R Assignment 1

Jesse Maki

Copy of commands and output

Generating data and calculating mean, median, trimmed mean, and 35% percentile:

```
# choose your unique seednumber to generate data, e.g. UFID
set.seed(48571578)

# generate data
mydata = rnorm(100, 30, 2)

# sample mean of mydata
mean(mydata)
```

```
## [1] 29.70181
```

```
# used prefered method to calculate median as seen in lecture
quantile(mydata,0.5,type=6)
```

```
##      50%
## 29.65479
```

```
# 10% trimmed mean
mean(mydata, trim=0.1)
```

```
## [1] 29.6917
```

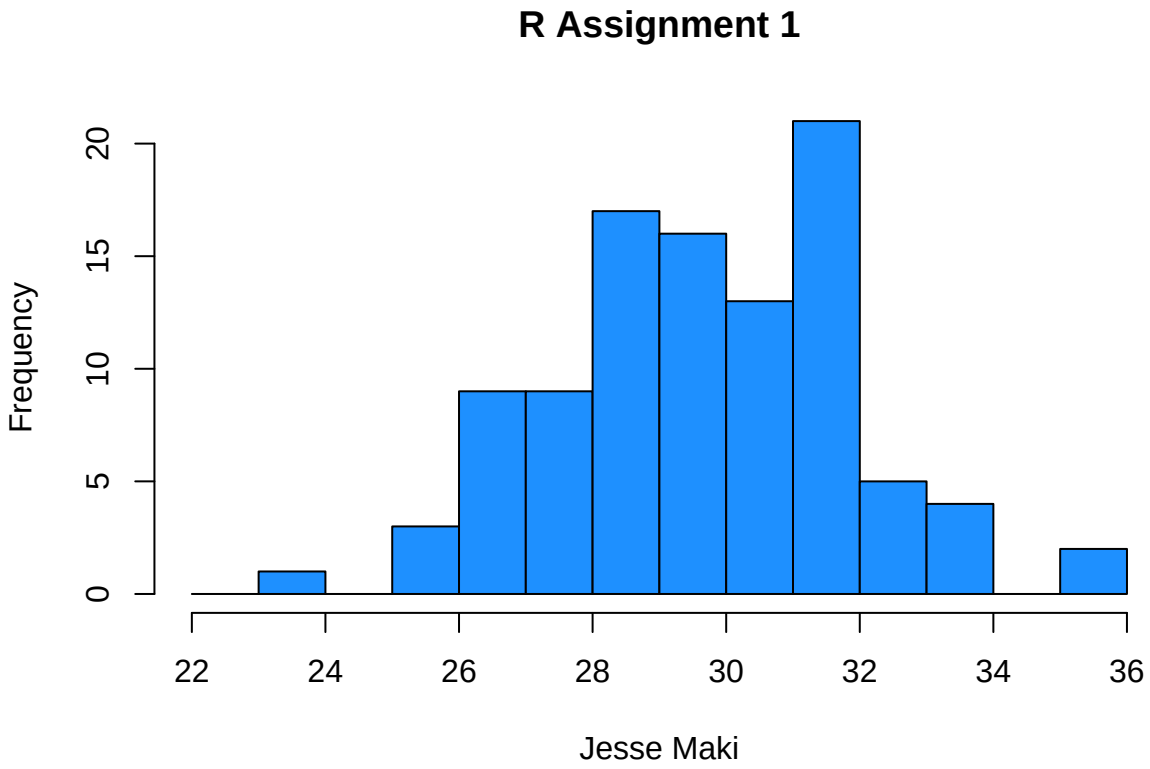
```
# 35th percentile
quantile(mydata,0.35,type=6)
```

```
##      35%
## 28.83549
```

Generating plots with vertical lines and lines curves to make inferences on data

Histogram of all data points

```
hist(mydata,col="dodgerblue", breaks=c(22:36), main="R Assignment 1", xlab="Jesse Maki")
```

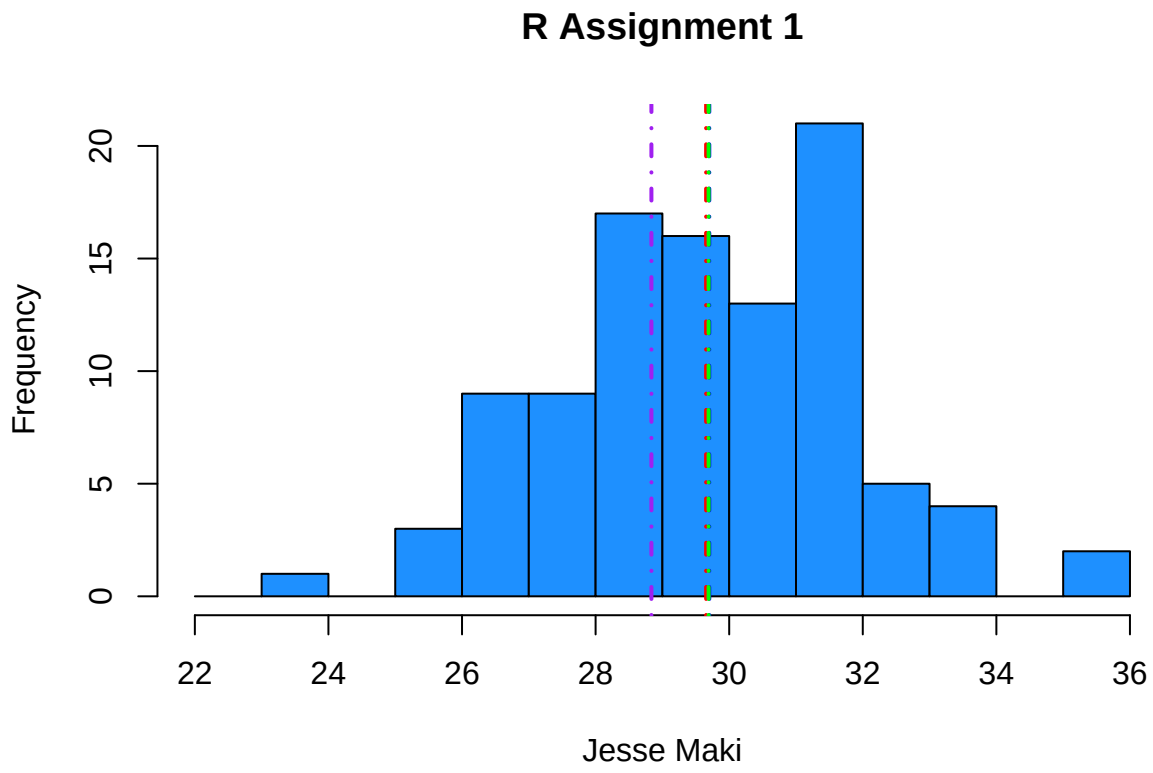


Histogram with added lines for mean, median, trimmed mean, and 35%.

Blue represents the mean line, though it is covered up by the median line (red) and trimmed 10% line (green).

The 35th percentile is represented by the purple line.

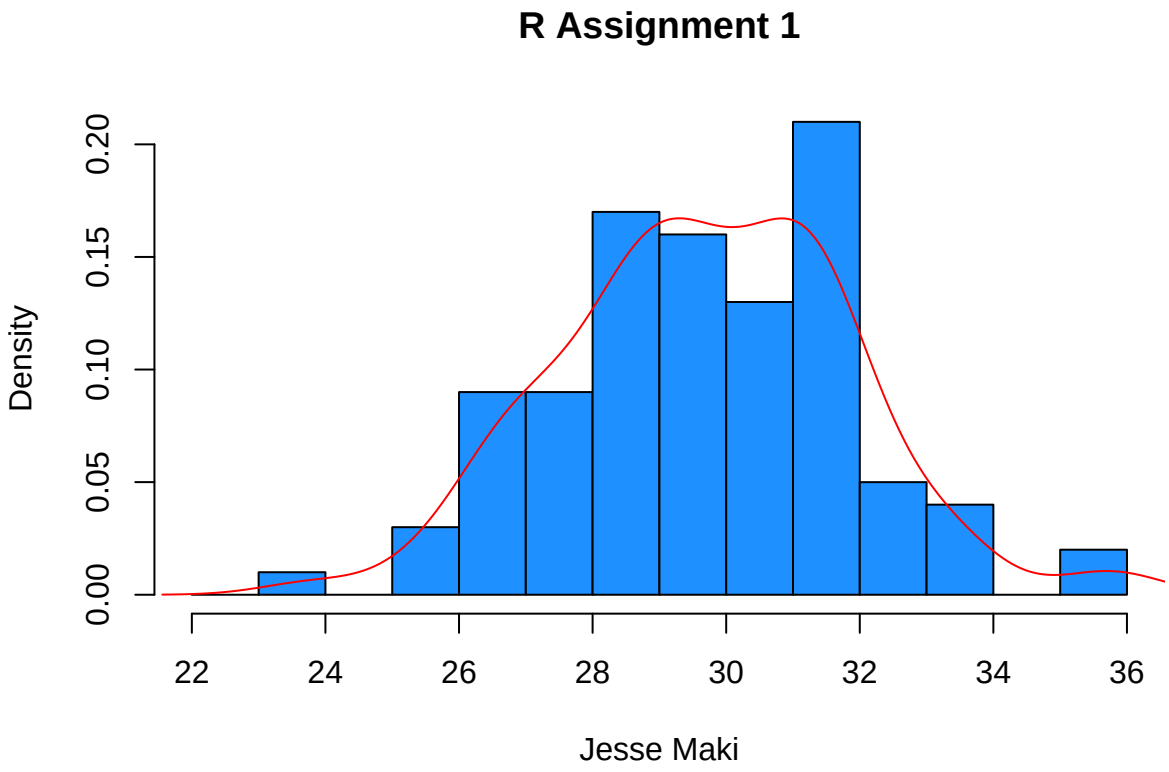
```
hist(mydata,col="dodgerblue", breaks=c(22:36), main="R Assignment 1", xlab="Jesse Maki")
abline(v=mean(mydata), col="blue", lwd=2, lty=4)
abline(v=median(mydata),col="red", lwd=2, lty=4)
abline(v=(mean(mydata, trim=0.1)), col="green", lwd=2, lty=4)
abline(v=(quantile(mydata,0.35,type=6)), col="purple", lwd=2, lty=4)
```



Histogram with line curve to represent shape

The shape of the histogram is unimodal bell-shaped curve with a slight left-skew. There isn't a clear peak and there are gaps in the distribution.

```
hist(mydata,col="dodgerblue", breaks=c(22:36), main="R Assignment 1", xlab="Jesse Maki", prob=TRUE)
lines(density(mydata ), col="red")
```



Suggested Optional Problems from *The Book of R*: I decided to complete the optional suggested problems 2.1, 2.2, 2.3, 2.5, and 3.1. The commands and outputs are below.

2.1:

```
#a
(6*2.3+42)/(3^(4.2-3.62))
```

```
## [1] 29.50556
```

```
#b
(-4)^2+2
```

```
## [1] 18
```

```
#c
sqrt(x=0.5*((25.2+15+16.44+15.3+18.6)/5))
```

```
## [1] 3.008987
```

```
#d
log(x=0.3)
```

```
## [1] -1.203973
```

```
#e
exp(x=-1.203973)
```

```
## [1] 0.2999999
```

```
#f
-0.00000000423546322
```

```
## [1] -4.235463e-09
```

2.2:

```
#a
x = 3^2*4^(1/8)

#b
x = x/2.33
x
```

```
## [1] 4.593504
```

```r
#c
y = -8.2e-13

#d
x*y
```

```
## [1] -3.766673e-12
```

2.3

```r
#a
temp = seq(from=5,to=-11,by=-0.3)
temp
```

```
##  [1]   5.0   4.7   4.4   4.1   3.8   3.5   3.2   2.9   2.6   2.3   2.0   1.7
## [13]   1.4   1.1   0.8   0.5   0.2  -0.1  -0.4  -0.7  -1.0  -1.3  -1.6  -1.9
## [25]  -2.2  -2.5  -2.8  -3.1  -3.4  -3.7  -4.0  -4.3  -4.6  -4.9  -5.2  -5.5
## [37]  -5.8  -6.1  -6.4  -6.7  -7.0  -7.3  -7.6  -7.9  -8.2  -8.5  -8.8  -9.1
## [49]  -9.4  -9.7 -10.0 -10.3 -10.6 -10.9
```

```r
#b
temp = sort(x=temp,decreasing=FALSE)
temp
```

```
##  [1] -10.9 -10.6 -10.3 -10.0  -9.7  -9.4  -9.1  -8.8  -8.5  -8.2  -7.9  -7.6
## [13]  -7.3  -7.0  -6.7  -6.4  -6.1  -5.8  -5.5  -5.2  -4.9  -4.6  -4.3  -4.0
## [25]  -3.7  -3.4  -3.1  -2.8  -2.5  -2.2  -1.9  -1.6  -1.3  -1.0  -0.7  -0.4
## [37]  -0.1   0.2   0.5   0.8   1.1   1.4   1.7   2.0   2.3   2.6   2.9   3.2
## [49]   3.5   3.8   4.1   4.4   4.7   5.0
```

```r
#(c)
y = rep(x=c(-1,3,-5,7,-9),times=2,each=10)
sort(x=y,decreasing=TRUE)
```

```
##  [1]  7  7  7  7  7  7  7  7  7  7  7  7  7  7  7  7  7  7  7  3  3  3  3  3
## [26]  3  3  3  3  3  3  3  3  3  3  3  3  3  3  3 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1
## [51] -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -5 -5 -5 -5 -5 -5 -5 -5 -5 -5 -5 -5 -5 -5 -5
## [76] -5 -5 -5 -5 -5 -9 -9 -9 -9 -9 -9 -9 -9 -9 -9 -9 -9 -9 -9 -9 -9 -9 -9 -9 -9
```

```r
#(d)
z = c(6:12,rep(5.3,times=3),-3,seq(from=102,to=length(y),length.out=9))
z
```

```
##  [1]   6.00   7.00   8.00   9.00  10.00  11.00  12.00   5.30   5.30   5.30
## [11]  -3.00 102.00 101.75 101.50 101.25 101.00 100.75 100.50 100.25 100.00
```

```r
#(e)
length(z)
```

```
## [1] 20
```

2.5

```r
#a
c(2,0.5,1,2,0.5,1,2,0.5,1)/c(2,0.5,1)
```

```
## [1] 1 1 1 1 1 1 1 1 1
```

```r
#b
f = c(45,77,20,19,101,120,212)
c = 5/9*(f-32)
c
```

```
## [1]   7.222222  25.000000  -6.666667  -7.222222  38.333333  48.888889 100.000000
```

```r
#(c)
temp = rep(x=c(2,4,6),times=2)*rep(x=c(1,2),each=3)
temp
```

```
## [1]  2  4  6  4  8 12
```

```r
#(d)
temp[2:5] = c(-0.1,-100)
temp
```

```
## [1]    2.0   -0.1 -100.0   -0.1 -100.0   12.0
```

3.1

```r
#a
a = matrix(data=c(4.3,3.1,8.2,8.2,3.2,0.9,1.6,6.5),nrow=4,ncol=2,byrow=TRUE)
a
```

```
##      [,1] [,2]
## [1,]  4.3  3.1
## [2,]  8.2  8.2
## [3,]  3.2  0.9
## [4,]  1.6  6.5
```

```r
#b
dim(a[-2,])
```

```
## [1] 3 2
```

```r
#c
a[,2] = sort(x=a[,2])
a
```

```
##      [,1] [,2]
## [1,]  4.3  0.9
## [2,]  8.2  3.1
## [3,]  3.2  6.5
## [4,]  1.6  8.2
```

```r
#d
a[-4,-1]
```

```
## [1] 0.9 3.1 6.5
```

```r
matrix(data=a[-4,-1])
```

```
##      [,1]
## [1,]  0.9
## [2,]  3.1
## [3,]  6.5
```

```r
#e
b =  a[3:4,]
b
```

```
##      [,1] [,2]
## [1,]  3.2  6.5
## [2,]  1.6  8.2
```

```r
#f
a[c(4,1),2:1] = -0.5*diag(b)
```