Lab 2: Data Analysis - Part I

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Saturday, Februray 5, 2022

Contents

This document shows you how to do basic statistical methods with RStudio.

Note: Throughout this lab, we type the commands in `RStudio Editor` and then run the command (i.e. send it to the console).

Read Data Sets

```
# Read data from txt

ex11Data <- read.table(file="ex11-09.txt", header=T, sep="\t")
ex11Data
```

```
##    State Percentage
## 1     AL   22.71557
## 2     AK   25.94752
## 3     AZ   23.61538
## 4     AR   22.62697
## 5     CA   24.78167
## 6     CO   24.51913
## 7     CT   20.85119
## 8     DE   22.10767
## 9     FL   21.28983
## 10    GA   23.79723
## 11    HI   23.83540
## 12    ID   23.68766
## 13    IL   24.01953
## 14    IN   22.89478
## 15    IA   22.47752
```

```
## 16    KS   23.59029
## 17    KY   22.67510
## 18    LA   24.14418
## 19    ME   19.90881
## 20    MD   22.61271
## 21    MA   23.05325
## 22    MI   22.18334
## 23    MN   23.04598
## 24    MS   23.51140
## 25    MO   22.71651
## 26    MT   22.23371
## 27    NE   23.49972
## 28    NV   23.07692
## 29    NH   20.51672
## 30    NJ   21.14477
## 31    NM   23.73992
## 32    NY   23.39148
## 33    NC   22.96682
## 34    ND   25.58502
## 35    OH   22.15741
## 36    OK   23.83306
## 37    OR   23.00792
## 38    PA   21.44120
## 39    RI   23.31113
## 40    SC   22.76786
## 41    SD   22.88557
## 42    TN   22.46179
## 43    TX   24.79961
## 44    UT   28.36257
## 45    VT   21.41707
## 46    VA   23.58090
## 47    WA   23.45396
## 48    WV   21.44432
## 49    WI   22.61905
## 50    WY   23.63977
```

```
#Reading Data from csv
ex14Data <- read.csv(file="eg14-01.csv",header = T, sep=",")
ex14Data
```

```
##    Distance Velocity
## 1     0.032      170
## 2     0.034      290
## 3     0.214     -130
## 4     0.263      -70
## 5     0.275     -185
## 6     0.275     -220
## 7     0.450      200
## 8     0.500      290
## 9     0.500      270
## 10    0.630      200
## 11    0.800      300
## 12    0.900      -30
## 13    0.900      650
## 14    0.900      150
```

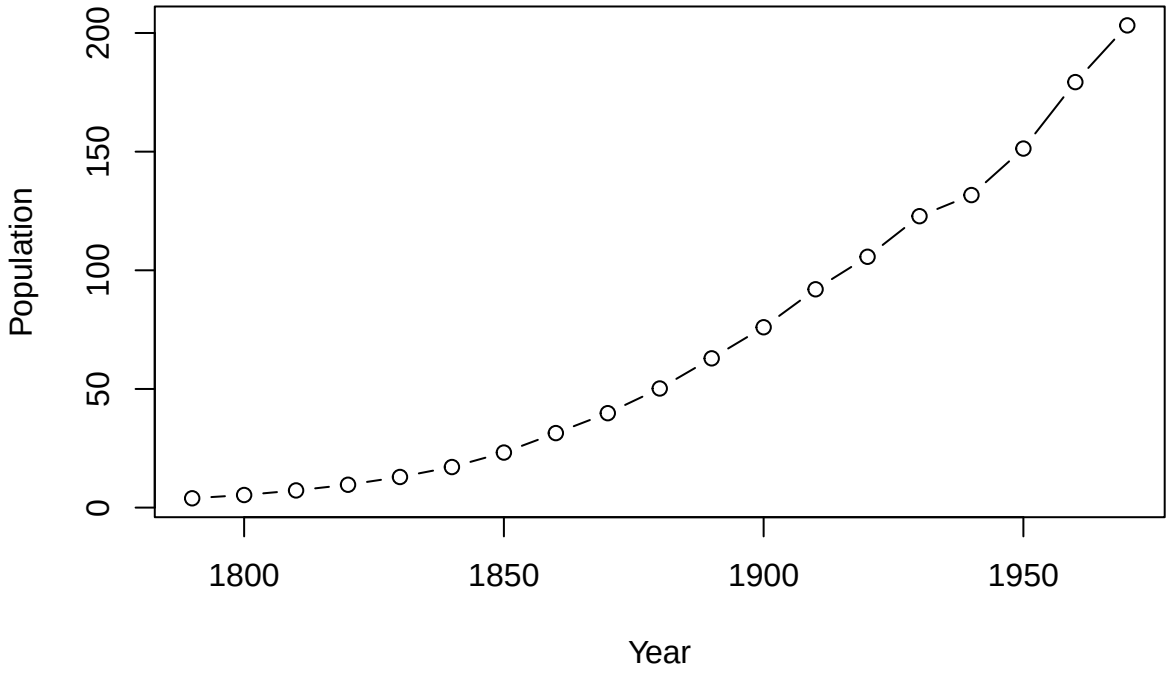
```
## 15    0.900      500
## 16    1.000      920
## 17    1.100      450
## 18    1.100      500
## 19    1.400      500
## 20    1.700      960
## 21    2.000      500
## 22    2.000      850
## 23    2.000      800
## 24    2.000     1090
```

Line Graph

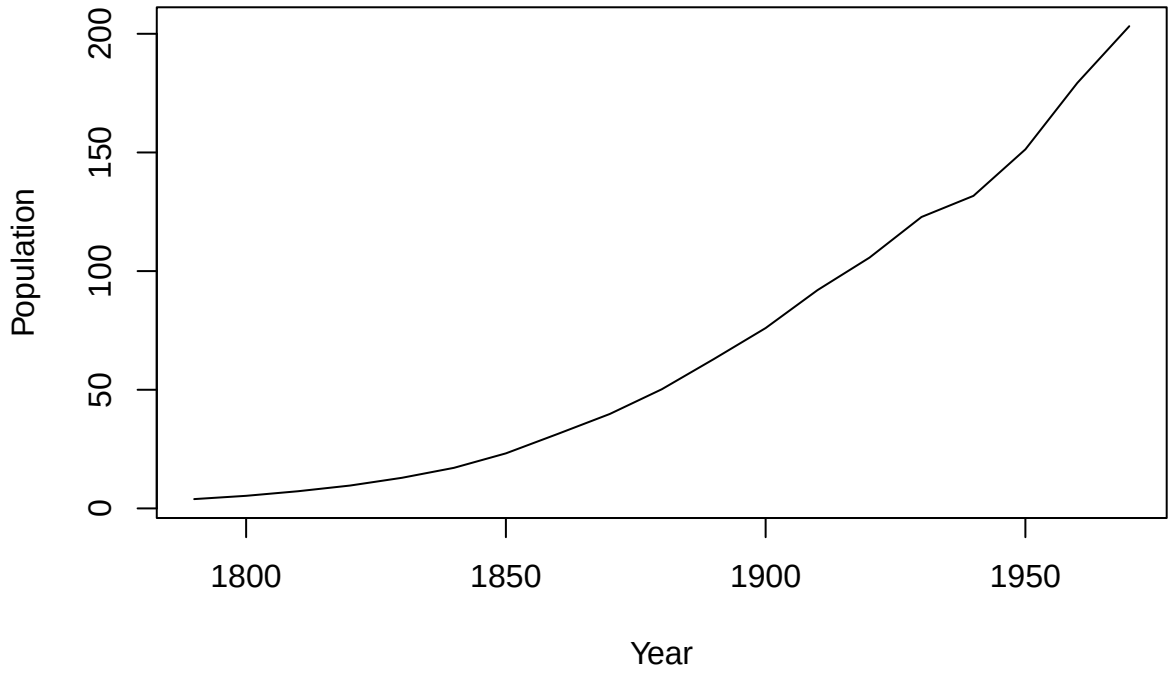
```
USdata <- read.table(file="UScensus.txt", sep="\t",header=T)
head(USdata)
```

```
##   Year Population
## 1 1790       3.93
## 2 1800       5.31
## 3 1810       7.24
## 4 1820       9.64
## 5 1830      12.90
## 6 1840      17.10
```

```
attach(USdata)
plot(Year,Population, type="b")
```



```
plot(Year,Population, type="l")
```



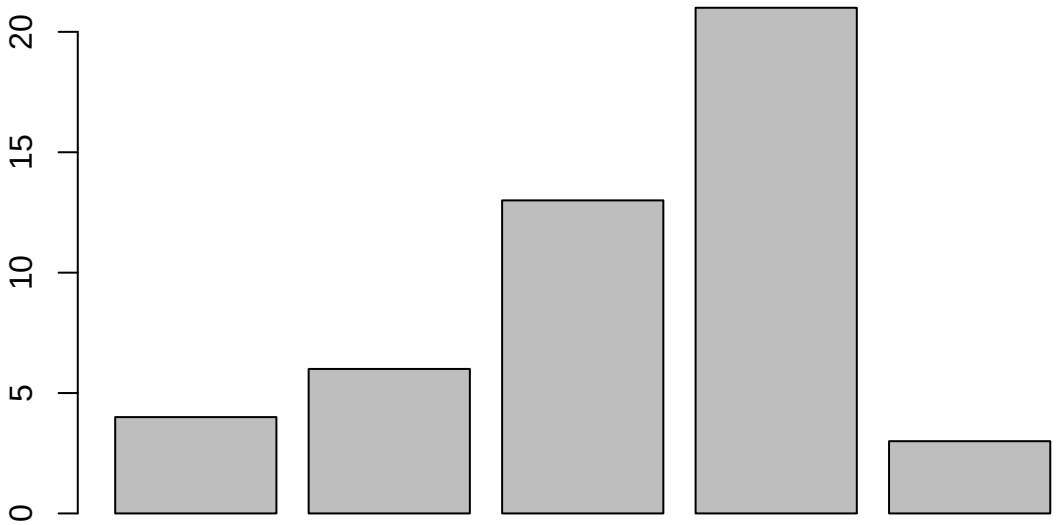

```
detach(USdata)
```

Bar Chart

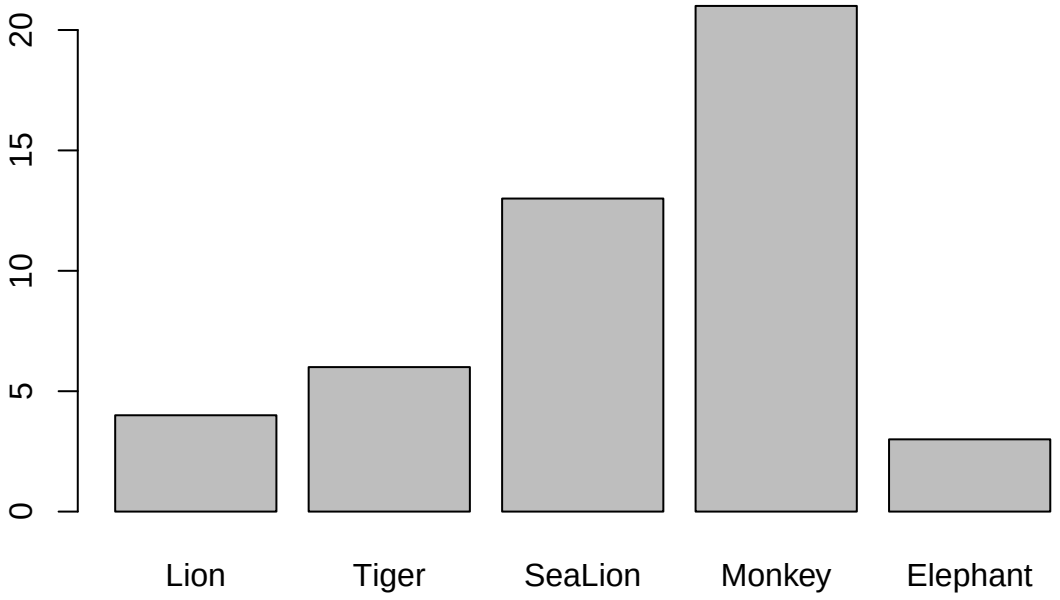
```
Zoo <- read.table(file="Zoo.txt",sep="",header=T)
head(Zoo)
```

```
##     Animal Count
## 1     Lion     4
## 2    Tiger     6
## 3  SeaLion    13
## 4   Monkey    21
## 5 Elephant     3
```

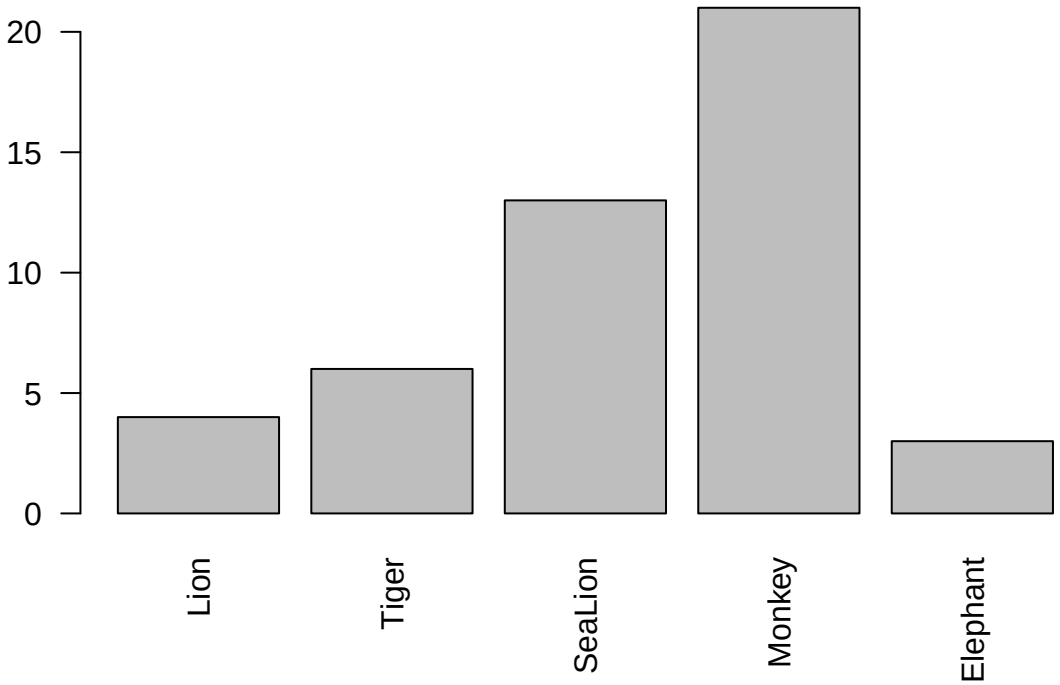
```
attach(Zoo)
barplot(Count)
```



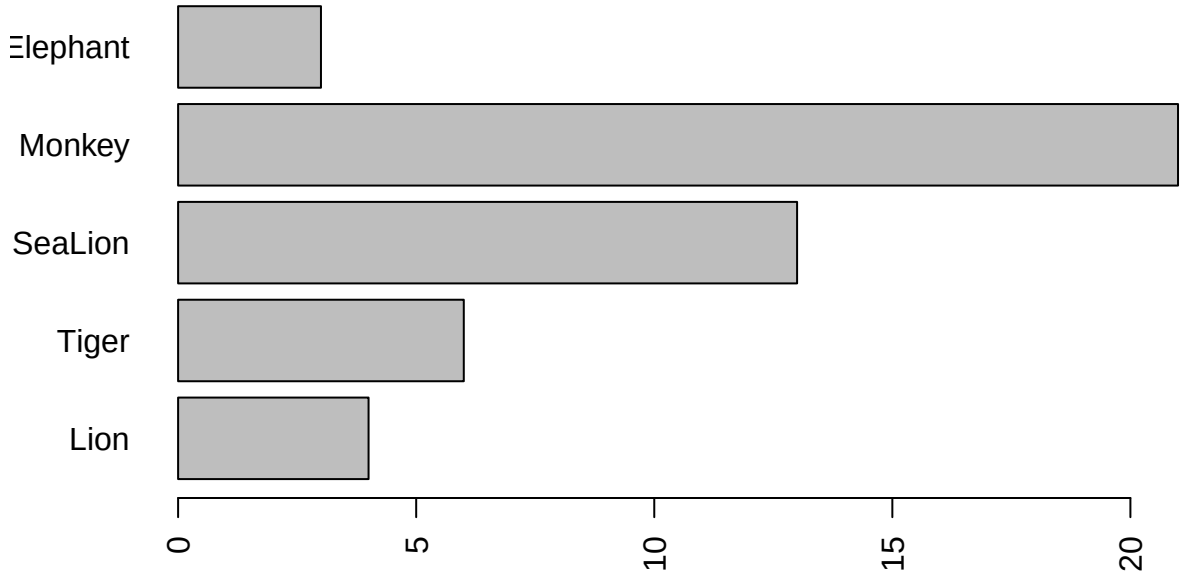

```
barplot(Count,names=Animal)
```




```
barplot(Count,names=Animal,las=2)
```




```
barplot(Count,names=Animal,las=2, horiz = TRUE)
```




```
detach(Zoo)
```

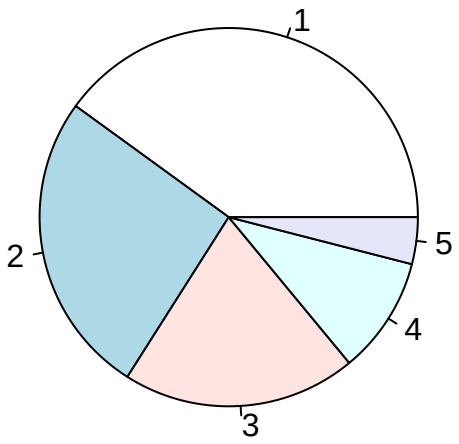
Pie Chart

```
myData <- read.csv(file="Exam1.csv",sep=",",header=T)
head(myData)
```

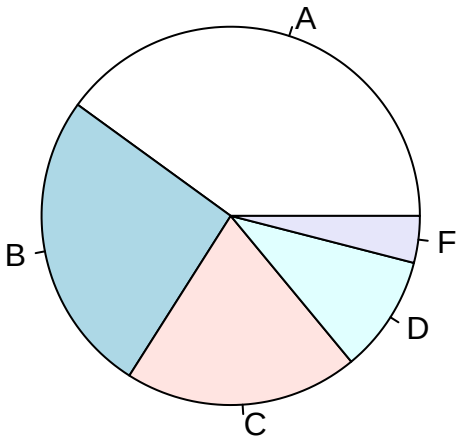
```
##   Grade Count
## 1     A    20
```

```
## 2     B    13
## 3     C    10
## 4     D     5
## 5     F     2
```

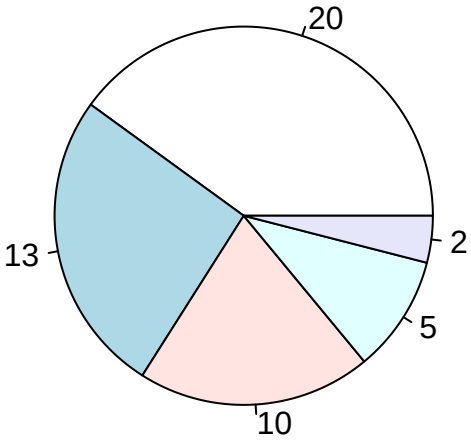
```
pie(myData$Count)
```




```
attach(myData)
pie(Count,labels=Grade)
```



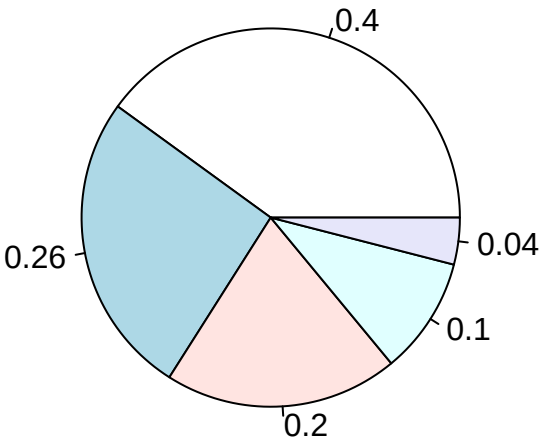

```
pie(Count,labels=Count)
```



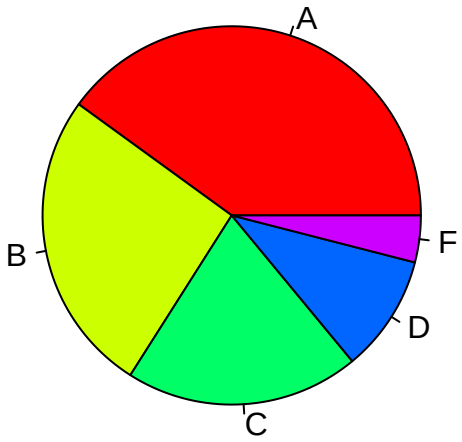
```
mylabel <- Count/sum(Count)
mylabel
```

```
## [1] 0.40 0.26 0.20 0.10 0.04
```

```
pie(Count,labels=mylabel)
```



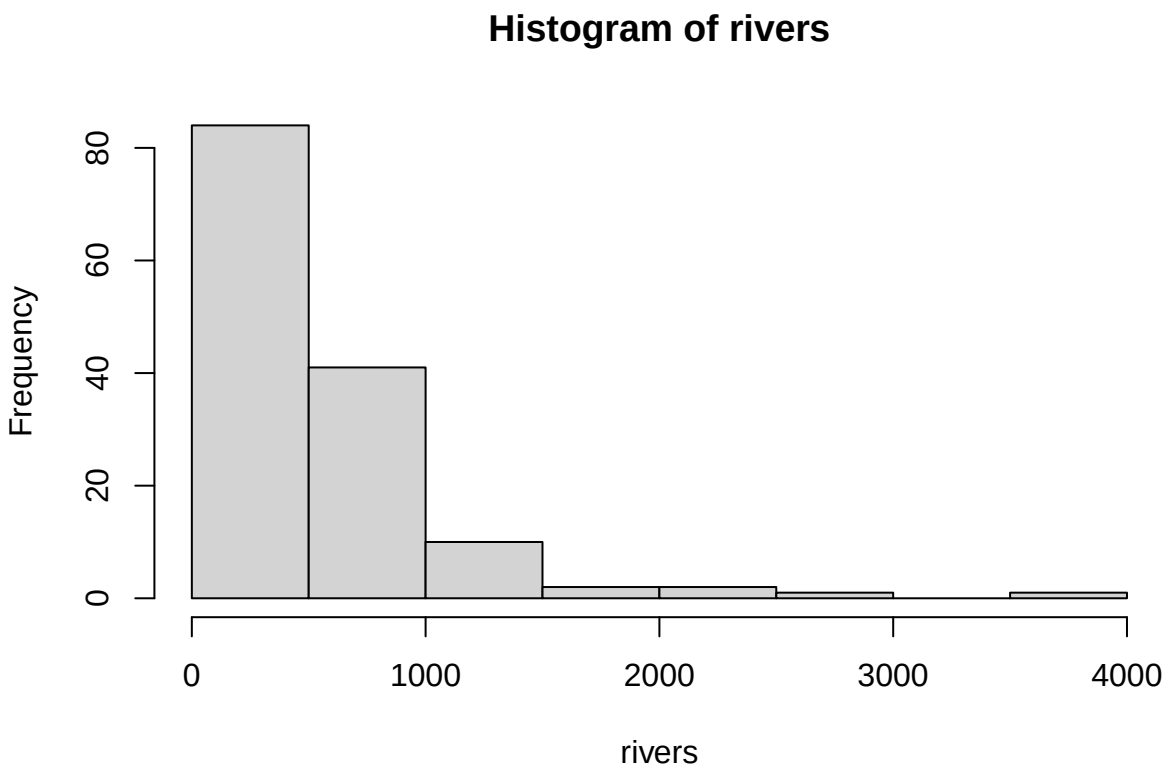

```
pie(Count,col=rainbow(5),labels=Grade)
```



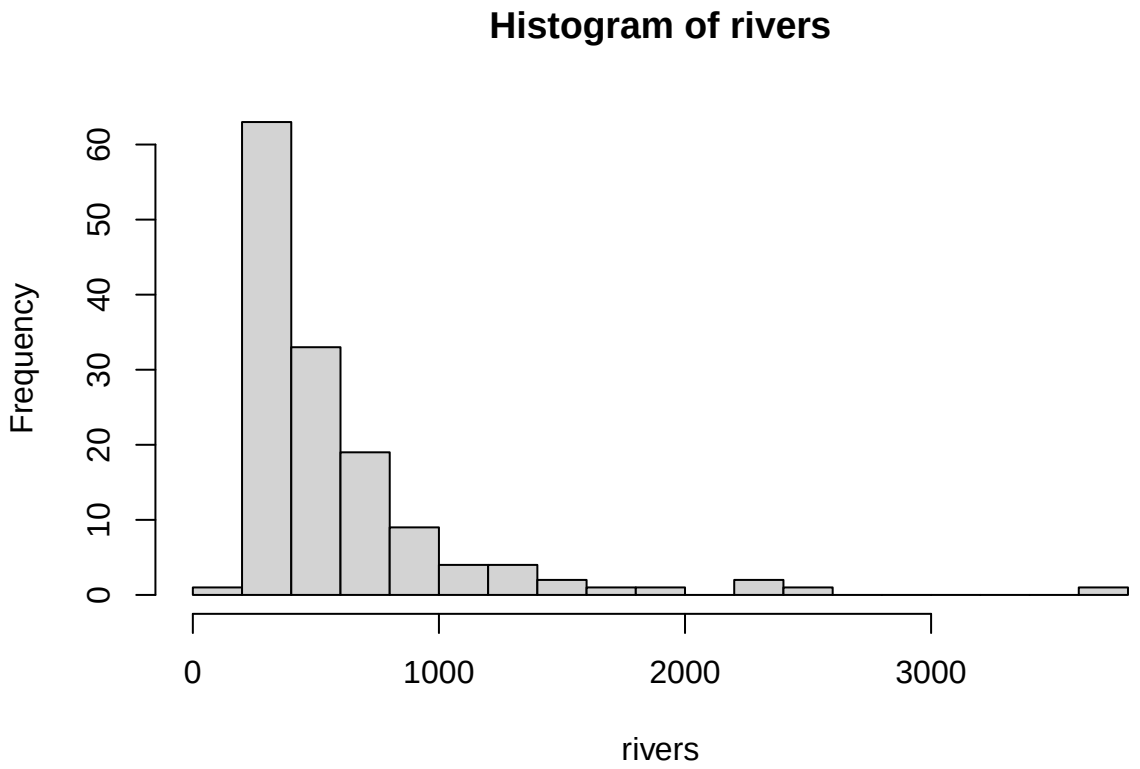

```
detach(myData)
```

Histogram

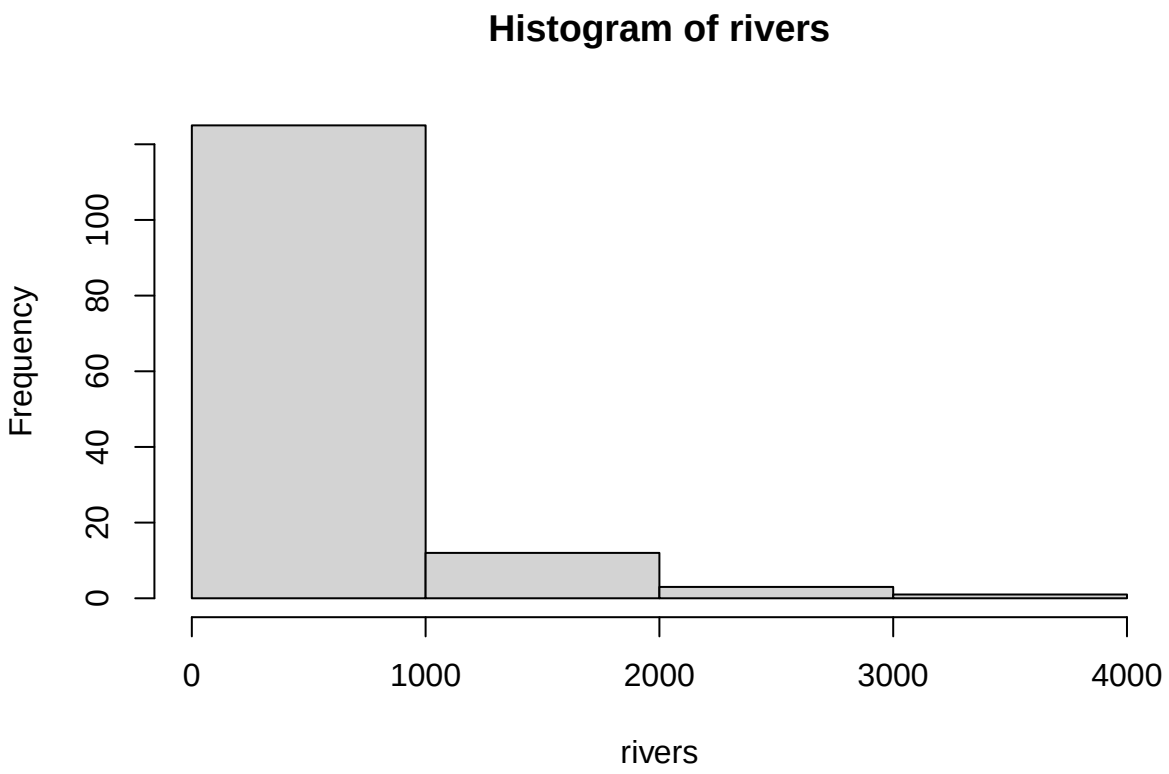
```
hist(rivers)
```




```
hist(rivers,breaks=21)
```



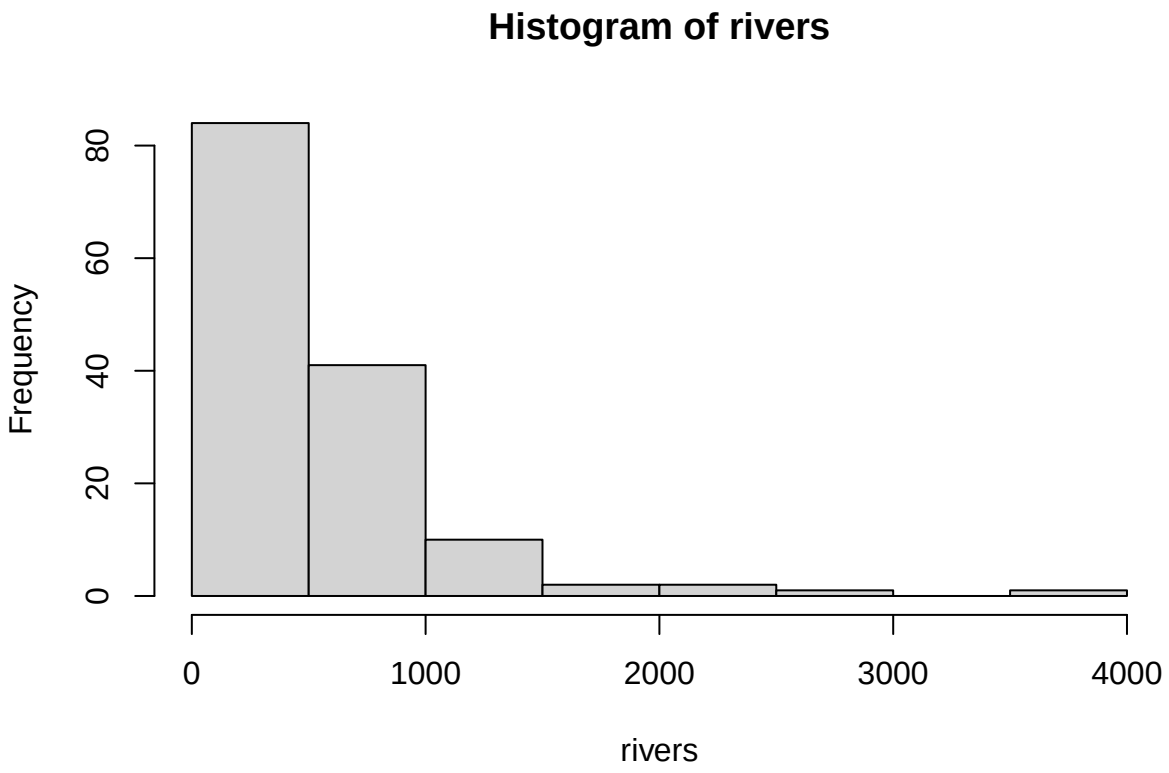

```
bvector <- c(0,1000,2000,3000,4000)

hist(rivers,breaks=bvector)
```




```
bvector2 <- seq(0,4000,by=500)
bvector2
```

```
## [1]    0  500 1000 1500 2000 2500 3000 3500 4000
```

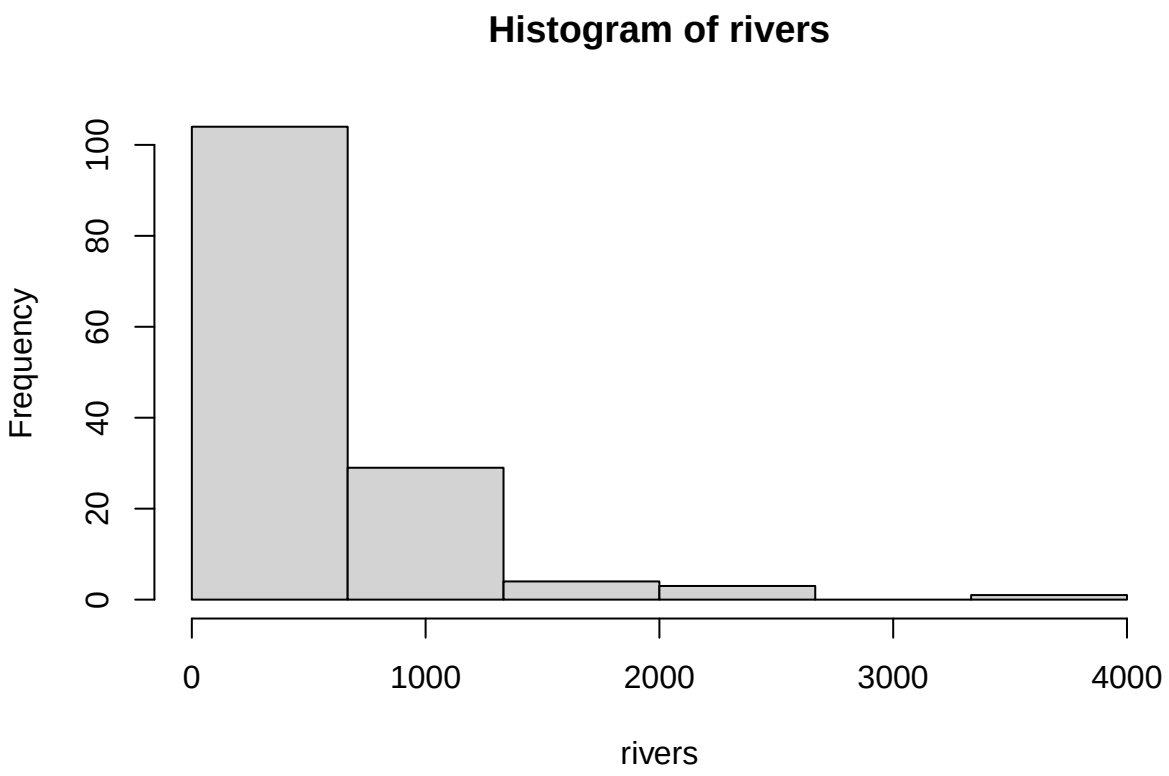
```
hist(rivers,breaks=bvector2)
```



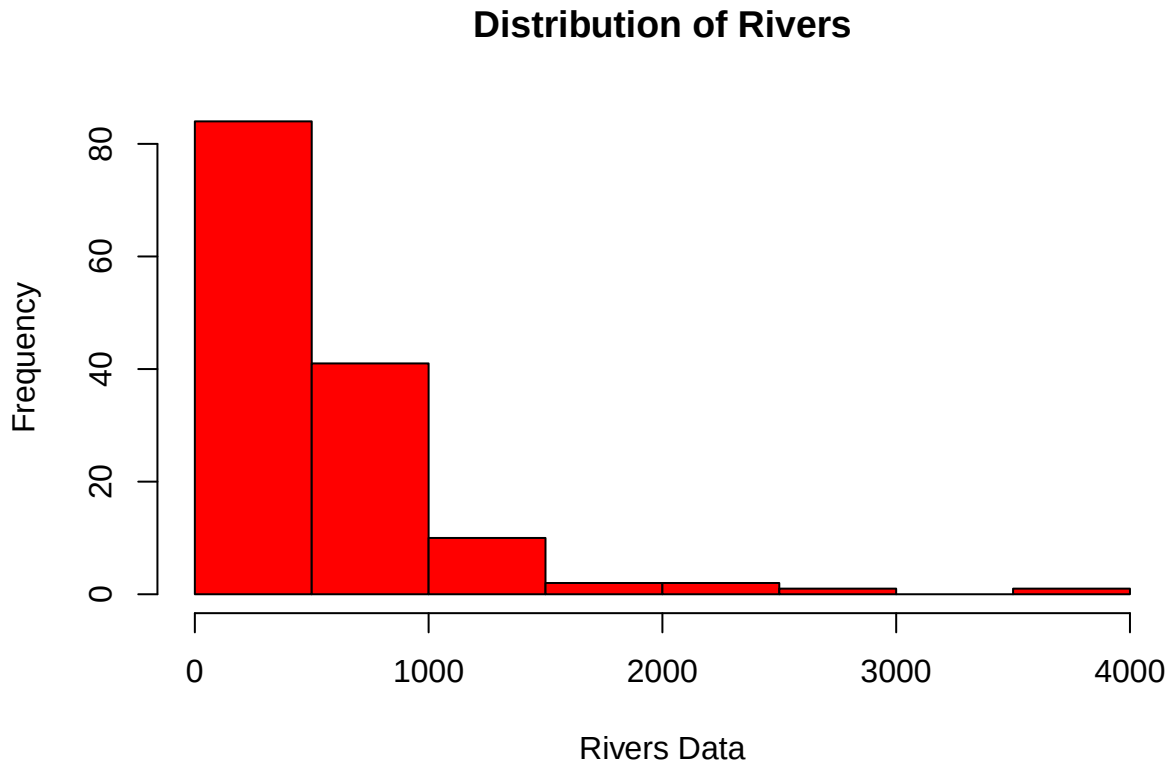
```r
bvector3 <- seq(0,4000,length=7)
bvector3
```

```
## [1]    0.0000  666.6667 1333.3333 2000.0000 2666.6667 3333.3333 4000.0000
```

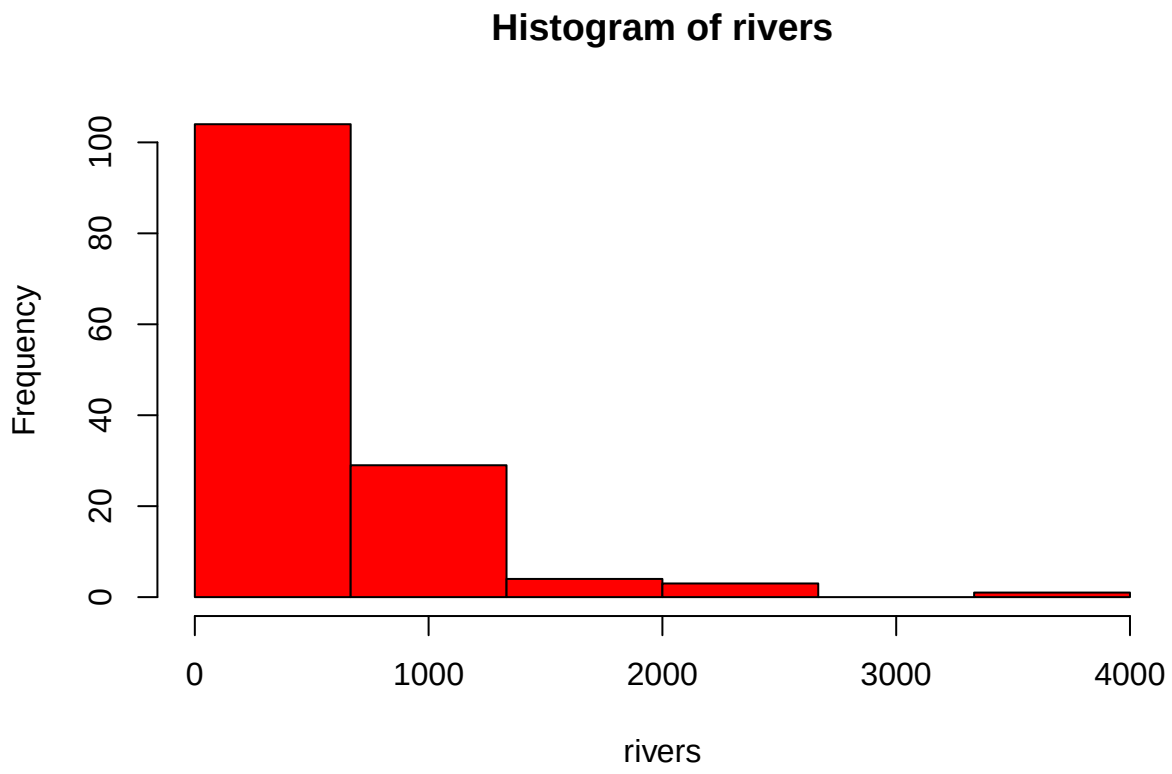
```r
hist(rivers,breaks=bvector3)
```



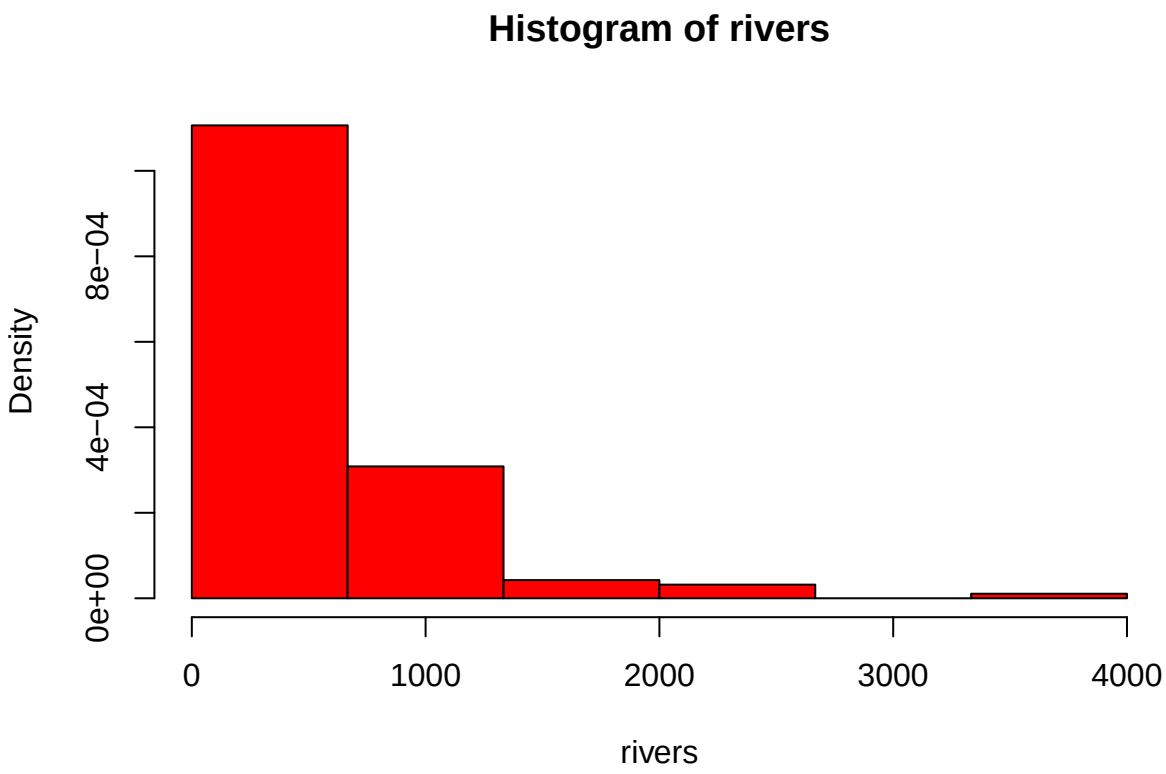

```r
hist(rivers,breaks=bvector2,col="red", main="Distribution of Rivers",xlab="Rivers Data")
```




```
hist(rivers,breaks=bvector3,col="red",freq=T)
```




```
hist(rivers,breaks=bvector3,col="red",freq=FALSE)
```


Histogram of rivers
Density
0e+00
4e−04
8e−04
0
1000
2000
3000
4000
rivers