Research Methods in Political Science I, Homework Assignment 6

Due: 9pm on 18 November 2015

How to submit: Send as email attachments

Email subject: Research Methods 1, Assignment 6

File names: `hw06-YourName.pdf` and `data06-YourName.csv`

1. Run simulations of multiple regression to answer the following questions. Specify the parameters, the sample size, and the values of predictors as you want. For each question, compare the results obtained by (at least) two different sample sizes. You do not have to answer the question in the order listed below as long as you answer all the questions. You do not have to submit your R codes.

   (1) Examine the properties of coefficient estimates using statistics, histograms, etc.

   (2) Examine the characteristics of the 95 percent confidence intervals. In so doing, visualize randomly chosen 100 CIs in a single figure.

   (3) Examine the characteristics of the 50 percent confidence intervals. In so doing, visualize randomly chosen 100 CIs in a single figure.

   (4) Run a regression analysis with *excluding at least one predictor* that generated the data. Then, examine the characteristics of the coefficient estimates and the residuals.

   (5) Add a predictor that is not used to generate data to the regression model and estimate the parameters. Then, examine the characteristics of the coefficient estimates and the residuals.

2. Find a dataset that you can analyze by linear regression. The dataset must have one possible response and at least two possible predictors. 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.