Introduction to Statistics
lab 8

Johan A. Elkink

jos.elkink@ucd.ie

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Data

For this lab we will continue to make use of the Irish National Election Study (INES) data from the 2007 general election. See Lab 6 for download and subset instructions.

t-tests

As will be clear in this and the next lecture, there are three types of t-tests, which can be executed as follows:

- One-sample t-test, where you compare the mean of one variable against a fixed value. For example, to test whether the mean of a variable **v0190** differs from 5:
  SPSS: `T-TEST TESTVAL 5 /VARIABLE = v0190.`
  R: `t.test(v0190, mu = 5)`
  Stata: `ttest v0190 == 5`

- Paired-samples t-test, where you compare the mean on two variables for the same individuals (e.g. a test score before and after a class). For example, to test whether the means of two variables, **v0190** and **v0191**, for the same individuals differ:
  SPSS: `T-TEST PAIRS = v0190 v0191.`
  R: `t.test(v0190, v0191, paired = TRUE)`
  Stata: `ttest v0190 == v0191`

- Independent-samples t-test, where you compare the mean on the same variable for two different groups. For example, **v0190** depending on whether a variable **union** is 1 or 0:
  SPSS: `T-TEST GROUPS = union(0,1) /VARIABLES = v0190.`
  R: `t.test(v0190 ∼ union)`
  Stata: `ttest v0190, by(union)`

For the following statements, formulate the null hypothesis and the alternative hypothesis, perform the appropriate t-test, and formulate the conclusion from the test:

1. Voters are more likely to vote Labour (**v0190**) than they are to vote Sinn Fein (**v0192**).

2. Union members are more likely to vote Labour (**v0190**) than are non-union members (**v0936**).

3. Voters in Ireland tend to the political right (i.e. **v0239** is greater than 5 on average).

4. Fianna Fáil voters are more right-wing (**v0239**) than Fine Gael voters (**v0195**), on average.

5. Voters like Enda Kenny (**v0522**) more than they like Pat Rabitte (**v0524**).[1]

6. *Extra challenge*: Voters who agree that there should be very strict limits on immigration (from "slightly agree" to "strongly agree") (**v0247**) are more likely to vote for Sinn Fein (**v0192**) than the others.

Attitudes towards abortion among younger voters

1. Construct a new variable **age** which is calculated on the basis of **v0906**. Remember that the year of the survey is 2007. SPSS users will need the `COMPUTE` command – cf. how you calculated the logarithmically transformed variables (see Lab 2). Stata users will use `gen`.

2. Produce a frequency table of attitude towards abortion (**v0266**) to check whether missing values and numerical values are correctly coded.[2]

3. Produce a scatter plot of attitude towards abortion by **age**. Add a regression line.

4. Regress attitude towards abortion on age.

5. Recode age into a variable **young**, which is 1 if **age** is less than 30 and 0 otherwise.

6. Regress attitude towards abortion on the young dummy variable. (Note comments in Lab 6.)

7. Perform a t-test whether the mean on abortion is different for young versus old. Compare the result to the regression result.

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[1]R users might have to check whether it is properly coded as a numerical variable.
[2]R users need to include the option `exclude = NULL` in the `table()` command to include the missing values.