

## Homework 10

1. Using Anscombe's data on state public school expenditures (found in Fox's car library), estimate a model regressing per capita education spending on per capita income, proportion of population under 18, and urban proportion of the population. Using the methods discussed in class and outlined in the two Fox textbooks do the following (include all appropriate graphs):
  - Examine the model for evidence of data with high leverage.
  - Examine the model for evidence of outliers.
  - Examine the model for evidence of influential data.
2. Gary Cox's book *Making Votes Count* discusses how both social structures and political institutions jointly influence the number of effective parties in a country. I have sent you data that will allow you to assess this theory. Using the data I emailed to you, estimate the following model:

$$\text{lm}(\text{candidates} \sim \text{groups} + \text{runoff} + \text{groups} \times \text{runoff})$$

The variable *candidates* is a proxy measure for how many effective political parties there are in a country. This measure reports the average number of candidates that run for president in each country in the dataset. The variable *groups* considers the number of social cleavages that exist in a society, and is a measure of the average number of ethnic groups in each country. The variable *runoff* considers whether a country has a presidential runoff system ( $\text{runoff}=1$ ) or not ( $\text{runoff}=0$ ). Cox's theory suggests that the impact of social cleavages on the number of candidates, should be conditional on whether or not a runoff system is used.

Assess this theory. Include a writeup of our analysis that you think would be appropriate for the results section of a journal submission. Also include all appropriate tables and graphs. Pay special attention to assessing the conditional influence of social cleavages and a runoff system.

For more information on the theory and data used in this question see Amorim and Cox's 1997 AJPS piece, "Electoral Institutions, Cleavage Structures, and the Number of Parties." or Cox's book.