Assignment 3

1) What does symmetric distribution means?

A symmetrical distribution occurs when the values of variables appear at regular frequencies and often the mean, median, and mode all occur at the same point. If a line were drawn dissecting the middle of the graph, it would reveal two sides that mirror one other.

In graphical form, symmetrical distributions may appear as a normal distribution (i.e., bell curve). Symmetrical distribution is a core concept in technical trading as the price action of an asset is assumed to fit a symmetrical distribution curve over time.

Symmetrical distributions can be contrasted with asymmetrical distributions, which is a probability distribution that exhibits skewness or other irregularities in its shape.

KEY TAKEAWAYS

A symmetrical distribution is one where splitting the data down the middle produces mirror images.

Bell curves are a commonly cited example of symmetrical distributions.

Having a symmetrical distribution is useful for analyzing data and making inferences based on statistical techniques.

In finance, data-generating processes with symmetrical distributions can help inform trading decisions.

Real-world price data, however, tend to exhibit asymmetrical qualities such as right-skewness.

2What is left Skewed distribution and right skewed distribution?

A left-skewed distribution is one where the left tail is longer than that of the right tail. Here, it is important to note that the mean < median < mode.

Similarly, a right-skewed distribution is one where the right tail is longer than the left one. But, here mean > median > mode

3) Where are long-Tailed distribution Used?

a)A long-tailed distribution is a type of distribution where the tail drops off gradually toward the end of the curve.

The Pareto principle and the product sales distribution are good examples to denote the use of long-tailed distributions. Also, it is widely used in classification and regression problems.

b)long tail concept used in mass media,business,micro-finance(grameen bank),user driven innovation, Knowledge management, and social networkmechanism(e.gcrowdsourcing,crowdcasting),economicmodel,marketing,business and IT Securities.

4) What is the central limit theorem?

The central limit theorem states that the normal distribution is arrived at when the sample size varies without having an effect on the shape of the population distribution.

This central limit theorem is the key because it is widely used in performing hypothesis testing and also to calculate the confidence intervals accurately

.

Central Limit Theorem Formula

$$\mu_{\overline{x}} = \mu$$

$$\sigma_{\overline{x}} = \frac{\sigma}{\sqrt{n}}$$

Where,

μ = Population mean

σ = Population standard deviation

μx = Sample mean

σx= Sample standard deviation

n = Sample size

5) What are observation and experimental data in statistics?

Observational data correlates to the data that is obtained from observational studies, where variables are observed to see if there is any correlation between them.

Experimental data is derived from experimental studies, where certain variables are held constant to see if any discrepancy is raised in the working.