Exploration of the Exponential Distribution

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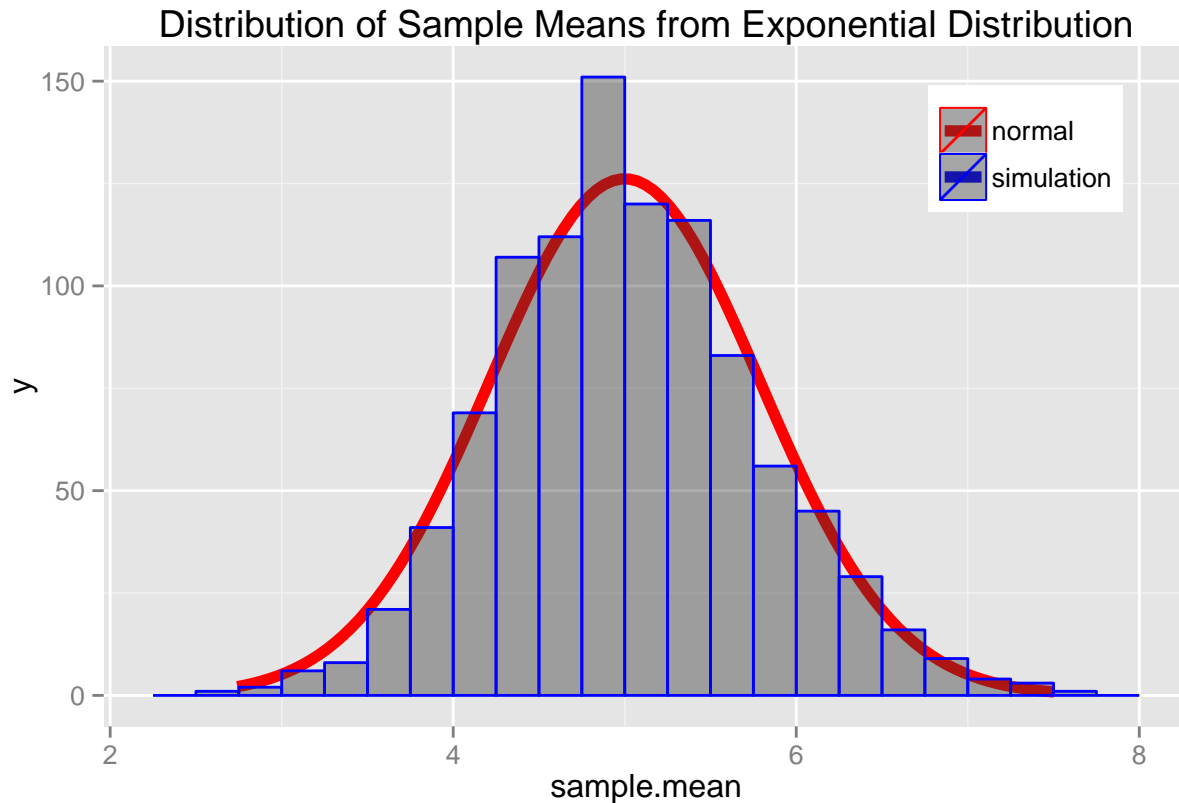
September 2015

Overview

The purpose of the report is to explore this exponential distribution and verify that the distribution of samples means from this distribution conform to the Central Limit Theorum. Three items are checked as part of the verification: 1) the shape of the distribution of sample means (DoSM) approaches that of a normal distribution, 2) the mean of the DoSM approaches the mean of the original distribution, and 3) the variance of the DoSM approaches σ^2/n where σ^2 is the variance of the original population and n is the number of samples.

Simulations

The function *createExpDoSM* created the plot shown below. The top plot is the original exponential distribution and the bottom is the DoSM created by taking an average of 40 samples 1000 times.

Looking at the distribution of sample standard deviations. . .