**Introduction to R worksheet and exercises**

In this exercise you will work through a tutorial in R. The goal of this exercise is to familiarize you with the basics of R and R Studio as well as introductory data manipulation and visualization.

On the Desktop you will see a folder named “Introduction\_to\_R”. Rename this folder by adding your last name (i.e. Introduction\_to\_R\_YOURLASTNAME). You will need to save all your files in this folder for this tutorial. Saving your work will allow you to revisit your code when you need it in the future.

Open the “Introduction\_to\_R” folder, and double click “Introduciton\_to\_R.Rmd”. This will open the program R studio and the tutorial.

The tutorial contains 16 exercises. You can begin reading in the tutorial and refer back to this sheet when you are ready to answer a question or complete one of the exercises.

Open the R script

**#Opening a script and saving**

Exercise 1 (~Line 21):

Question 1: What do you notice about initial appearances?

Answer: \*Looking for something about grey chunks etc. or how the script only doesn’t containg the header etc.

Question 2: What is different between the two file types with respect to where the figure appears?

Answer: \* here students should recognize where the figure appears. In the script, the figure is plotted in the plots tab. In the notebook, the figure appears below.

**#Installing a package**

Exercise 2 (~Line 42)

Question 1: What can you do with this package?

Answer: \*manipulate dates or something of the sort

**#R as a calculator**

**#Familiarizing yourself with your working environment.**

Exercise 3 (~Line 72)

Code used to change your working directory to your ECOL5540 folder on your Desktop and display what your current working directory is:

Exercise 4 (~Line 89)

Question 1: What is the difference between the 2 codes and what does it do?

Answer: \*“<-” allows you to save things in your environment

Question 2: What happened when you forget to include the "" around the file name?

Answer: \*it doesn’t work

Question 3: What happens when your working directory is changed back to the "Downloads" file?

Answer: \*it doesn’t work because the pima.csv file doesn’t exist in that location.

**#Loading data**

Exercise 5 (~Line 97)

Error message from code in lines 98-100 and your code if you were able to get the .csv read in successfully.

Answer:\*doesn’t exist

Correct code to read in the Pima.csv file using the entire pathway to your folder on your Desktop: “/Users/….”

Exercise 6 (~Line 115):

Description of "read.csv" in help window:

Answer: \*paste in description

Exercise 7 (~Line 130):

Question 1: What are some other types of data in R according to your Google search?

Answer: \*matrix, etc

Exercise 8 (~Line 131):

Question 1: What does the structure looks like when it is a matrix?

Answer: \*only four lines show up and its not a line for each variable anymore

**#Working with data**

Exercise 9 (~Line 157):

Code to create a dataset with a subset of columns (columns 1-5):

Answer: \*however students find to subset code

First line of the resulting display of the data structure using the 'str' command:

Exercise 10 (~Line 172):

Question 1: What does the code “subset\_Pima<-Pima[,colnames(Pima) %in% columns\_to\_keep]” do? Describe in your own words.

Answer: \*subset the data to only include the columns found in the vector.

Exercise 11 (~Line 174):

Code that will pull only the first two rows of the columns "age" and "triceps" from the Pima data set:

Answer: \* code used to subset

Exercise 12 (~Line 198):

Code that will filter the Pima dataset to only include the individuals that are over 25, and then get the average B.M.I. for both the positive and negative test groups:

Fill out the values in the table

|  |  |
| --- | --- |
| Test | Mean BMI |
| 0 | \*31 |
| 1 | \*34 |

Exercise 13 (~Line 210):

Code you used to load the data “metadata” into R:

Answer:

Exercise 14 (~Line 234):

Code you used to create a new column "Infestation\_Stage", and add values to this column for each sample based on the sample ID:

Exercise 15 (~Line 254):

Code you used to save the metadata file as a new file in your folder on the Desktop:

Exercise 16 (~Line 263): Empty and reload of your environment.

\*\*Exercises 13-14 can be tailored to each specific class