Asude Berber - Statistical Inference

R Markdown

This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see http://rmarkdown.rstudio.com.

When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

```
#In this project I will investigate the exponential distribution in R and compare it with the Central L

library(ggplot2)
lambda <- 0.2 # lambda for rexp
n <- 40 # number of exponetials
numberOfSimulations <- 1000 # number of tests
set.seed(11081979)

exponentialDistributions <- matrix(data=rexp(n * numberOfSimulations, lambda), nrow=numberOfSimulations)

exponentialDistributionMeans <- data.frame(means=apply(exponentialDistributions, 1, mean))

### Sample Mean versus Theoretical Mean
mu <- 1/lambda
mu #5
```

```
## [1] 5
```

```
meanOfMeans <- mean(exponentialDistributionMeans$means)
meanOfMeans #5.027126
```

```
## [1] 5.027126
```

```
#the expected mean and the avarage sample mean are very close.

## Sample Variance versus Theoretical Variance
sd <- 1/lambda/sqrt(n)
sd #0.7905694
```

```
## [1] 0.7905694
```

```
Var <- sd^2
Var #0.625
```

```
## [1] 0.625
```

```
sd_x <- sd(exponentialDistributionMeans$means)
sd_x  #0.8020334
```

```
## [1] 0.8020334
```

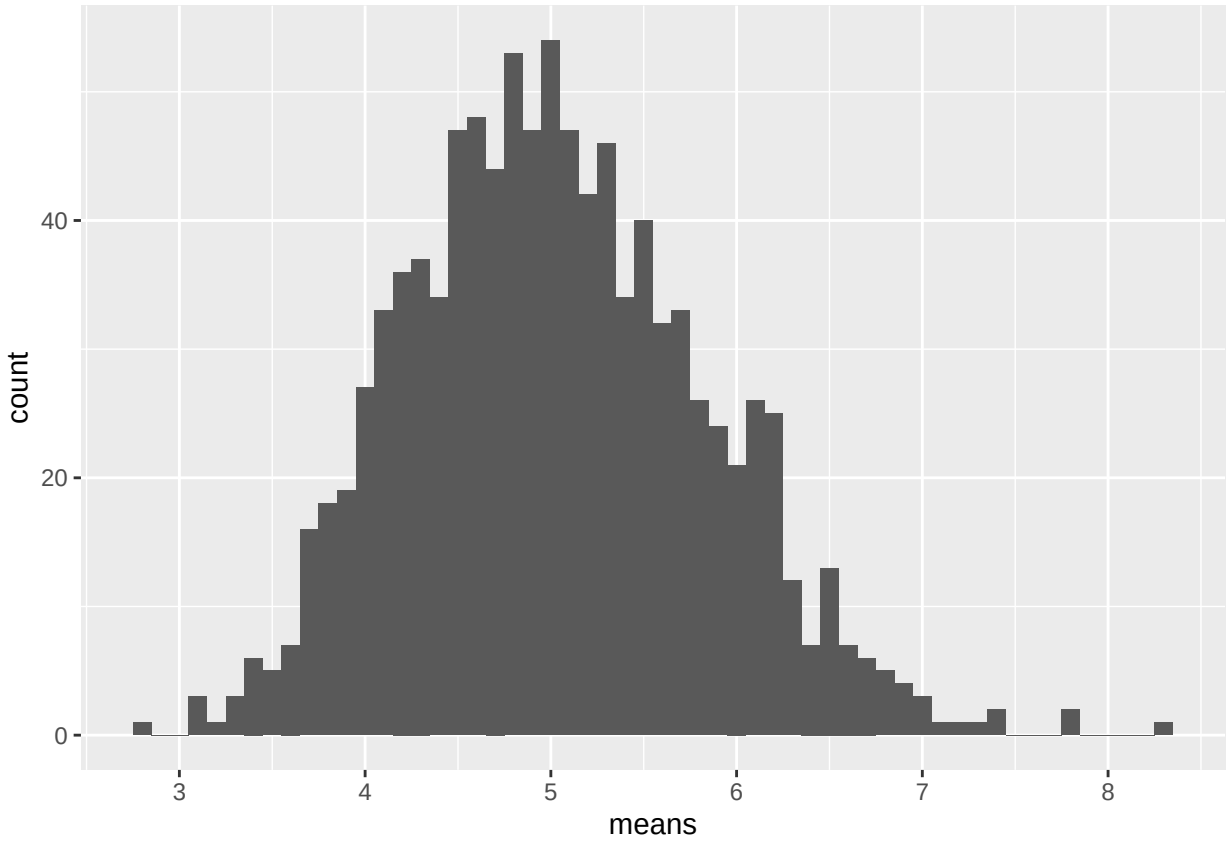
```
Var_x <- var(exponentialDistributionMeans$means)
Var_x #0.6432577
```

```
## [1] 0.6432577
```

```
##the standard deviations are very close
##Since variance is the square of the standard deviations, minor differnces will we enhanced, but are s
```

Including Plots

You can also embed plots, for example:

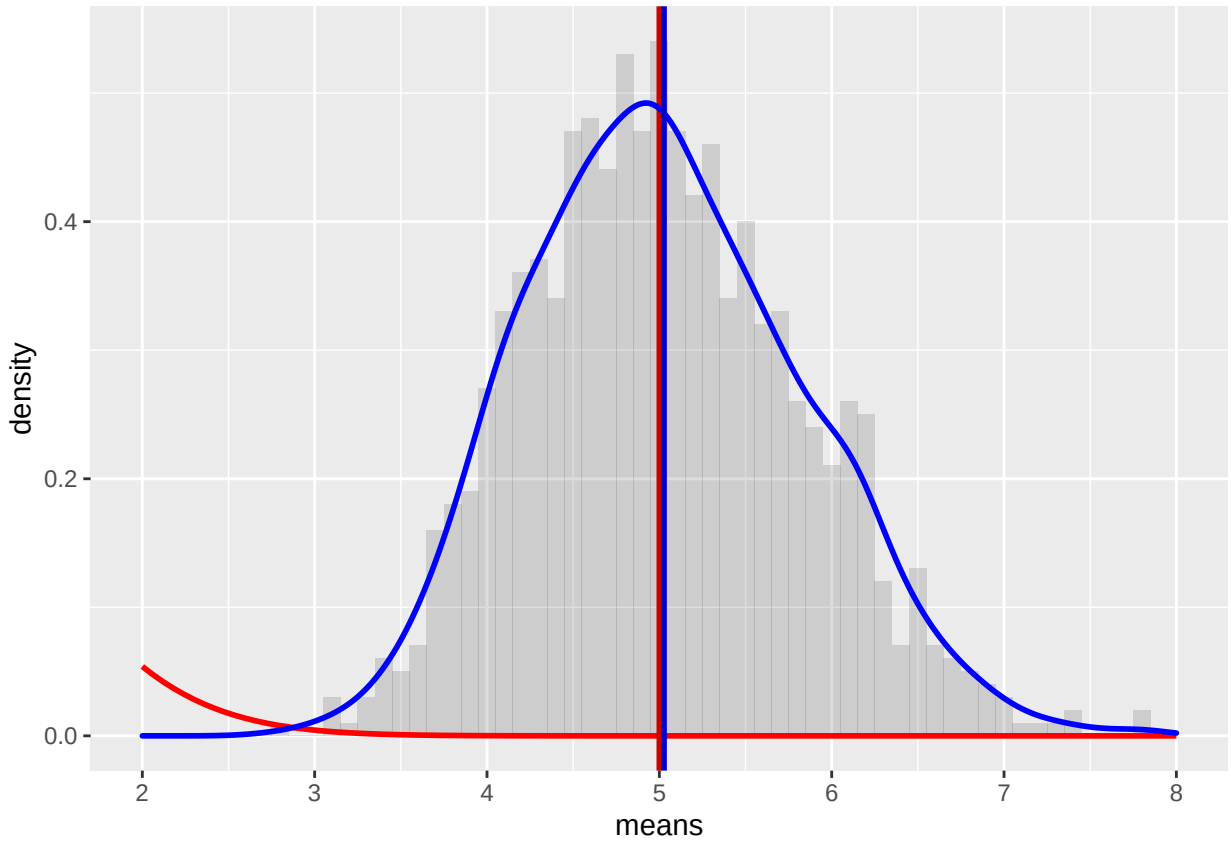



```
## Warning: Ignoring unknown parameters: arg
```

```
## Warning: Removed 1 rows containing non-finite values (stat_bin).
```

```
## Warning: Removed 1 rows containing non-finite values (stat_density).
```

```
## Warning: Removed 2 rows containing missing values (geom_bar).
```



Note that the `echo = FALSE` parameter was added to the code chunk to prevent printing of the R code that generated the plot.