

Week 1, Class 1: Practice Exercises

Introduction to Quantitative Political Analysis

2024-12-31

1 Non-AI Exercises

1.1 1. Vocabulary & Concepts

1.1.1 1.1 Code Detective

Explain what each line of this code does: anything

```
electoral_votes <- 270  
winner <- "Biden"  
margin <- 81283501 - 74223975  
percentage <- margin / 155507476 * 100
```

Line 1: _____ Line 2: _____ Line 3: _____ Line 4: _____

1.2 2. Historical Example: John Snow

1.2.1 2.1 The conventional wisdom in 1854 was that cholera spread through:

- a) Contaminated water
- b) Bad air (miasma)
- c) Person-to-person contact
- d) Poor nutrition

Answer: _____

1.2.2 2.2 Data-Driven Decision Making

John Snow challenged the conventional wisdom about cholera transmission. What made his approach “quantitative” rather than just observational? Why was mapping the data crucial to his discovery?

Answer:

1.3 3. Critical Thinking: AI and Analysis

1.3.1 3.1 Critical Thinking with AI

Why is it important to verify AI-generated analysis rather than accepting it automatically? Give an example of how an AI might produce technically correct code that leads to a misleading conclusion.

Answer:

1.4 4. Applications of Quantitative Political Analysis

2 AI Exercises

For each AI exercise:

- Write your prompt in the designated space
- Record Claude’s response
- Run the code and document the results

2.1 5. Introduction to Political Data

Dataset: `nat_pol_attitudes.csv`

Description: Simulates a nationally representative survey measuring political attitudes, ideology, and demographics.

Variables:

- `respondent_id`: Unique respondent ID (int)
- `age`: Age in years, 18-90 (int)
- `gender`: male, female, nonbinary (factor)
- `race_ethnicity`: White, Black, Latino, Asian, Other (factor)
- `education`: Less than HS, HS, Some College, BA, Postgrad (ordered)

- `income_bracket`: Ten brackets from <\$10k to >\$200k (ordered)
- `ideology`: 1 (very liberal) to 7 (very conservative) (int)
- `party_id`: Democrat, Republican, Independent, Other (factor)
- `trust_gov`: 0-10 political trust scale (int)
- `policy_support_env`: Support for environmental regulation, 0/1 (binary)
- `policy_support_guns`: Support for stricter gun laws, 0/1 (binary)

2.1.1 5.1 Data Exploration

```
# Load the dataset
nat_pol_attitudes <- read_csv("nat_pol_attitudes.csv")
```

```
Rows: 1200 Columns: 11
-- Column specification -----
Delimiter: ","
chr (3): gender, race_ethnicity, party_id
dbl (8): respondent_id, age, education, income_bracket, ideology, trust_gov,...

i Use `spec()` to retrieve the full column specification for this data.
i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
# Explore the structure of the data
glimpse(nat_pol_attitudes)
```

```
Rows: 1,200
Columns: 11
$ respondent_id    <dbl> 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15,~
$ age              <dbl> 36, 34, 32, 36, 44, 41, 81, 40, 60, 73, 69, 23, 87~
$ gender           <chr> "male", "female", "female", "female", "female", "f~
$ race_ethnicity   <chr> "White", "White", "Latino", "Other", "White", "Whi~
$ education        <dbl> 4, 5, 2, 2, 4, 1, 5, 3, 1, 3, 4, 2, 4, 1, 4, 4, 5,~
$ income_bracket   <dbl> 2, 10, 5, 10, 2, 1, 7, 4, 4, 7, 8, 7, 9, 10, 4, 6,~
$ ideology         <dbl> 5, 5, 3, 2, 6, 6, 5, 4, 4, 1, 3, 2, 4, 4, 6, 1, 3,~
$ party_id         <chr> "Republican", "Independent", "Independent", "Repub~
$ trust_gov        <dbl> 2, 2, 5, 0, 5, 6, 5, 4, 4, 4, 2, 4, 9, 3, 3, 4, 0,~
$ policy_support_env <dbl> 0, 1, 1, 1, 0, 1, 0, 0, 0, 0, 1, 1, 1, 1, 1, 1,~
$ policy_support_guns <dbl> 0, 1, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 1, 0, 0,~
```

Using Claude, explore this political attitudes dataset. Ask it to help you understand if ideology varies by income bracket. (Bonus: Try to do this without using Claude.)

Prompt: I am working with a dataset in R called `nat_pol_attitudes.csv`. I am using tidyverse. I want to know if ideology varies by income bracket. Write code to explore this and explain each step.

Response:

Interpretation:

2.1.2 5.2 Basic Summary Statistics

Work with Claude to calculate the average age and political trust score by party affiliation. Record both your prompt and the code Claude provides. (Bonus: Try to do this without using Claude.)

Prompt:

Response:

Interpretation: