

Research Methods in Political Science I, Homework Assignment 9

Due: 9pm on 9 December 2015

How to submit: Send as email attachments

Email subject: Research Methods 1, Assignment 9

File names: hw09-YourName.pdf and data09-YourName.csv

I. Run simulation of logistic regression as instructed below.

1. Define the data generating process (DGP) and generate data.
 - (1) Generate predictors
 - (2) Calculate the probabilities of success based on the DGP you define.
 - (3) Randomly draw the response (0 or 1) using the probabilities calculated above.
2. Estimate the parameters by logistic regression.
3. Estimate the parameters by linear regression (OLS).
4. With the DGP fixed, repeat data generation and estimation, and study properties of the estimates obtained by logistic regression. Under what condition(s) does logistic regression work well? Is it fine to apply linear regression to binary outcomes? Why or why not? What problems do we have when we use linear regression for binary outcomes?

II. Find a dataset that contains a binary variable and predictors that explain the binary outcome (at least one predictor should be continuous). You can create your own dataset using multiple data sources. Submit the dataset saved in a CSV file in which the first row contains the variable names written in alphanumeric characters.