Bayesian Inference PSTAT 215A
Final project **Name**: RBG/Fall 2009

Assigned 24 Nov 2009; due 11 Dec 2009. *You may discuss high level concepts with your peers, but all work handed in for credit must be your own.*

A survey was done of bicycle and other vehicular traffic in the neighborhood of the campus of UC Berkeley in the spring of 1993. Six city blocks were selected at random; each block was observed for one hour, and the numbers of bicycles and other vehicles travelling along that block was recorded. The sampling was stratified into six types of city blocks: busy, fairly busy, and residential streets, with and without bike routes, with ten blocks measured in each stratum. A data file linked from the course web page contains the number of bicycles and other vehicles recorded in the study, as well as the information about the strata. (Unfortunately, the data for two of the residential blocks were lost.) You will recognize a portion of this data from the fourth homework assignment.

Your task is simply stated: Analyze this bicycle data using Bayesian model(s) and any corresponding inference methods that you deem appropriate. Tell a story about the data, and show how it paints a picture of bicycle/vehicular traffic in Berkeley. Imagine the sorts of uses an urban planning team might put to your analyses, and/or how the media might present (or miss-represent) conclusions based upon your analysis. In other words, be thorough and present your results clearly. You may hand in code, but only as an appendix. Your report should be geared towards a statistical audience rather than a computing one.

There are many valid ways of analysing this data, although some are better than others. You must motivate and criticise your modeling choices and accompanying inferential procedures both in absolute terms, and relative to sensible alternatives. Be mindful that the point of this exercise is to highlight your command of the new tools and concepts presented in this course, but also that the work you hand in must be well organized and focused on the task at hand: analysing the bicycle data.

Finally, have fun. Exploring new data is what our business is all about.