1 Overview and Course Objectives

This course is designed to get you over the basic hurdles you will face when beginning to learn R. It will cover some of the basic tasks that you face as quantitative researchers and will put you in a position to extend your knowledge of R in whatever direction is required to meet your own needs.

This course is a lecture, meaning there will be no explicit lab component. However, students with laptops are welcomed to bring them to class to follow along with the notes. The materials for the course will be made available as will all of the code to generate all of the results. Both the instructor and teaching assistant will be available outside class to help students with any specific problems.

There is no formal assessment in the course (i.e., assignments), though there will periodically be exercises on which students can work outside of class to develop their knowledge and understanding of R.
Outline

1. Getting to Know R and Data Types. (7/17-18)
   - R Basics (working with an object oriented language)
   - Vectors and matrices
   - Reading in data from other statistical programs
   - Different data types in R.
   - Basic data management (recoding, transforming, generating new variables)
   - Filtering/subsetting with logical expressions

2. Basic Statistical Routines (7/19)
   - Factors and contrasts
   - Cross-tabs
   - Linear Models
   - GLMs

3. Intro to Traditional Graphics. (7/20)
   - Overview of different graphics systems
   - Making graphs in the traditional graphics environment.

4. Basic Function Writing (7/23)
   - Writing basic functions
   - Repeated calculations - loops and apply
   - Merging Datasets

5. Lattice Graphs (7/24)
   - Difference between lattice graphs and traditional graphs
   - Making graphs in the Lattice system.

6. The Effects Package (7/25)
   - Effects for linear models with interactions
   - Effects for non-linear models

7. ggplot2 (7/26)
   - Model-based graphing
   - Difference between ggplot2 and the other graphical packages

8. R and \LaTeX with Sweave (7/27)