POLI706: Advanced Methods of Political Analysis

Problem set 1

Exercise 1

Recap your 502 experience.

    a. Find and load `data_assignment2.xlsx`.

`data_assignment2.xlsx` contains four variables: `country_name`, `year`, `v2x_polyarchy`, and `e_gdppc`.

    b. Define the *measurement level* of each variable in `data_assignment2.xlsx` for the following types of variables: continuous, ordinal, binary, categorical, and nominal.

Exercise 2

Based on Exercise 1, perform both descriptive and causal inference. The goal is to understand the relationship between two variables and draw conclusions based on the data.

    a. Make a scatter plot with x = `v2x_polyarchy` and y = `e_gdppc`. Label your axes and give the scatter plot a title.

    b. Describe the pattern you observe in the scatter plot. Identify any trends, clusters, or outliers in the data. Based on the scatter plot, describe the relationship between electoral democracy index (`v2x_polyarchy`) and gross domestic production per capita (`e_gdppc`).

    c. Hypothesize whether there is a causal relationship betweenelectoral democracy index and gross domestic production per capita.

    d. Discuss whether the relationship observed could be interpreted as a causal one.

Exercise 3

    a. Make a scatter plot with x = `v2x_polyarchy > 17.5` and y = `v2x_polyarchy`.

    b. Make a scatter plot with x = `v2x_polyarchy` and y = `v2x_polyarchy > 0.5`.

    c. Draw linear fitted lines between x and y for d and e. Explain the differences between two plots based on the results of a in Exercise 2.