questions. (B or C)
- ▶ Unmarked: You did not submit enough of an assignment for credit.

Assignment for Monday

- ▶ Download software on your own computer.
- ▶ Set up your working directory.
- ▶ Compile and submit a report.
- ▶ (Fill out the feedback form as well, even though there aren't solutions.)

Final Project

- ▶ More in-depth, open-ended problem set.
- ▶ Make sure you understand the homework solutions, the final will not have a solution set.
- ▶ You pick from approved data sets–or propose your own.
- ▶ Run through a series of coding exercises and statistical analyses.

Github

- `https://github.com/UChicago-pol-methods/SOSC13200-W24`
- Serves as a repository for class documents.
- You don't need a GitHub account, or need to know how to use git.
- But if you *do* find mistakes in slides or homeworks, you can get extra extra credit for submitting a pull request on GitHub with revisions.

Other questions/concerns about class policies?

Getting started in R / Stata

[R script]