Tutorial 02, Hilary Term

Research Methods for Political Science (PO3600)

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Session Outline

1. Discussion Homework #1, HT

2. Exercise: Bivariate regression

Define and explain: **Correlation**

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A standardised statistic that provides a measure of the strength and direction of a relationship between two variables. It can take any value from -1 to +1. A result of +1 shows that there is a perfect positive relationship between the two variables: as one variable increases, the other increases. A correlation of -1 indicates that if one variable increases, the other one decreases. A result of 0 shows that there is no discernible pattern to the relation between the two variables.

- **External validity**
- **Level of measurement**
- **Measure of central tendency**

A lecturer suspects that students who attend all of their lectures will have a higher final grade than students who miss at least one of them. He has access to the final grades of all the students in his class, as well as information about any classes that they have missed. 15 of his students have attended all classes, while 9 have missed at least one.

Describe in detail how the lecturer should proceed if he wants to test his theory (clearly define the hypotheses, describe the statistical test he should use, how he should perform this statistical test, and how he can draw a conclusion about his intuition).

Exercise II

Dependent variable: Grade (interval/ratio)

Independent variable: All lectures attended/not all lectures attended

H0: There is no difference in the grades between students who attended all lectures and students who missed at least one lecture.

H1: Students who attended all lectures have a higher grade than students who did not attend all lectures.

Test: Independent sample t-test

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\sigma_1^2/n_1 + \sigma_2^2/n_2}} \tag{1}$$

Compare t-value with critical t-value from t-distribution table (one-tailed).

If obtained t-value is greater than the critical value, then the null hypothesis is rejected. Then there is a significant difference in the mean grades between those students who attended all lectures and those who missed at least one.

1. Open the `norris.sav` dataset from Blackboard

2. Create a scatterplot of `Women2005` and `HDI2005`

SPSS: Bivariate Regression

1. Run a bivariate linear regression with `Women2005` as the dependent variable and `HDI2005` as the independent variable
2. Interpret the SPSS output