STAT 511 Final Project

You are to conduct a final project which will show your mastery of regression and allow you to dig deeply into either an application of regression or a topic not covered fully in class.

This project will be graded as follows:

1. (10%) Project proposal. A short one-paragraph to one-page description of your proposed project. This is due on 11/21/14.

2. (40%) Technical merit. Your project is technically sound, with all methods being statistically rigorous.

3. (30%) Clarity of description. Your project should be written up professionally (Word or LaTeX or something similar). You should clearly describe each step of your project. Plots should be clear and referenced in the text. Your final report should be no more than 10 pages in length.

4. (20%) Commented code. You should include clearly commented R-code which could be used to replicate the technical aspects of your project. I should be able to easily find code for each task done in your project.

I STRONGLY encourage you to find a way to make this project relevant to your PhD research. Example projects include:

- Use methods described in class to analyze a dataset which is likely to be part of your dissertation. Clearly describe the data and carefully analyze it. Make conclusions from your analysis.

- Read and summarize a statistical paper related to regression and your research. Conduct a simulation study to illustrate the methods developed in the paper. Statistics students might consider a paper written by a potential adviser.

- Pick a section of the textbook that was not covered (or was glossed over) in class, but that is potentially related to your research. Summarize the material and either analyze a dataset using the methods, or conduct a simulation study to illustrate the methods. Example topics include:

  1. Numerical methods for maximum likelihood estimation of GLM parameters.
  2. Linear (or generalized linear) mixed models.
  3. Bayesian inference for linear models.
  4. Regression for spatially-correlated data.
  5. Classification and regression trees.