**STAT 3022 LAB WEEK 1: INTRODUCTORY WEEK**

**Outline**

This first lab session involves learning 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. Installing and Loading packages essential for the course in R

**R Basics**

*x <- c(10, 3, 3, 4)*

> *x + 4*

[1] 14 7 7 8

> *y <- max(x)*

> y

[1] 10

> *x^2*

[1] 100 9 9 16

> *y <- min(x)*

> y

[1] 3

**Working with Data Objects**

> *x <- c(1, 3, 4, 6, 5, 6)*

> x [1] 1 3 4 6 5 6

> *mean(x) # Mean of x*

[1] 4.166667

> *sd(x) # Standard deviation of x*

[1] 1.940790

> var(x) # Variance of X

[1] 3.766667

Next create matrix y from the vector x, making it into 3 rows (and # thus, 2 columns).

> y <- matrix(x,nrow=3)

> y

[,1] [,2]

[1,] 1 6

[2,] 3 5

[3,] 4 6

R provides some familiar mathematical functions such as log, exp, and sqrt. These three are used often in statistics. (There are many other functions, including trigonometric functions.) Here are some examples:

*> exp(1)*

[1] 2.718282

> *log(exp(4))*

[1] 4

*> sqrt(20)*

[1] 4.472136

**Loading Some Essential Packages**

**Data on Porsche prices**

***>Install.packages(Stat2Data)***

***>Library((Stat2Data)***

***>Data(PorschePrice)***

***>attach(PorschePrice)***

***>PorschePrice***

**Data on Doctors and hospitals in metropolitan areas**

***> Library((Stat2Data)***

***>Data(****MetroHealth83****)***

***>attach(****MetroHealth83****)***

*>MetroHealth83*

**Data on Olympics Long Jump**

***> Library((Stat2Data)***

***>Data(****LongJumpOlympics****)***

***>attach(****LongJumpOlympics****)***

*>LongJumpOlympics*

***Data on Butterfly Ballot***

***>*** *Library((Stat2Data)*

*>Data* (PalmBeach *)*

*>attach(*PalmBeach*)*

*>* PalmBeach

Sparrows Data

***>*** *Library((Stat2Data)*

*>Data* (Sparrows*)*

*>attach(*Sparrows*)*

*>* Sparrows

**breakfast cereal Data**

***>*** *Library((Stat2Data)*

*>Data* (Cereal*)*

*>attach(*Cereal*)*

*>* Sparrows

**Capacitor voltage Data**

***>*** *Library((Stat2Data)*

*>Data* (Volts*)*

*>attach(*Volts*)*

*>* Volts

**Caterpillars Data**

*> Library((Stat2Data)*

*>Data (Caterpillars)*

*>attach(Caterpillars)*

*> Caterpillars*