Statistical Inference Course Project

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Synopsis

This report is part of Statistical Inference course from Johns Hopkins University (Coursera).

It consists of two parts:

1. A simulation exercise. will compare the exponential distribution in R with the Central Limit Theorem.

2. Basic inferential data analysis. I will analyze (very basically) the ToothGrowth data in the R datasets package.

Part 1 : Simulation exercise with exponentials

```
options(width=80)
set.seed(113)
datos<-rnorm(175,3,2)
head(datos)
```

Generate 175 random values from a normal distribution of mean 3 and standard deviation 2 (uses seed 113)

```
## [1]  3.2667090  5.7504432  4.4974301  0.4122990  1.8824584 -0.4648985
```
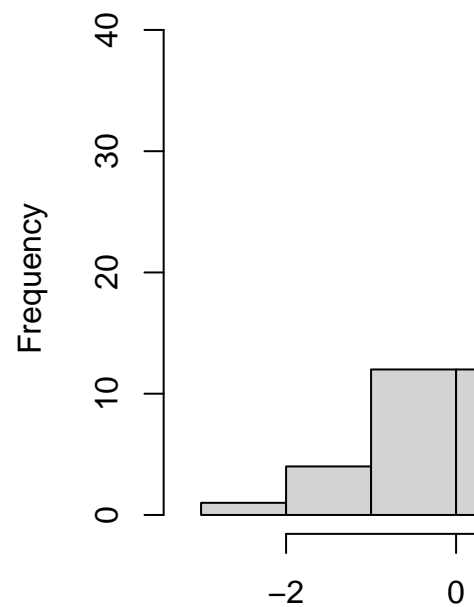
```
mean(datos)
```

Now let's see two important data such as the mean and variance of the data

```
## [1] 2.892319
```
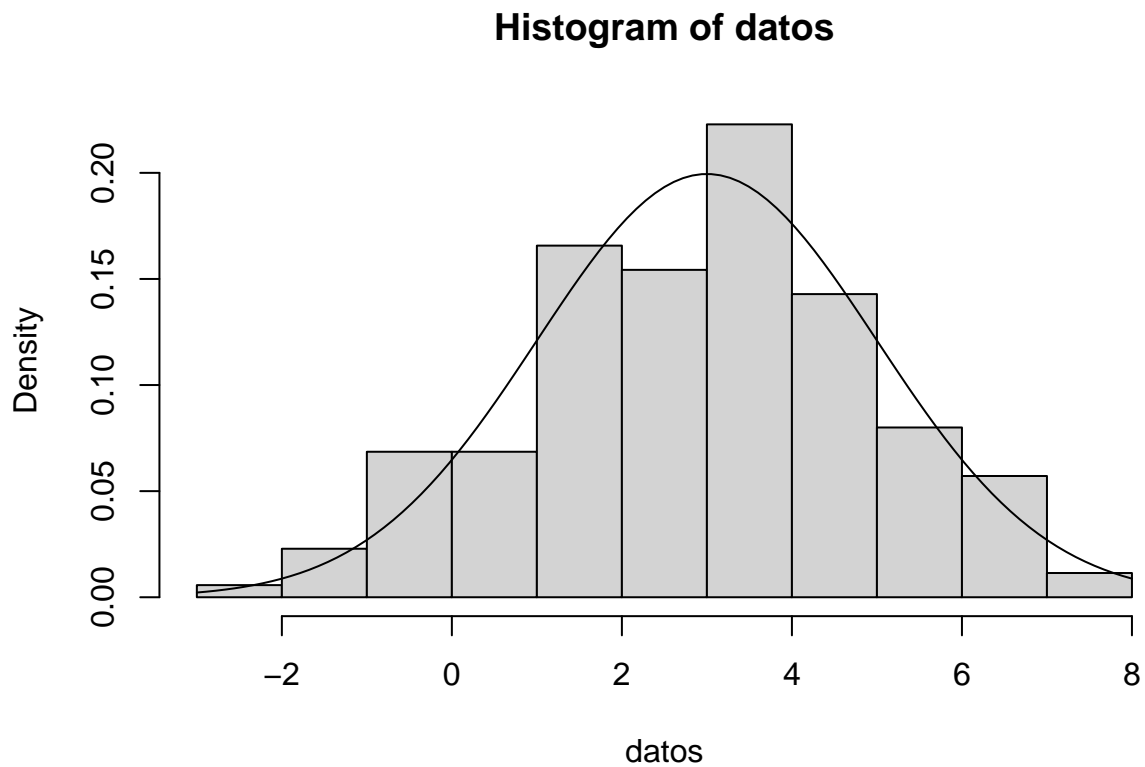
```
var(datos)
```

```
## [1] 4.042107
```

```
hist(datos)
```


Now let's see the histogram reflecting the distribution of the information

```
hist(datos, freq=FALSE)
curve(dnorm(x,3,2),add=TRUE)
```

Relative frequencies are represented and it is possible to make a comparison with the theoretical density function. This comparison is done by executing the following code below.

Histogram of datos

From the above we can see how the sample data are distributed against the density they show, so we see the central limit theorem.

Part 2 : basic inferential data analysis with ToothGrowth dataset