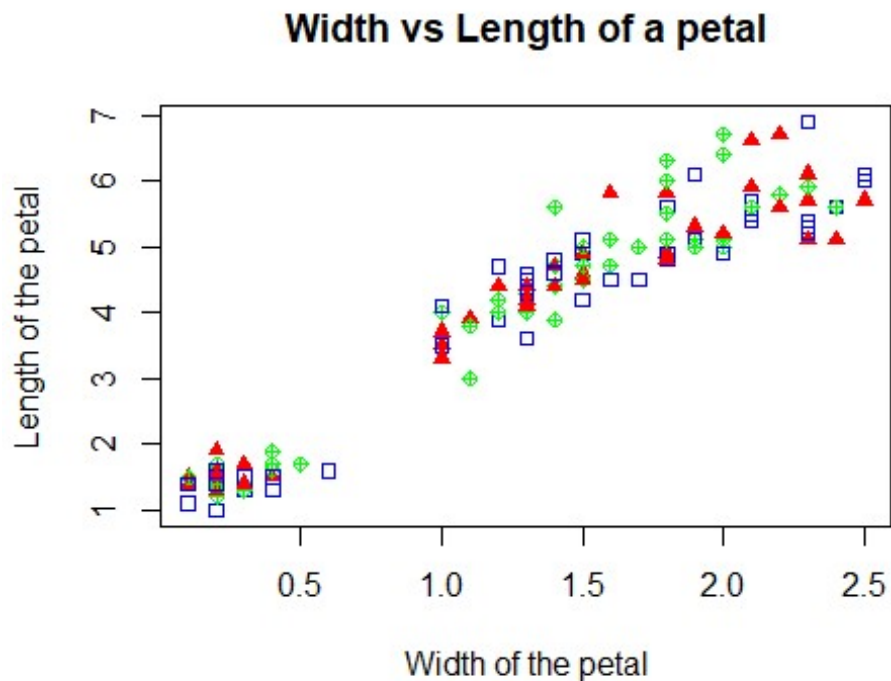# HWK4

Henrique

March 1, 2019

question 1

```r
attach(iris)

plot(Petal.Width,Petal.Length,col=c("red","blue","green"),pch=c(17,22,10),xla
b = "Width of the petal",ylab= "Length of the petal", title(main ="Width vs
Length of a petal"))
```
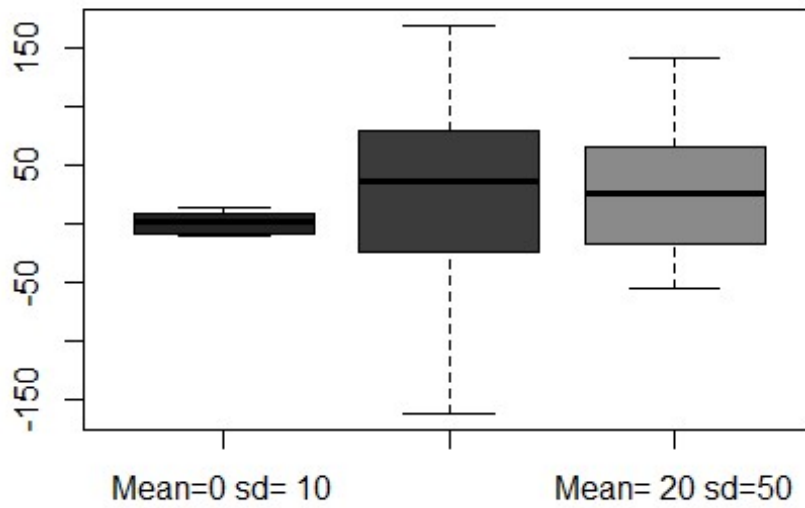

Width vs Length of a petal

```r
detach(iris)
```

Question 2

```r
a <- rnorm(10,0,10)
b <- rnorm(20,40,100)
c <- rnorm(15,20,50)

boxplot(a,b,c, col = c("gray14","gray23","gray54"), names = c("Mean=0 sd=
10","Mean=40 sd=100","Mean= 20 sd=50"), bty='n')
```

Question 3a)

```r
sample_size <- 30
sds <- rep(0,10e4)
for (i in 1:length(sds)){
  temp_sample <- runif(n=sample_size,min=100, max=300)
  sds[i] <- sd(temp_sample)
}
hist(sds)
```
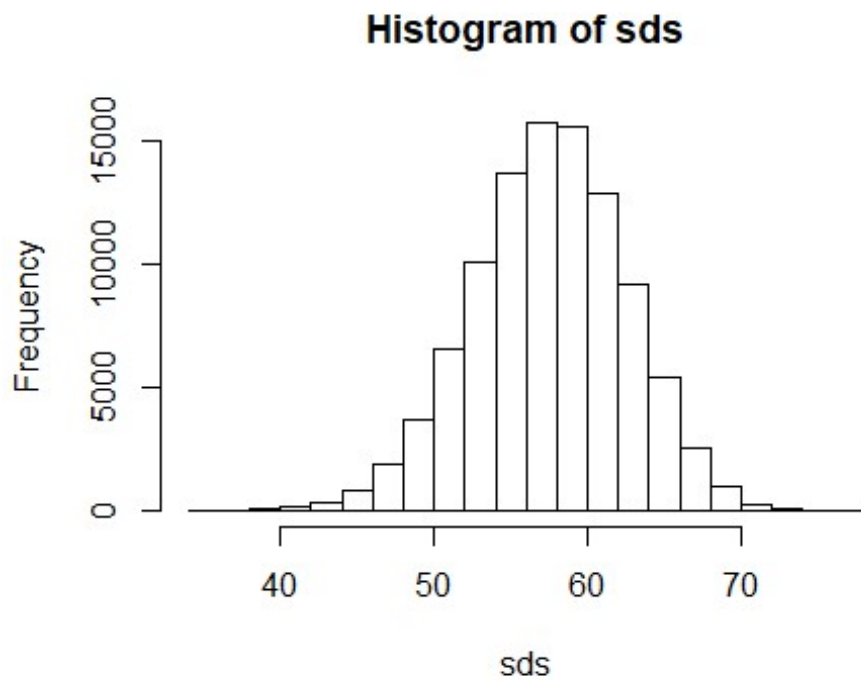
Histogram of sds

Question 3b)

```
sample_size <- 50
sds2 <- rep(0,10e4)
for (i in 1:length(sds2)){
  temp_sample <- runif(n=sample_size,min=100, max=300)
  sds2[i] <- sd(temp_sample)
}
hist(sds2)
```

Histogram of sds2

question 3c)

```r
sample_size <- 30
sds3 <- rep(0,10e4)
for (i in 1:length(sds3)){
  temp_sample <- runif(n=sample_size,min=100, max=500)
  sds3[i] <- sd(temp_sample)
}
hist(sds3)
```
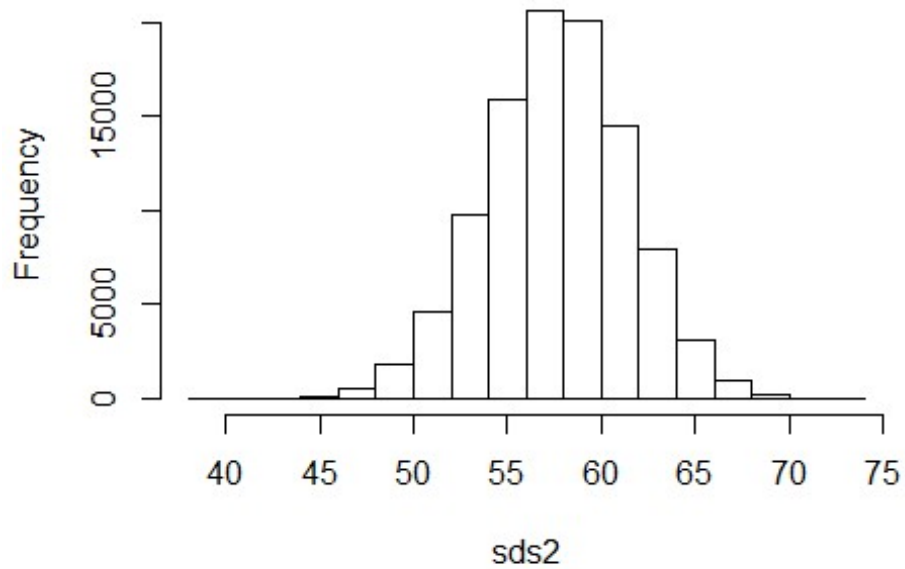
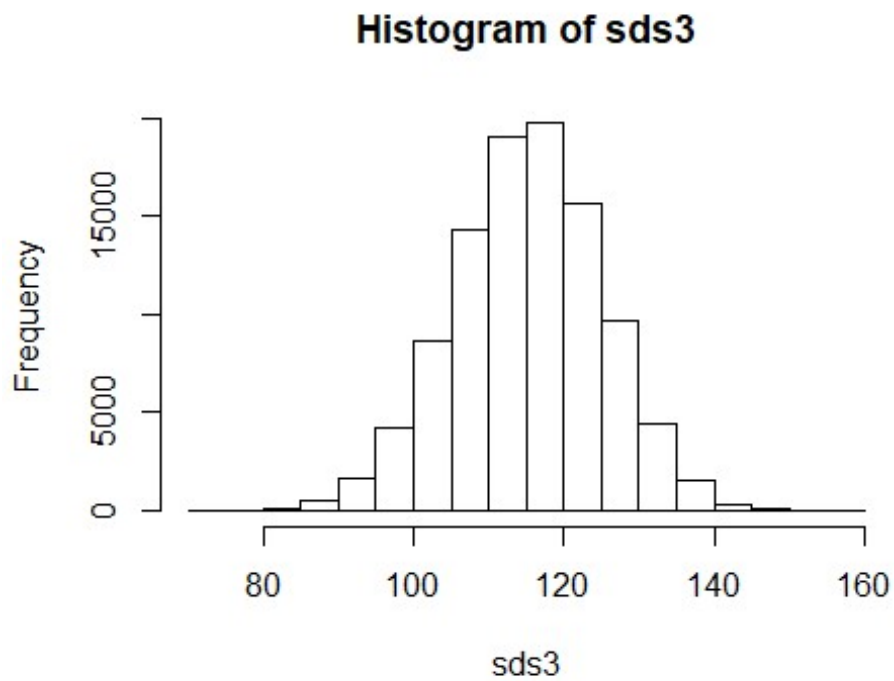## Histogram of sds3

question 3d)

```
hist(sds,ylim = c(0,30000), xlim = c(0,140))
```

Histogram of sds
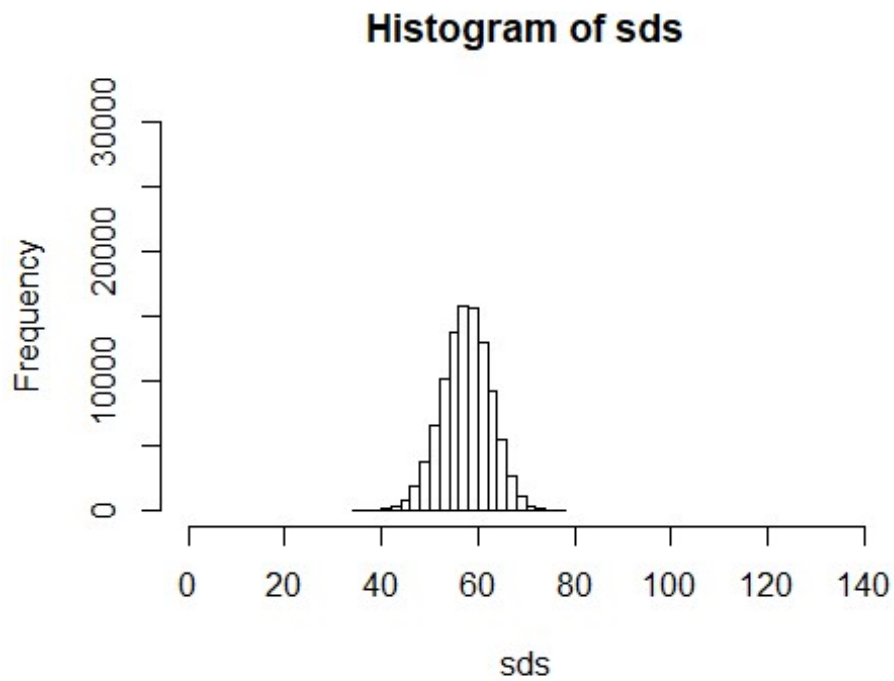
```
hist(sds2,ylim = c(0,30000),xlim = c(0,140))
```

Histogram of sds2
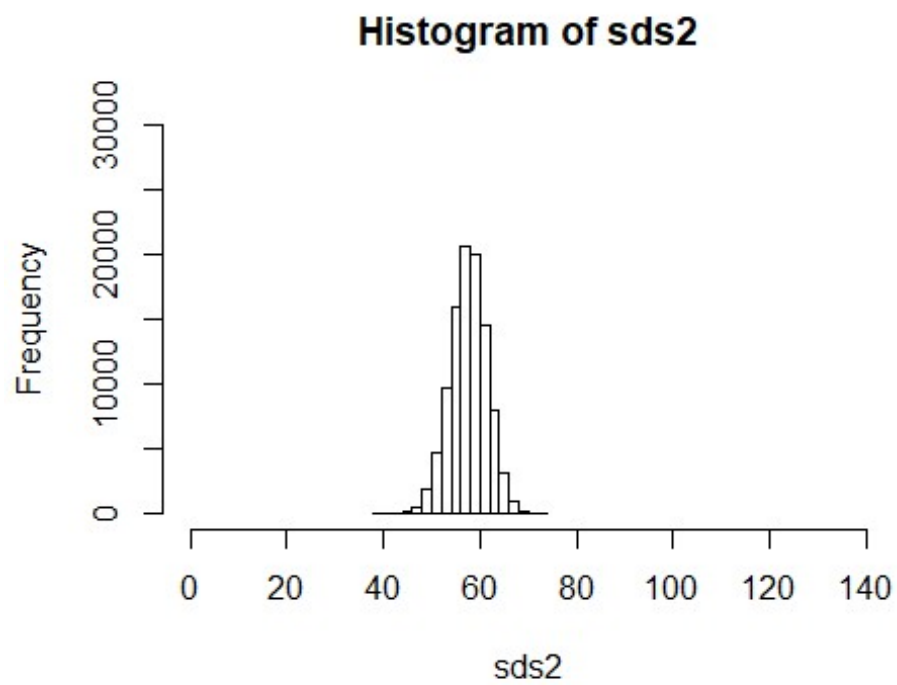

```
hist(sds3,ylim = c(0,30000),xlim =c(0,140))
```

Histogram of sds3
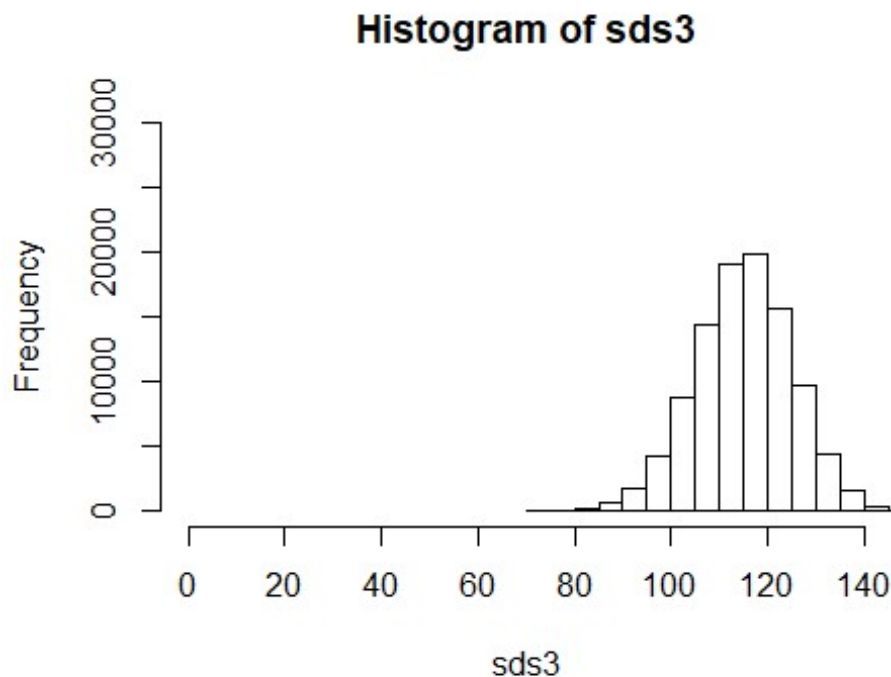
When the sample size is increased it makes the variation of the standard deviation smaller, changin the max value moves the graph of the standard deviation to the right due to the increase in its variation.

Question 4

```
  sample_size <- 30
lns <- rep(0,30)
for (i in 1:length(lns)){
  temp_sample <- rnorm(30,0,10)
  lns[i] <- log(temp_sample)
}

## Warning in log(temp_sample): NaNs produced

## Warning in lns[i] <- log(temp_sample): number of items to replace is not a
## multiple of replacement length

## Warning in log(temp_sample): NaNs produced

## Warning in lns[i] <- log(temp_sample): number of items to replace is not a
## multiple of replacement length

## Warning in log(temp_sample): NaNs produced

## Warning in lns[i] <- log(temp_sample): number of items to replace is not a
## multiple of replacement length

## Warning in log(temp_sample): NaNs produced
```

```
## Warning in lns[i] <- log(temp_sample): number of items to replace is not a
## multiple of replacement length

## Warning in log(temp_sample): NaNs produced

## Warning in lns[i] <- log(temp_sample): number of items to replace is not a
## multiple of replacement length

## Warning in log(temp_sample): NaNs produced

## Warning in lns[i] <- log(temp_sample): number of items to replace is not a
## multiple of replacement length

## Warning in log(temp_sample): NaNs produced

## Warning in lns[i] <- log(temp_sample): number of items to replace is not a
## multiple of replacement length

## Warning in log(temp_sample): NaNs produced

## Warning in lns[i] <- log(temp_sample): number of items to replace is not a
## multiple of replacement length

## Warning in log(temp_sample): NaNs produced

## Warning in lns[i] <- log(temp_sample): number of items to replace is not a
## multiple of replacement length

## Warning in log(temp_sample): NaNs produced

## Warning in lns[i] <- log(temp_sample): number of items to replace is not a
## multiple of replacement length

## Warning in log(temp_sample): NaNs produced

## Warning in lns[i] <- log(temp_sample): number of items to replace is not a
## multiple of replacement length

## Warning in log(temp_sample): NaNs produced

## Warning in lns[i] <- log(temp_sample): number of items to replace is not a
## multiple of replacement length

## Warning in log(temp_sample): NaNs produced

## Warning in lns[i] <- log(temp_sample): number of items to replace is not a
## multiple of replacement length

## Warning in log(temp_sample): NaNs produced
```

```
## Warning in lns[i] <- log(temp_sample): number of items to replace is not a
## multiple of replacement length

## Warning in log(temp_sample): NaNs produced

## Warning in lns[i] <- log(temp_sample): number of items to replace is not a
## multiple of replacement length

## Warning in log(temp_sample): NaNs produced

## Warning in lns[i] <- log(temp_sample): number of items to replace is not a
## multiple of replacement length

## Warning in log(temp_sample): NaNs produced

## Warning in lns[i] <- log(temp_sample): number of items to replace is not a
## multiple of replacement length

## Warning in log(temp_sample): NaNs produced

## Warning in lns[i] <- log(temp_sample): number of items to replace is not a
## multiple of replacement length

## Warning in log(temp_sample): NaNs produced

## Warning in lns[i] <- log(temp_sample): number of items to replace is not a
## multiple of replacement length

## Warning in log(temp_sample): NaNs produced

## Warning in lns[i] <- log(temp_sample): number of items to replace is not a
## multiple of replacement length

## Warning in log(temp_sample): NaNs produced

## Warning in lns[i] <- log(temp_sample): number of items to replace is not a
## multiple of replacement length

## Warning in log(temp_sample): NaNs produced

## Warning in lns[i] <- log(temp_sample): number of items to replace is not a
## multiple of replacement length

## Warning in log(temp_sample): NaNs produced

## Warning in lns[i] <- log(temp_sample): number of items to replace is not a
## multiple of replacement length

## Warning in log(temp_sample): NaNs produced
```

```
## Warning in lns[i] <- log(temp_sample): number of items to replace is not a
## multiple of replacement length

## Warning in log(temp_sample): NaNs produced

## Warning in lns[i] <- log(temp_sample): number of items to replace is not a
## multiple of replacement length

## Warning in log(temp_sample): NaNs produced

## Warning in lns[i] <- log(temp_sample): number of items to replace is not a
## multiple of replacement length

## Warning in log(temp_sample): NaNs produced

## Warning in lns[i] <- log(temp_sample): number of items to replace is not a
## multiple of replacement length

## Warning in log(temp_sample): NaNs produced

## Warning in lns[i] <- log(temp_sample): number of items to replace is not a
## multiple of replacement length
```

```r
hist(lns)
```


Histogram of lns