

Simulating the Central Limit Theorem

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Overview

In a few (2-3) sentences explain what is going to be reported on.

Simulations

Include English explanations of the simulations you ran, with the accompanying R code. Your explanations should make clear what the R code accomplishes.

```
mns = NULL
for (i in 1:1000) mns=c(mns, mean(rexp(40,0.2)))
```

Sample Mean versus Theoretical Mean

Include figures with titles. In the figures, highlight the means you are comparing. - - Include text that explains the figures and what is shown on them, and provides appropriate numbers.

```
mean(mns)
```

```
## [1] 5.004384
```

Sample Variance versus Theoretical Variance

Include figures (output from R) with titles. Highlight the variances you are comparing. Include text that explains your understanding of the differences of the variances.

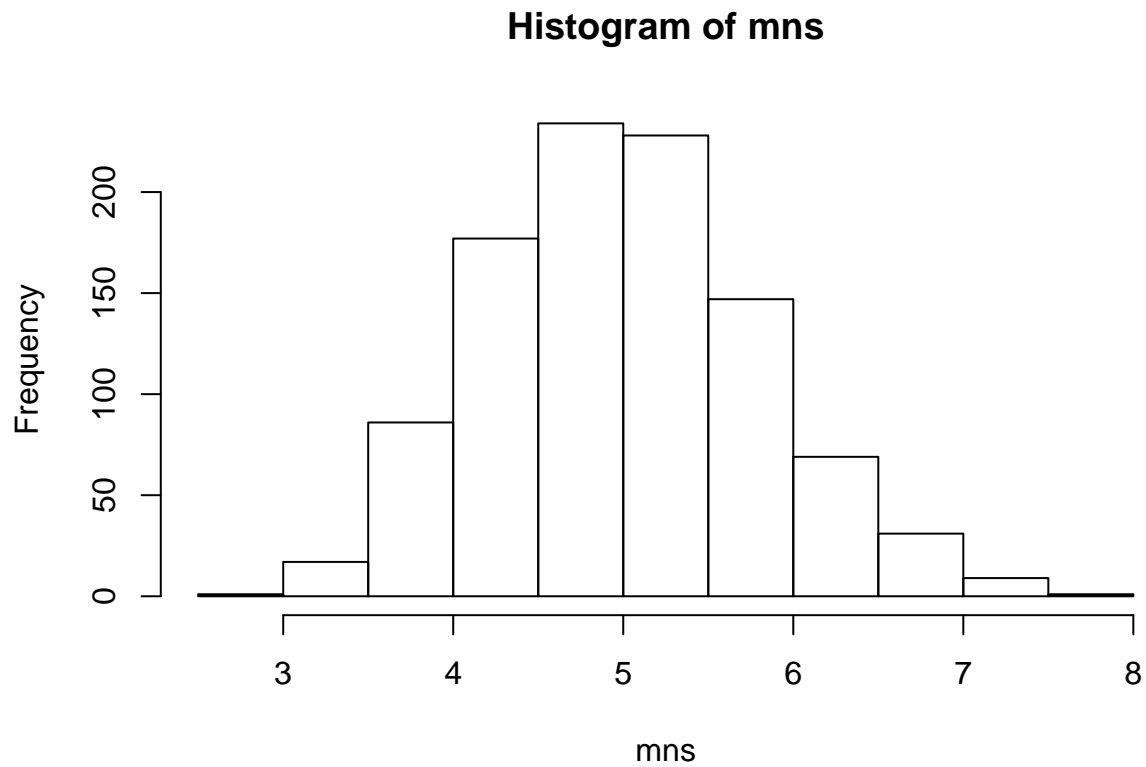
```
var(mns)
```

```
## [1] 0.6308912
```

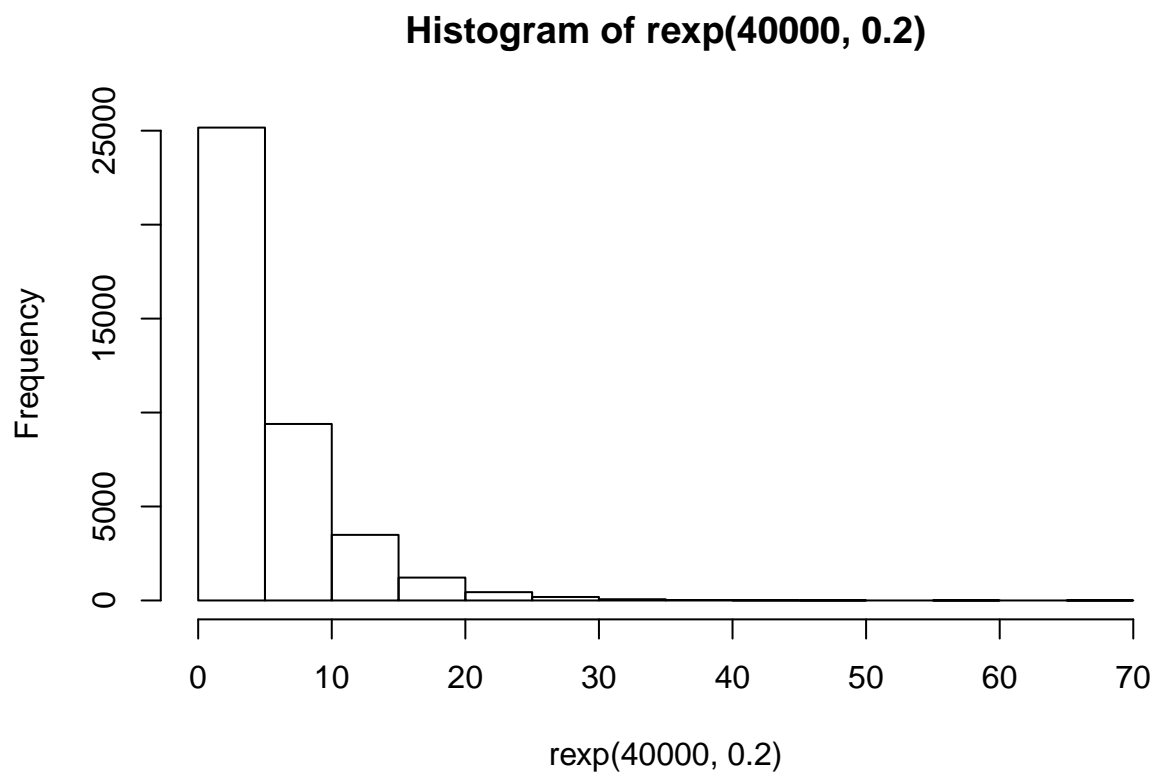
Distribution

Via figures and text, explain how one can tell the distribution is approximately normal.

```
hist(mns)
```



```
hist(rexp(40000,0.2))
```



Focus on the difference between the distribution of a large collection of random exponentials and the distribution of a large collection of averages of 40 exponentials.