Statistics 5303

Spring 2016

Lab #1

The first lab in STAT 5303 occurs on the first day of the semester, Tuesday January 19, 2016. Unfortunately, this is before the first lecture, which is on January 20. Nevertheless, we will endeavor to make some use of this jump start recitation section.

Although this is labeled a "lab" section, it is not given in a computer lab space. It is not necessary to have a computer with you to get value from the lab, but students often find it helpful to bring one. Lab 1 is one of those labs where it might be useful.

Our class will be using the R statistical software system. It is free, and it has some really great stuff in it. In this lab, I only want you to learn about a few things:

1. How to download and install R on your computer.

2. Learn the difference between installing an R package on your computer and loading an R package into your current R session.

3. How to (download and) install packages for your R system. For STAT 5303 you will need the following packages:

   - cfcdae (from `http://users.stat.umn.edu/~gary/classes/5303/software.html`)
   - Stat5303libs (from `http://users.stat.umn.edu/~gary/classes/5303/software.html`)
   - oehlert (optional, from `http://users.stat.umn.edu/~gary/Book.html`)
   - lme4 (and its dependencies)
   - mvtnorm (and its dependencies)
   - car (and its dependencies)
   - perm (and its dependencies)
   - effects (and its dependencies)
   - tseries (and its dependencies)
   - FrF2 (and its dependencies)
   - RLRsim (and its dependencies)
   - rsm (and its dependencies)
   - conf.design (and its dependencies)
   - pbkrtest (and its dependencies)

   All except the first three are standard R packages that can be installed over the web with little fuss, and there is a simple way to tell R to fetch any dependencies. The first three need to be downloaded and installed in two steps. There are instructions on the respective web pages.

4. How to save R output and format it properly in MS Word or other text processors (the key is `to use a monospaced font such as Courier` when printing material from R). In monospaced font, tables look like tables and you get this:

```
Response: ppb
          Df  Sum Sq Mean Sq F value    Pr(>F)
treatment  4 141.701  35.425  27.298 9.897e-07 ***
Residuals 15  19.466   1.298
---
Signif. codes:  0 *** 0.001 ** 0.01 * 0.05 . 0.1   1
```

However, in a proportional font you get this:

Response: ppb
Df Sum Sq Mean Sq F value Pr(¿F)
treatment 4 141.701 35.425 27.298 9.897e-07 ***
Residuals 15 19.466 1.298
—
Signif. codes: 0 *** 0.001 ** 0.01 * 0.05 . 0.1   1

which is very difficult to read. *Use a monospaced font for any R output you use in your homework solutions, final project, and exam notes!!!!* You will lose points if you don't.

5. How to save R graphical output (which you will later want to embed in reports, etc).