

Applied Linear Mixed Models in Behavioral Research

Assignment 1: due 3/2/2007

1. Next time we meet, you should have access to a working copy of R . R can be downloaded for free from <http://www.r-project.org>. Download the version for your computer platform (Windows or Macintosh). Unpack it, and follow the instructions on the screen to install R .
2. Launch R and type the following commands into R :

```
x1 <- rnorm(30) # random sample of 30 with mean = 0 and sd = 1
x2 <- rnorm(30, mean = 1.5, sd = 1)
t.test(x1, x2) # t-test comparing x1 and x2
hist(x1) # a histogram of x1
hist(x2) # a histogram of x2
cor(x1, x2) # Pearson's correlation between x1 and x2
par(mfcol = c(2, 2))
hist(x1, br = seq(-4, 4, by = .5))
hist(x2, br = seq(-4, 4, by = .5))
plot(x1, x2, xlim = c(-4, 4), ylim = c(-4, 4))
abline(b = 1, a = 0)
help(demo) # find out what demo is
demo(graphics)
help.search("glm") # search help files for a partial match
```

3. Save workspace. By default, the Windows version of R uses the “C:\\Program Files\\R\\R-2.4.1” directory as your main workspace. You should switch it to a different workspace, like “G:\\My Documents\\tryR\\lme”, assuming that you have already created the “tryR\\lme” directory on your G: drive. This helps you organize projects by R workspaces.

```
save.image("G:\\My Documents\\tryR\\lme\\.RData")
savehistory("G:\\My Documents\\tryR\\lme\\.Rhistory")
```

These two commands save your work into two files: 1) .RData, which contains all data objects and 2) .Rhistory, which contains all the commands you have typed since the beginning of the current R session.

4. Use a text editor like Notepad or Simpletext to edit the .Rhistory file and use the “Save As” option to save the edited commands into an R script such as “G:\\My Documents\\tryR\\lme\\assign1.R”)

5. Exit and re-launch R . Switch the workspace to where “assign.R” is saved, and run “assign1.R” with `source("assign1.R", echo = TRUE)`, or with the complete directory path `source("G:\\My Documents\\tryR\\lme\\assign1.R", echo = TRUE)`. Print the output and hand it in next time.
6. Read data with `read.table()`. On “H:\Liy_Analy\instr\mulstat\lme” you will find a data file called “trainee.dat”. Copy that file to your workspace, then read it into a dataframe `df1` by typing `df1 <- read.table(file="trainee.dat", header = TRUE, skip = 1)`.
 - . Explain why you need the parameters `header = TRUE`, `skip = 1`. You can get that information from `help(read.table)`.
 - . Goto <http://www.psych.upenn.edu/~baron/rpsych/rpsych.html>, Section 6.9. Follow the R commands in that section to analyze `df1`. (Hint: do `rating <- as.vector(df1)` to convert the dataframe into a vector)
7. Go to <http://addictedtor.free.fr/graphiques/RGraphGallery.php?graph=109> and “Download or view” the sourcecode, save the source code into a file like “G:\\My Documents\\tryR\\lme\\rgallery109.R”.
8. Do the following to install the “quantreg” package. `install.packages("quantreg", repos = "http://lib.stat.cmu.edu/R/CRAN", dependencies = TRUE, clean = TRUE)`. The “quantreg” package is needed to run the `rgallery109.R` commands.
 - . Run `source("rgallery109.R")` and print the graph. Hand in the graph along with what you have done for items 5 and 6 above.
 - . If you encounter problems during installation or `source("rgallery109.R")`, hand in what these problems are and what you have done to try to fix them.