Introduction to R Programming
Lecture 1

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1 Some Reference Material

R Cookbook: http://www.cookbook-r.com/
R in Action: http://www.amazon.com/R-Action-Robert-Kabacoff/dp/1935182390
ggplot2: Elegant Graphics for Data Analysis (Use R!): http://www.amazon.com/ggplot2-Elegant-Graphics-Data-Analysis/dp/0387981403
Advanced R: http://adv-r.had.co.nz/ **&** http://www.amazon.com/Advanced-Chapman-Hall-CRC-Series/dp/1466586966

2 Installing and Loading Packages

Installing: install.packages('ggplot2')
Loading: library(ggplot2)
Updating: update.packages()

3 R language basics

Create a vector: v = c(1,4,4,3,2,2,3) or w = c("apple","banana","orange")
Return certain elements: v[c(2,3,4)] or v[2:4] or v[c(2,4,3)]
Delete certain element: v = v[-2] or v = v[-2:-4]
Extract elements: v[v<3]
Find elements: which(v==3) **Note**: the returns are the indices of elements

4 Numbers

Random Number: a = runif(3, min=0, max=100)
Rounding of Numbers: floor(a) or ceiling(a) or round(a,4)
Random Numbers from Other Distributions: rnorm(), rexp(), rbinom(), rgeom(), rnbinom() and so on.
Repeatable Random Numbers: set.seed()

5 Data Input

Loading Local Data: ?read.csv(); read.csv(file=" /documents/rugby.txt") or read.table(file=" /documents/rugby.txt")
Loading Online Data: read.csv("http://www.macalester.edu/ kaplan/ISM/datasets/swim100m.csv")
Attach: attach()

6 Graphs

Plot:plot()
Histograms: hist()
Density Plot:plot(density())
Scatter Plot: plot()
Box Plot: boxplot(time sex)
Q-Q Plot: qqnorm(), qqline() and qqplot()