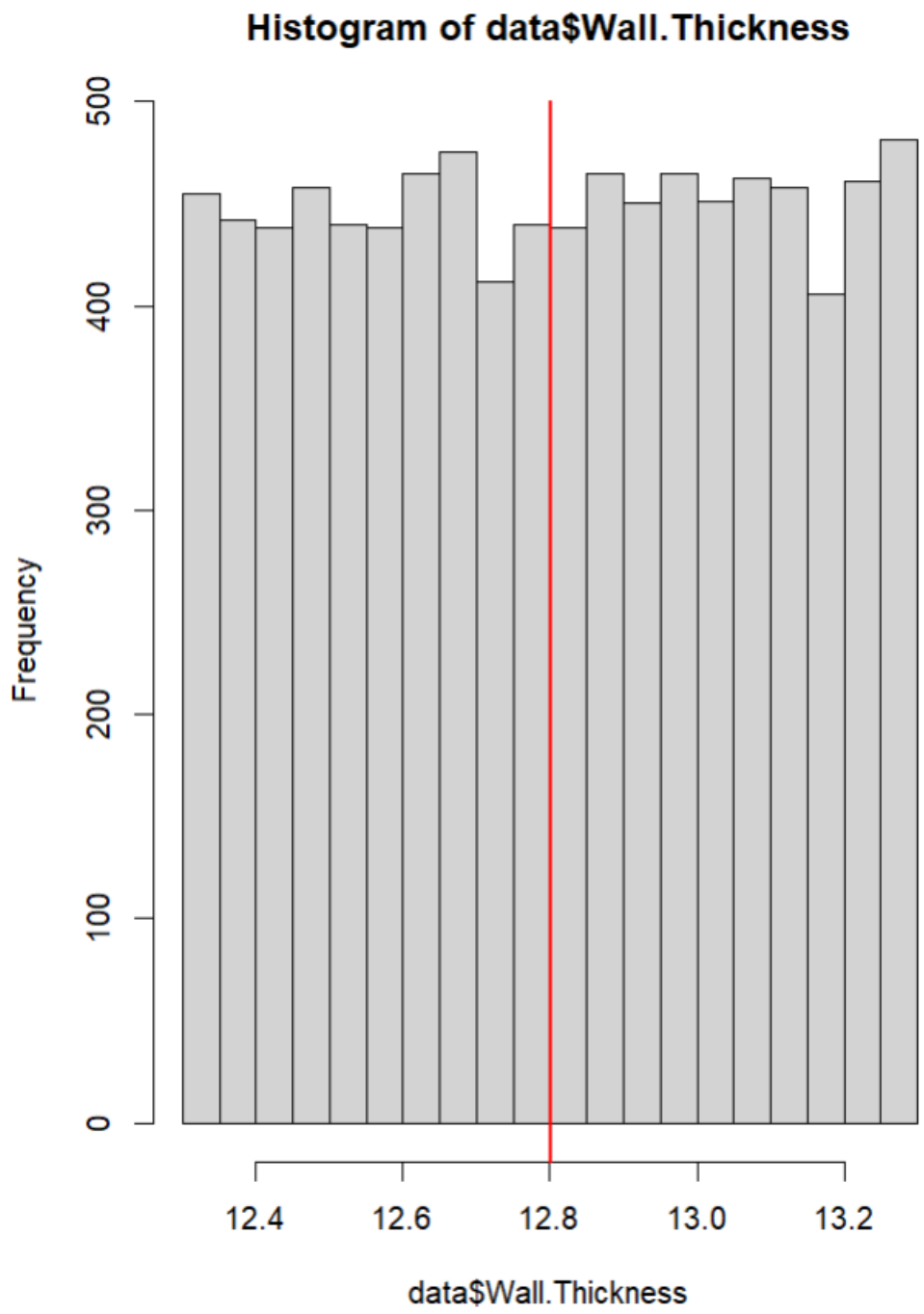
ASSIGNMENT-8

Question-1).

```
# Q1
# (a)
# Reading the dataset
# data <- read.csv(file.choose())
data <- read.csv(file = "C:/Users/tinor/Documents/Probability and Statistics Lab/Clt-data.csv")


# (b)
dim(data)
head(data, 10)


# (c)
mean(data$Wall.Thickness)
hist(data$Wall.Thickness)


# (d)
abline(v = mean(data$Wall.Thickness), col = "red", lwd = 2)
```

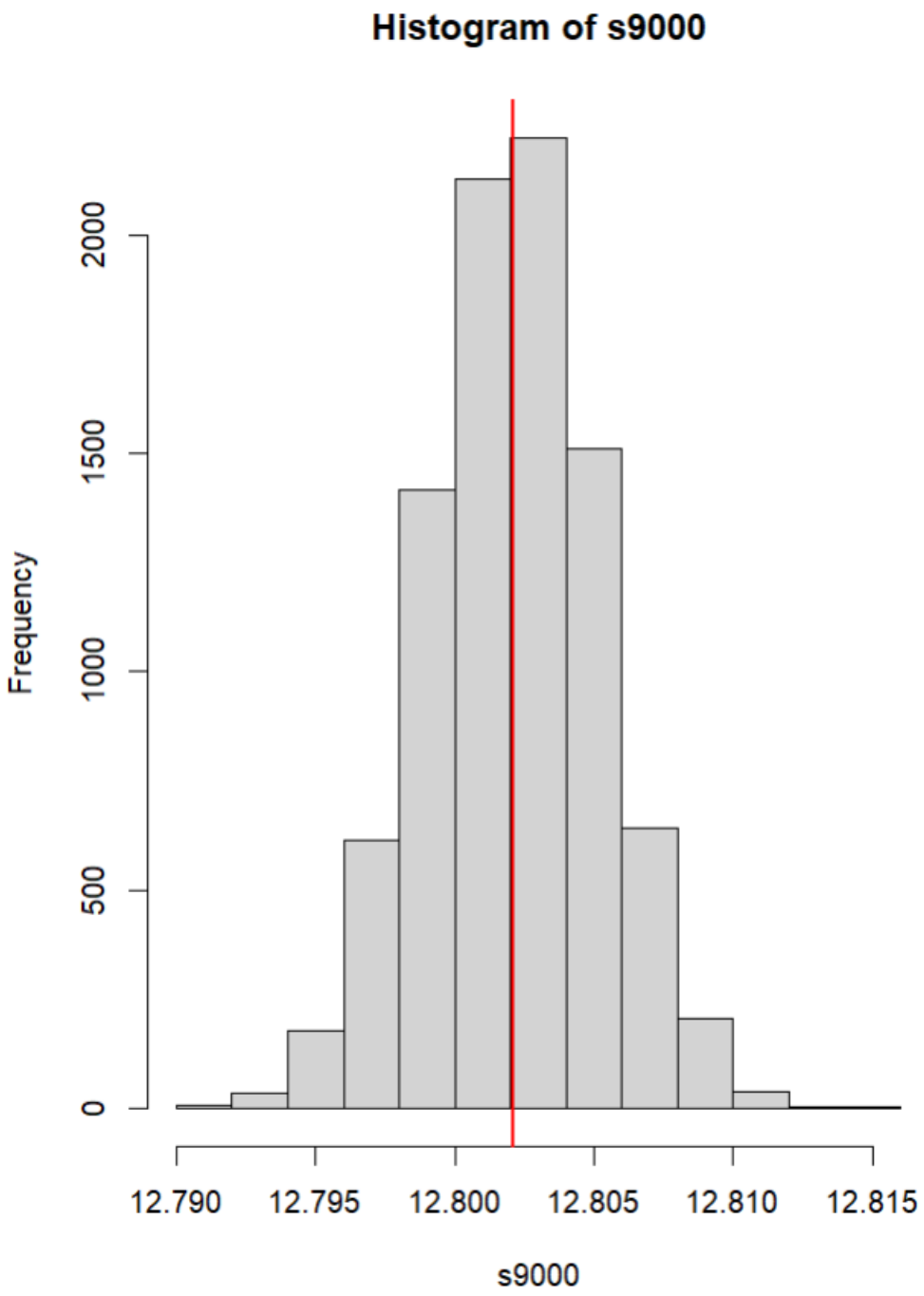
```
> # Q1
> # (a)
> # Reading the dataset
> # data <- read.csv(file.choose())
> data <- read.csv(file = "C:/Users/tinor/Documents/Probability and Statistics Lab/Clt-data.csv")
>
>
> # (b)
> dim(data)
[1] 9000    1
> head(data, 10)
   Wall.Thickness
1        12.35487
2        12.61742
3        12.36972
4        13.22335
5        13.15919
6        12.67549
7        12.36131
8        12.44468
9        12.62977
10       12.90381
>
>
> # (c)
> mean(data$Wall.Thickness)
[1] 12.80205
> hist(data$Wall.Thickness)
>
>
> # (d)
> abline(v = mean(data$Wall.Thickness), col = "red", lwd = 2)
>
```

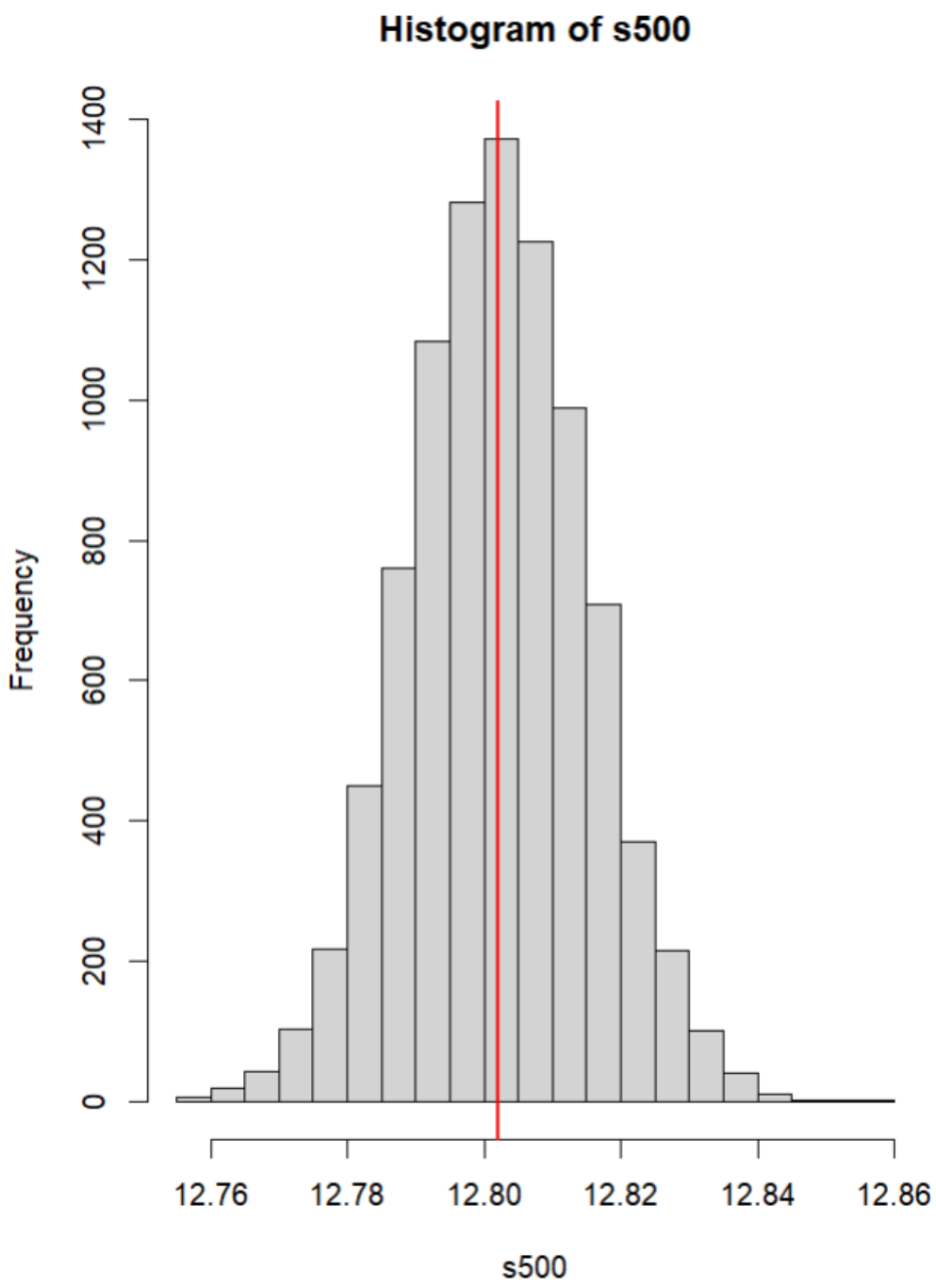

Histogram of data$Wall.Thickness
Frequency
0
100
200
300
400
500
12.4
12.6
12.8
13.0
13.2
data$Wall.Thickness

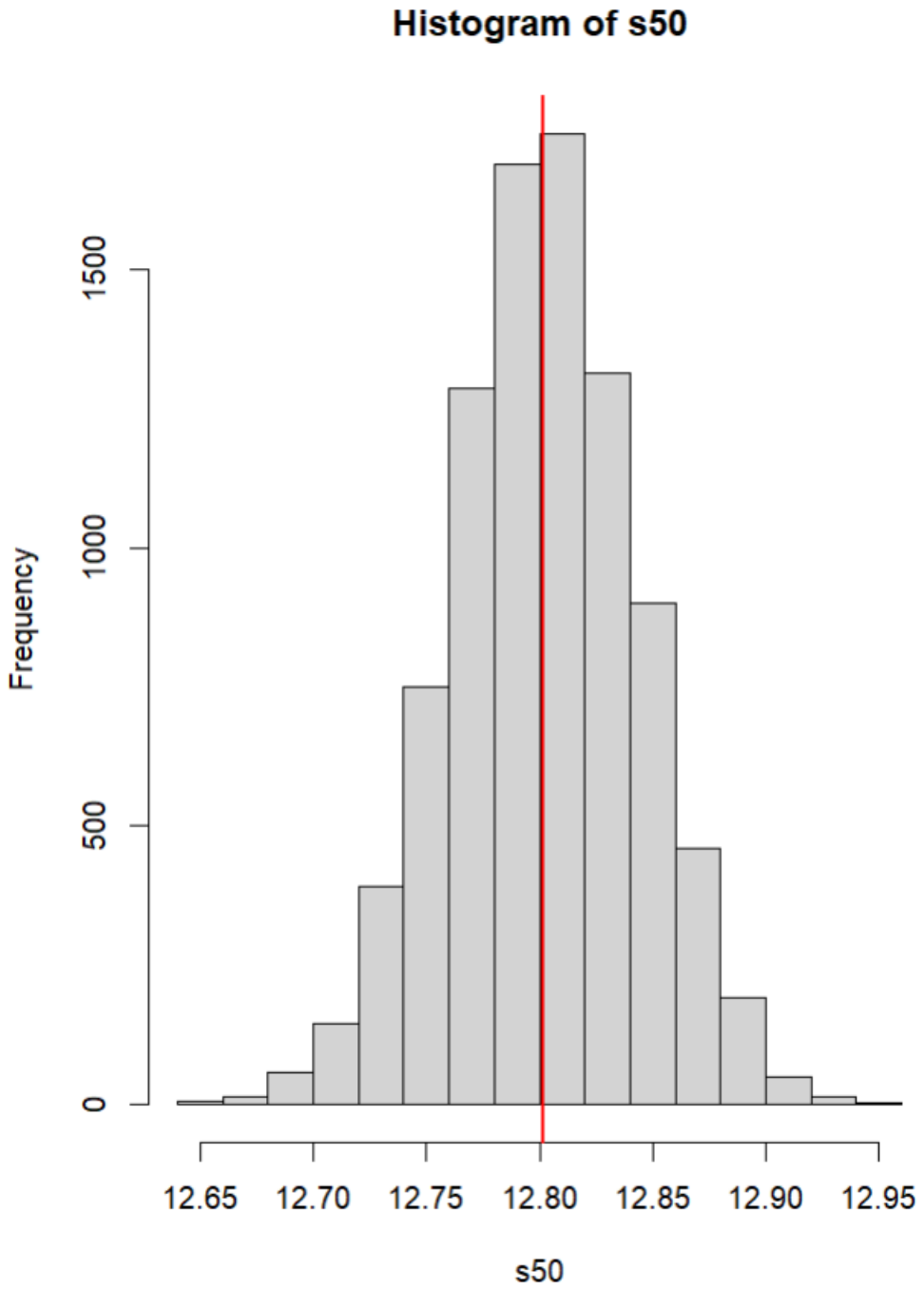
Question-2).

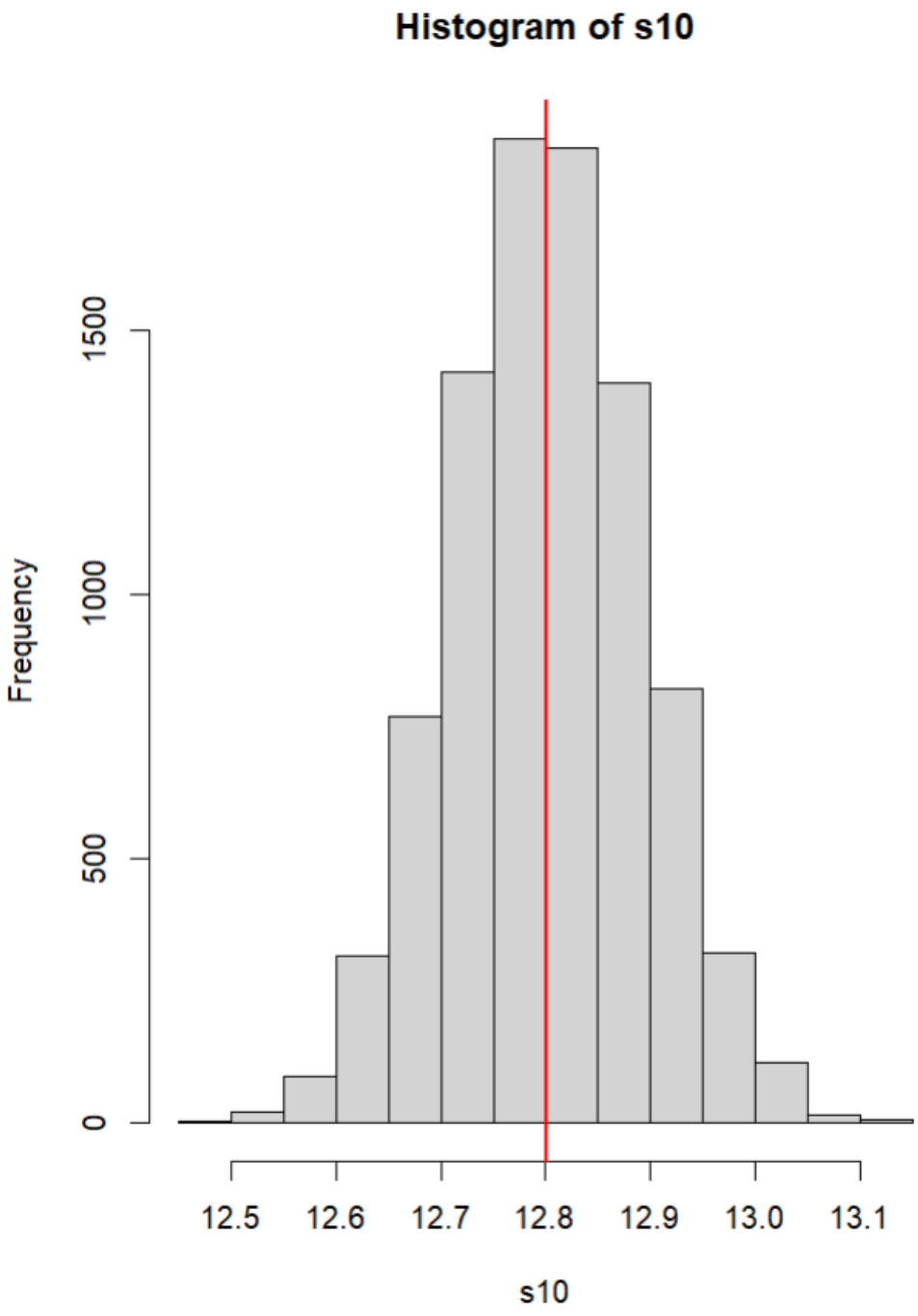
```
n <- 9000
s10 <- c()
for (i in 1:n)
{
  s10[i] <- mean(sample(data$Wall.Thickness, 10, replace = TRUE))
}

hist(s10)
abline(v = mean(s10), col = "red", lwd = 2)


# (b)
"For size 50"
n <- 9000
s50 <- c()
for (i in 1:n)
{
  s50[i] <- mean(sample(data$Wall.Thickness, 50, replace = TRUE))
}

hist(s50)
abline(v = mean(s50), col = "red", lwd = 2)

"For size 500"
n <- 9000
s500 <- c()
for (i in 1:n)
{
  s500[i] <- mean(sample(data$Wall.Thickness, 500, replace = TRUE))
}

hist(s500)
abline(v = mean(s500), col = "red", lwd = 2)

"For size 9000"
n <- 9000
s9000 <- c()
for (i in 1:n)
{
  s9000[i] <- mean(sample(data$Wall.Thickness, 9000, replace = TRUE))
}

hist(s9000)
abline(v = mean(s9000), col = "red", lwd = 2)
```

```
> # Q2
> # (a)
> n <- 9000
> s10 <- c()
> for (i in 1:n)
+ {
+   s10[i] <- mean(sample(data$Wall.Thickness, 10, replace = TRUE))
+ }
>
> hist(s10)
> abline(v = mean(s10), col = "red", lwd = 2)
>
>
> # (b)
> "For size 50"
[1] "For size 50"
> n <- 9000
> s50 <- c()
> for (i in 1:n)
+ {
+   s50[i] <- mean(sample(data$Wall.Thickness, 50, replace = TRUE))
+ }
>
> hist(s50)
> abline(v = mean(s50), col = "red", lwd = 2)
>
> "For size 500"
[1] "For size 500"
> n <- 9000
> s500 <- c()
> for (i in 1:n)
+ {
+   s500[i] <- mean(sample(data$Wall.Thickness, 500, replace = TRUE))
+ }
>
> hist(s500)
> abline(v = mean(s500), col = "red", lwd = 2)
>
> "For size 9000"
[1] "For size 9000"
> n <- 9000
> s9000 <- c()
> for (i in 1:n)
+ {
+   s9000[i] <- mean(sample(data$Wall.Thickness, 9000, replace = TRUE))
+ }
```


Histogram of s9000
Frequency
0
500
1000
1500
2000
12.790
12.795
12.800
12.805
12.810
12.815
s9000


Histogram of s500
Frequency
0
200
400
600
800
1000
1200
1400
12.76
12.78
12.80
12.82
12.84
12.86
s500


Histogram of s50
Frequency
0
500
1000
1500
12.65
12.70
12.75
12.80
12.85
12.90
12.95
s50


Histogram of s10
Frequency
0
500
1000
1500
12.5
12.6
12.7
12.8
12.9
13.0
13.1
s10