

Plan for Week 8 Computer Lab

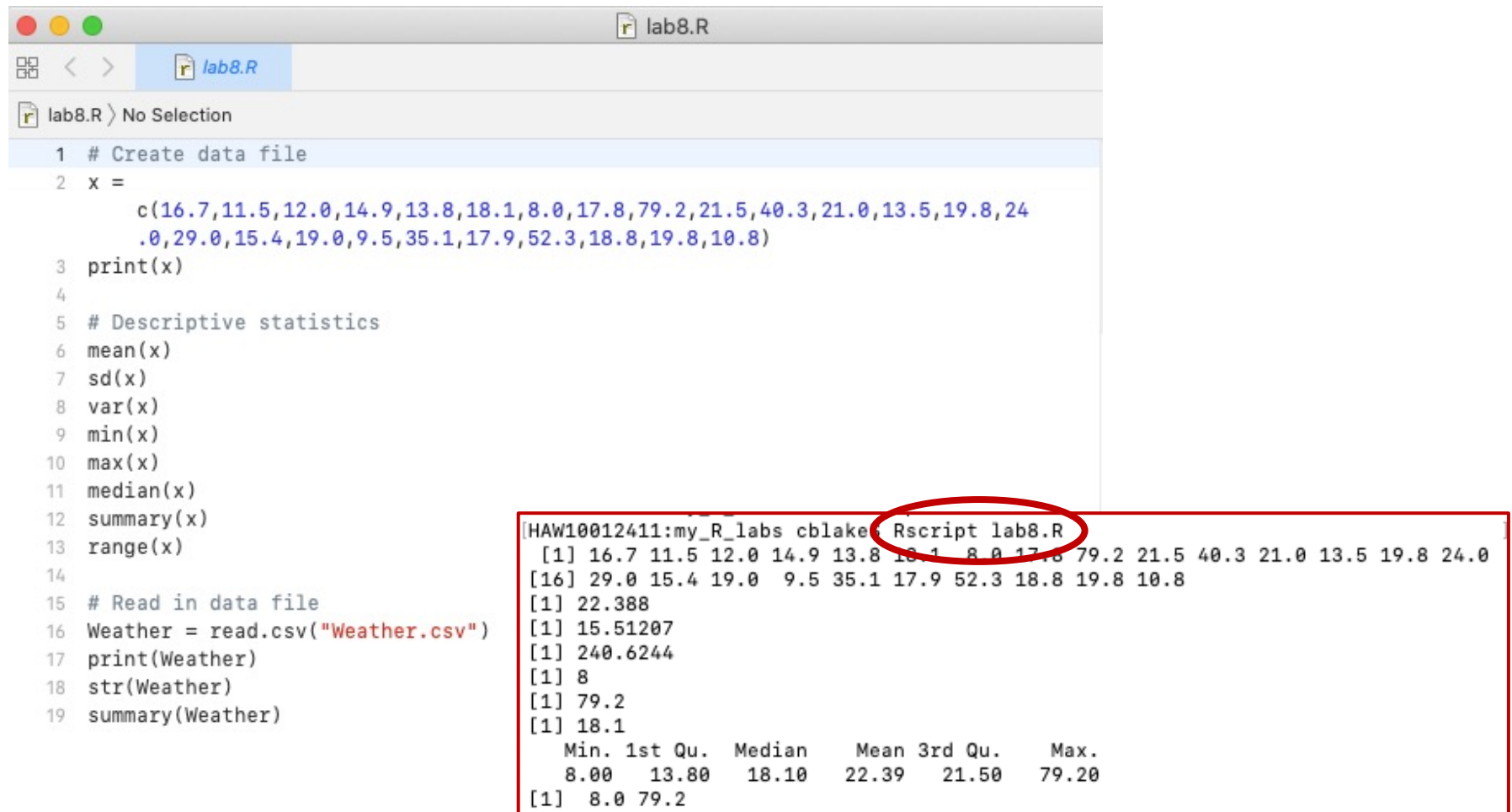
- In Weeks 8-12 of Labs, we'll be using the **R language**, which is optimized for statistical applications
- Options for running R:
 1. **Install R on your laptop**
(free downloads for Linux, Windows and Mac are available from many mirror sites such as <http://cran.csiro.au/>)
 2. **Run R on the PC** in front of you
- **R Assignments**: Please note there are 4 quizzes to complete, which are due on **Fridays of Weeks 9-12**, and are together worth 15% of the unit grade

Plan for Week 8 Computer Lab

- Please make sure you can run R 😊
- Please run through the “**R Laboratory 1**” document on Canvas ([R_lab1.pdf](#))
- We’ll learn how to use R to find **basic descriptive statistics** of data, and **generate statistical distributions**
- We’ll learn how to produce **useful statistics plots** such as box plots, histograms, and Q-Q plots

Running R

Option 1: Make a script and run it from the command line



The image shows a screenshot of an R script editor window titled 'lab8.R'. The script contains the following code:

```
1 # Create data file
2 x =
  c(16.7,11.5,12.0,14.9,13.8,18.1,8.0,17.8,79.2,21.5,40.3,21.0,13.5,19.8,24
    .0,29.0,15.4,19.0,9.5,35.1,17.9,52.3,18.8,19.8,10.8)
3 print(x)
4
5 # Descriptive statistics
6 mean(x)
7 sd(x)
8 var(x)
9 min(x)
10 max(x)
11 median(x)
12 summary(x)
13 range(x)
14
15 # Read in data file
16 Weather = read.csv("Weather.csv")
17 print(Weather)
18 str(Weather)
19 summary(Weather)
```

The terminal output shows the execution of the script. The first line of the output is 'HAW10012411:my_R_labs cblake Rscript lab8.R', which is circled in red. The subsequent lines show the output of the script, including the vector 'x', the descriptive statistics, and the summary of the 'Weather' data frame.

```
[1] 16.7 11.5 12.0 14.9 13.8 18.1 8.0 17.8 79.2 21.5 40.3 21.0 13.5 19.8 24.0
[16] 29.0 15.4 19.0 9.5 35.1 17.9 52.3 18.8 19.8 10.8
[1] 22.388
[1] 15.51207
[1] 240.6244
[1] 8
[1] 79.2
[1] 18.1
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
   8.00  13.80   18.10   22.39   21.50   79.20
[1] 8.0 79.2
```

Running R

Option 2: Start a command window

```
[HAW10012411:my_R_labs cblake]$ R
```

```
R version 4.2.3 (2023-03-15) -- "Shortstop Beagle"  
Copyright (C) 2023 The R Foundation for Statistical Computing  
Platform: x86_64-apple-darwin17.0 (64-bit)
```

```
R is free software and comes with ABSOLUTELY NO WARRANTY.  
You are welcome to redistribute it under certain conditions.  
Type 'license()' or 'licence()' for distribution details.
```

```
  Natural language support but running in an English locale
```

```
R is a collaborative project with many contributors.  
Type 'contributors()' for more information and  
'citation()' on how to cite R or R packages in publications.
```

```
Type 'demo()' for some demos, 'help()' for on-line help, or  
'help.start()' for an HTML browser interface to help.  
Type 'q()' to quit R.
```

```
> ■ Type commands here
```

Running R

Option 3: Run commands from the R console

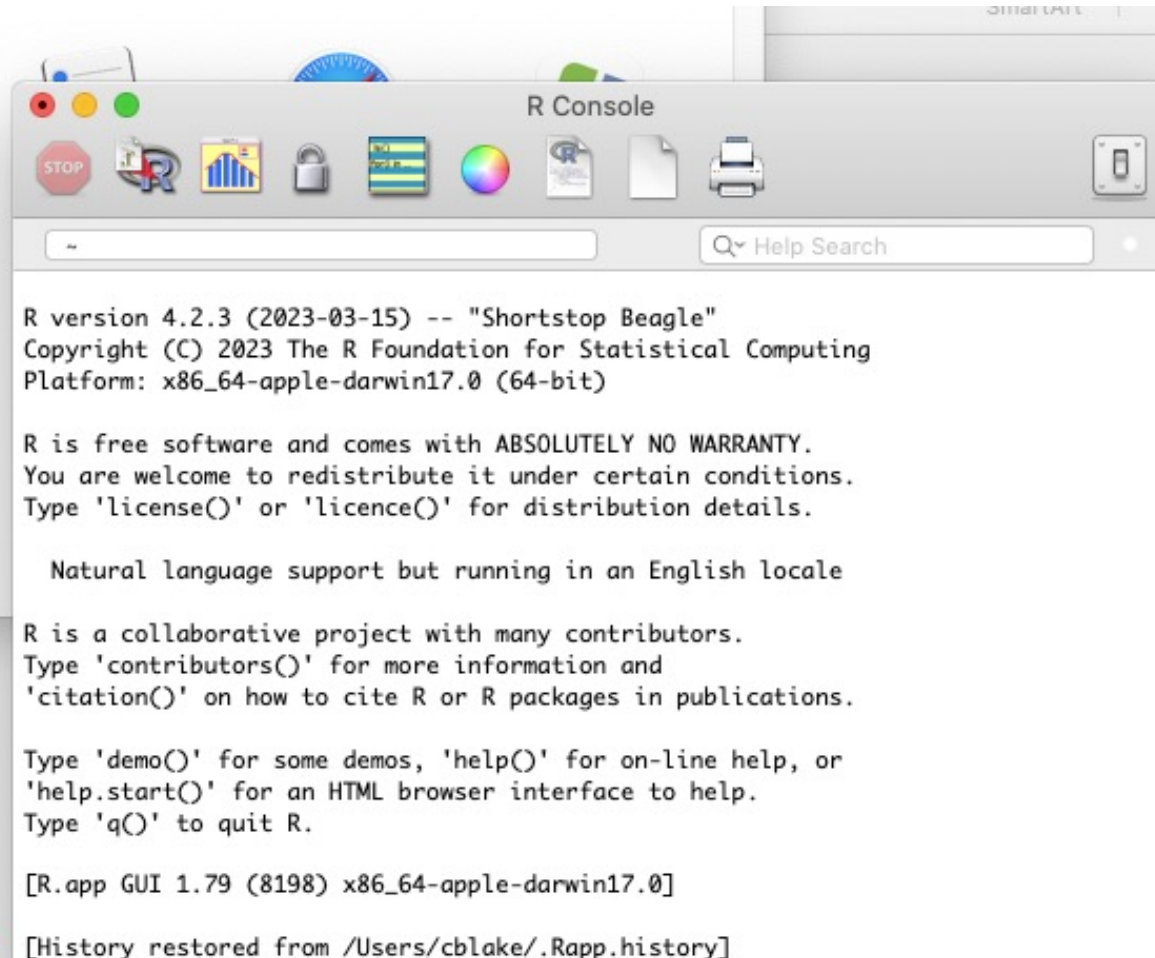


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A screenshot of the R Console window on a Mac. The window title is 'R Console'. The menu bar includes 'STOP', 'R', 'Bar Chart', 'Lock', 'Flag', 'Color Wheel', 'R Logo', 'Document', 'Printer', and 'Mobile Device'. Below the menu bar is a search bar labeled 'Help Search'. The main text area displays the following information:

R version 4.2.3 (2023-03-15) -- "Shortstop Beagle"
Copyright (C) 2023 The R Foundation for Statistical Computing
Platform: x86_64-apple-darwin17.0 (64-bit)

R is free software and comes with ABSOLUTELY NO WARRANTY.
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Natural language support but running in an English locale

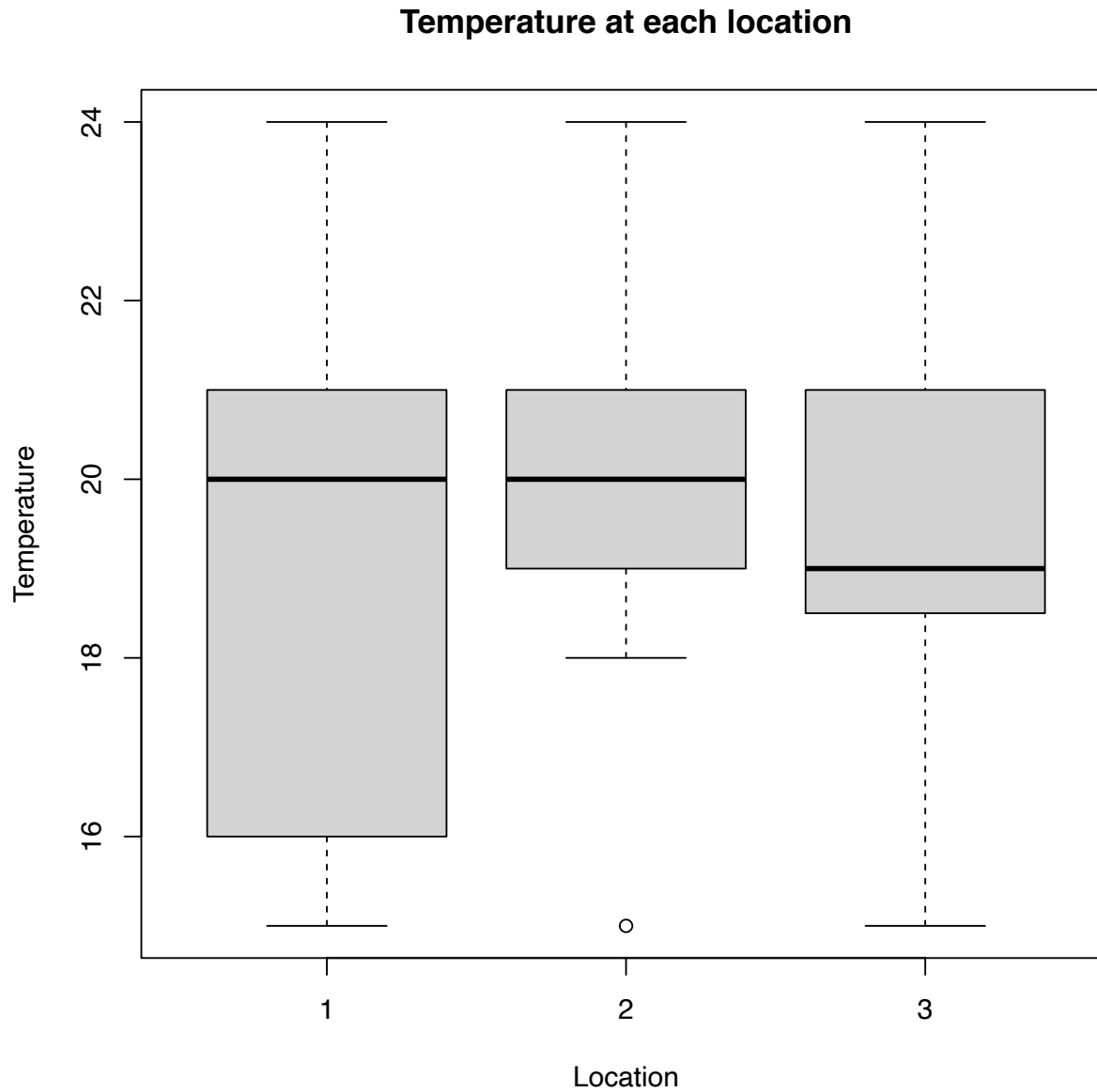
R is a collaborative project with many contributors.
Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in publications.

Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

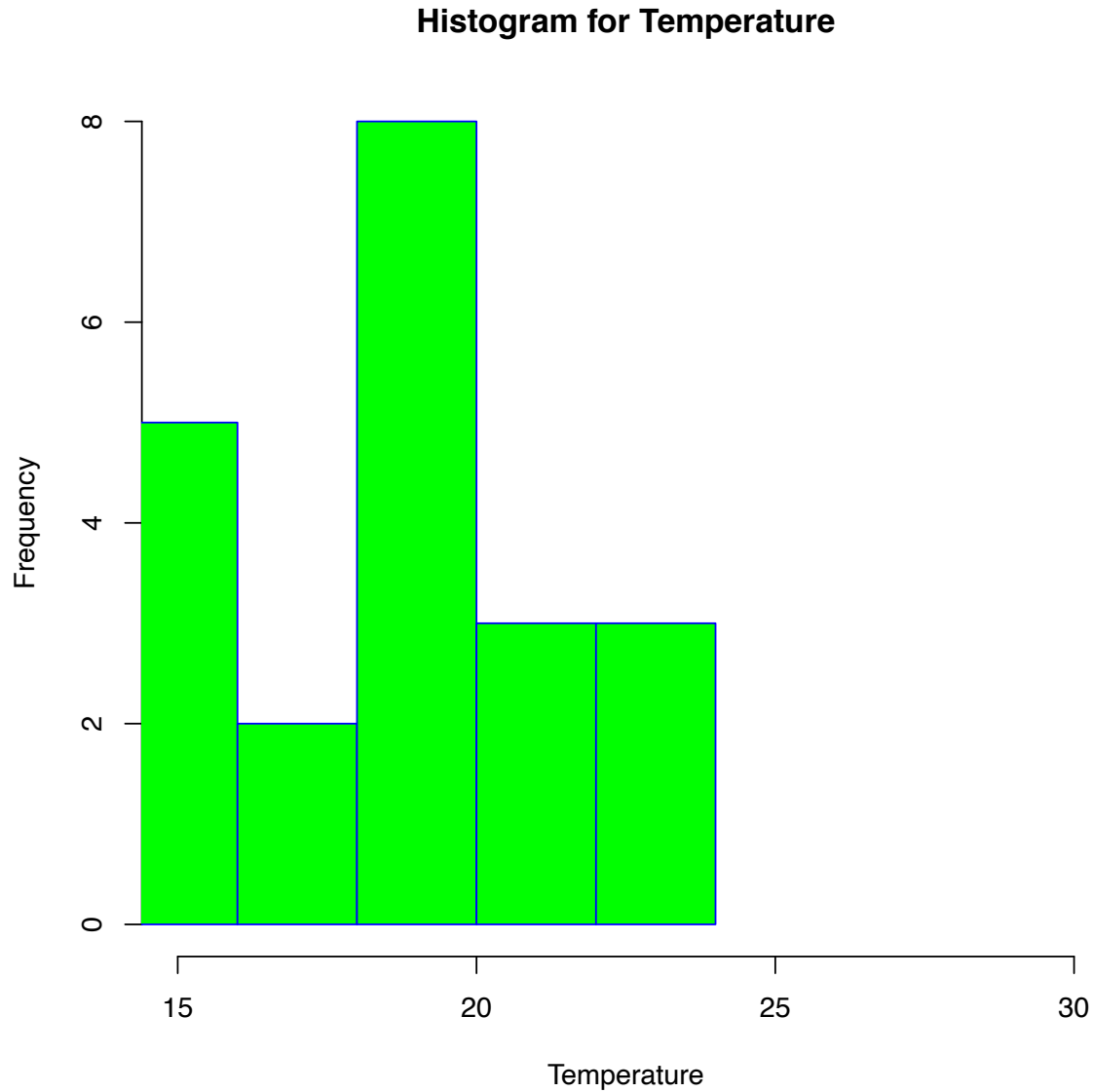
[R.app GUI 1.79 (8198) x86_64-apple-darwin17.0]
[History restored from /Users/cblake/.Rapp.history]

> **Type commands here**

Plots for Lab 8

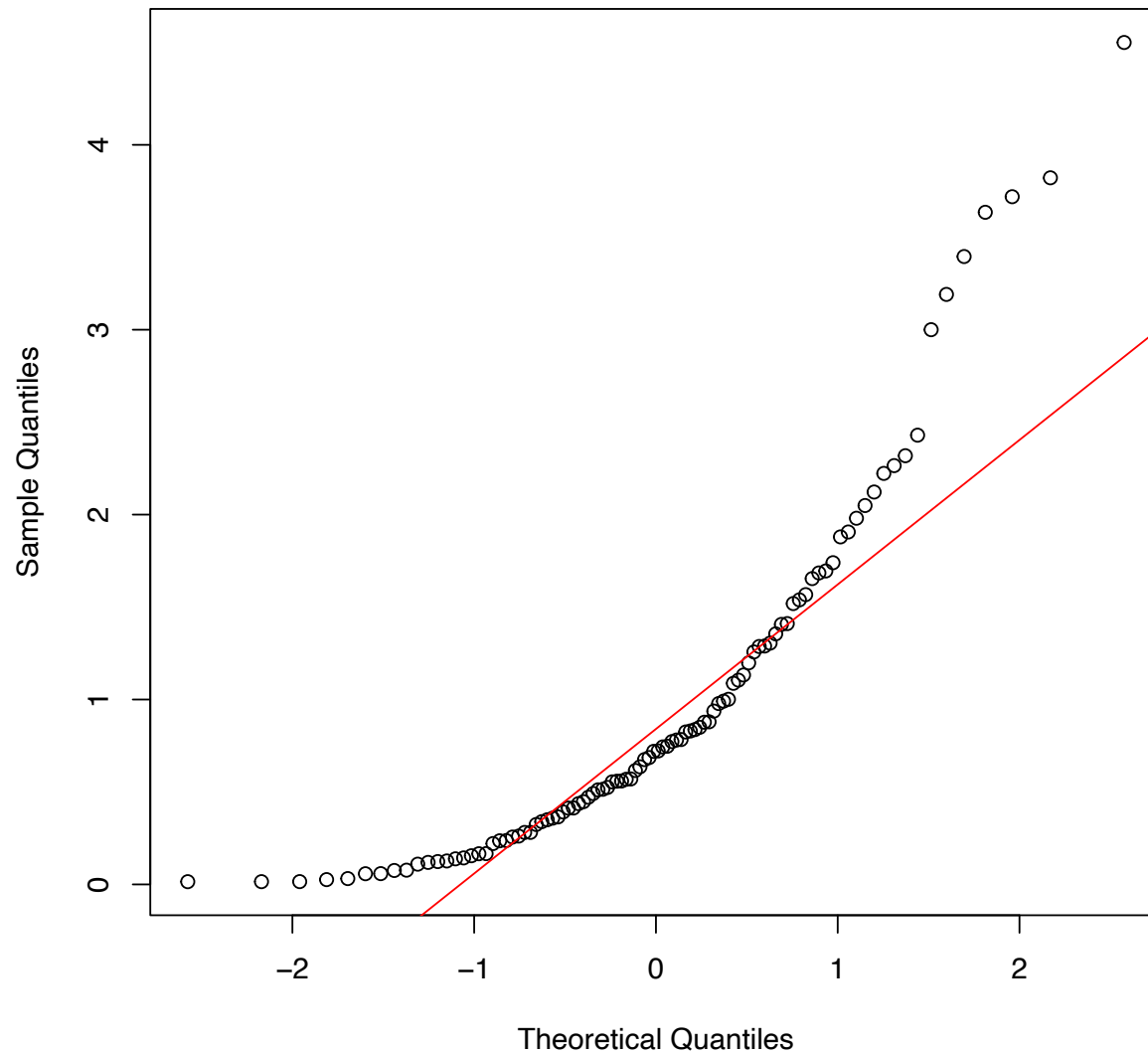


Plots for Lab 8



Plots for Lab 8

Normal Q-Q Plot



Plots for Lab 8

Normal Q-Q Plot

