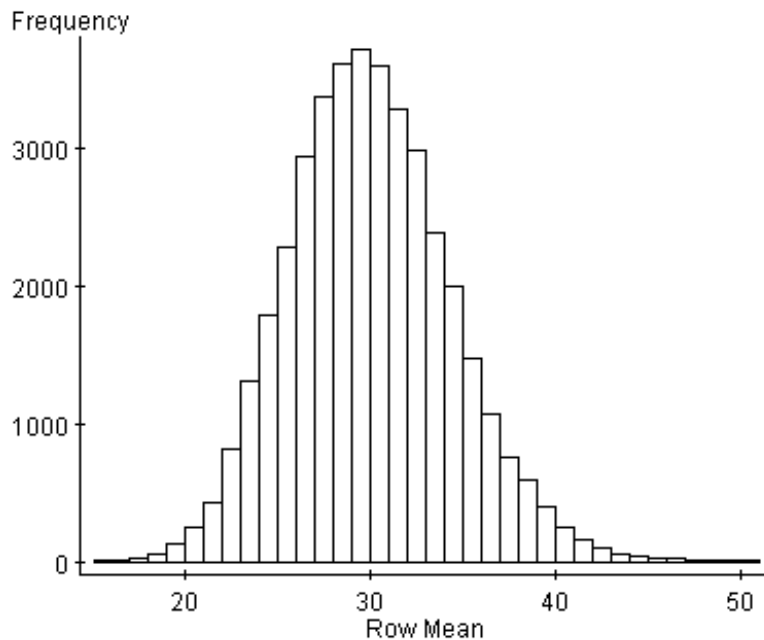


A SIMULATION OF THE SAMPLING DISTRIBUTION OF THE SAMPLE MEAN

Consider a population that is very skewed to the right with a mean of 30 and a standard deviation of 30. Consider all possible random samples of $n = 50$ measurements from this population, and the corresponding sample means of each of these possible samples. What does the distribution of all such means look like? What properties does it have? To help answer these questions, StatCrunch was used to simulate 40,000 samples each with $n = 50$ measurements from the described population. The mean of each sample was then calculated. A summary and histogram of these 40,000 sample means is shown below.

Summary statistics:

Column	n	Mean	Std. Dev.	Median
Row Mean	40000	29.999489	4.3351293	29.789272



QUESTIONS

- What is the mean of the simulated distribution of 40,000 sample means?
 - How does this value compare to the mean of the original population?
- What is the standard deviation of the simulated distribution of 40,000 sample means?
 - How does this value compare to the standard deviation of the original population?
- What is the shape of the simulated distribution of 40,000 sample means?
- How would these answers change if a small sample size, of say $n=4$, instead of a large sample size of $n = 50$, were used?