Tutorial 08, Hilary Term

Research Methods for Political Science (PO3600)

Stefan Müller

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Trinity College Dublin
http://muellerstefan.net/research-methods

Outline

1. Standardised regression coefficients
2. Non-parametric tests
3. Logistic regression

Odds

Odds:

Odds

Odds: Ratio of the probability that an event will occur divided by the probability that an even will not occur.

$$Odds = \frac{prob(rain)}{prob(no\ rain)} = \frac{0.2}{0.8} = \frac{1}{4} = 0.25$$

Important: Probabilities always range between 0 and 1, but odds may be greater than 1. A 80% probability of rain has odds of $0.8/0.2 = 4.0$.

Odds Ratios (II)

"Odds are fairly easy to visualise when they are greater than one, but are less easily grasped when the value is less than one. **Thus odds of six (that is, six to one) mean that six people will experience the event for every one that does not** (a risk of six out of seven or 86%). An **odds of 0.2** however seems less intuitive: **0.2 people will experience the event for every one that does not**. This translates to one event for every five non-events (a risk of one in six or 17%)."
Source: Davies et al. (2012):
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1112884/pdf/989.pdf

Odds Ratio

Odds ratio displays the ratio of two odds. Suppose women have a 0.6 probability of answering an exam question correctly, while men have a 0.55 probability.

$$Odds_{women} = \frac{0.6}{1 - 0.6} = 1.5 \tag{1}$$

$$Odds_{men} = \frac{0.55}{1 - 0.55} = 1.22 \tag{2}$$

$$Odds\ ratio = \frac{Odds_{women}}{Odds_{men}} = \frac{1.5}{1.22} = 1.23 \tag{3}$$

The **odds** for women to answer a question correctly are 1.23 times times higher **than the odds** for men to answer the question correctly.

Presentations

Some thoughts:

- Keep slides as simple as possible
  - White background
  - Large enough font size
  - Not too many bullet points
  - Avoid sentences
- Explain variable coding explicitly
- Think about control variables (theoretically justified)
- Explain substantive results

Exercise

Linear regression:

1. Dependent variable: `fttrump`, Independent variables: `ftobama`; Important: recode missing values properly
2. Run regression model, but select "Save" first and tick "Unstandardised" in the "Predicted Values" box

Exercise

Linear regression:

1. Dependent variable: `fttrump`, Independent variables: `ftobama`; Important: recode missing values properly
2. Run regression model, but select "Save" first and tick "Unstandardised" in the "Predicted Values" box
3. Plot a scatterplot (using the Chartbuilder): x-axis: `ftobama` (recoded), y-axis: `PRE_1`
4. Rerun regression but add `gender`
5. Plot a new scatterplot with `ftobama` (recoded) on x-axis and `PRE_2` on y-axis; add `gender` for "Set color"

Exercise

Logistic regression:

1. Dependent variable: `warm`, Independent variables: `fttrump`, `gender`; Important: recode missing values properly
2. Run regression model, but select "Save" first and tick "Probabilities" in the "Predicted Values" box

Exercise

Logistic regression:

1. Dependent variable: `warm`, Independent variables: `fttrump`, `gender`; Important: recode missing values properly
2. Run regression model, but select "Save" first and tick "Probabilities" in the "Predicted Values" box
3. Plot a scatterplot (using the Chartbuilder): x-axis: `fttrump` (recoded), y-axis: `PRE_3`
4. Rerun regression but add `gender`
5. Plot a new scatterplot with `fttrump` (recoded) on x-axis and `PRE_4` on y-axis; add `gender` for "Set color"