Measures of Shape and Position are used to describe the characteristics and distribution of data. They provide information about the shape of the data distribution, its central tendency and the presence of outliers. These measures help us understand and interpret data in the real world.

1. Skewness
   - Measures the asymmetry of the data distribution.
   - Identify whether the data is skewed,
     - Left (negative skewness) or
     - Right (positive skewness) or
     - Symmetrix (zero skewness).
   - Skewness is valuable in fields such as finance,
     - Indicate the presence of market trends or imbalances.

2. Kurtosis
   - Kurtosis measures the shape of the data distribution's tails.
   - Quantifies the degree of peakedness or flatness of the distribution compared to a normal distribution.
   - High kurtosis indicates heavy tails,
     - Useful in financial risk analysis or detecting outliers.

A positive skewness indicates a right-skewed distribution, a longer width right tail.
A negative skewness indicates a left-skewed distribution that is a longer left tail.

Positive Kurtosis indicates a distribution with heavier tails and a sharper peak that is leptokurtic, while negative kurtosis indicates a distribution with lighter tails and a flatter peak like platykurtic.

Measures of Position
1. Percentiles
   - Percentiles divide the dataset into 100 equal parts.
   - Indicate the value below which a certain percentage of the data falls.
   - Percentiles are helpful in analysing income,
     - Distributions, exam scores, etc.
     - Where relative ranking is significant.

2. Quartiles
   - Quartiles divide a dataset into four equal parts.
   - Identify the spread and central tendency of the data distribution.
   - First quartile (Q1) represents the 25th percentile,
   - Second quartile (Q2) is the median, and
   - Third quartile (Q3) is the 75th percentile.
   - Analysing data in areas,
     - Economics, healthcare and demographics.

Real-World Applications: Shape and Position
1. Data Analysis:
   - Insights into the characteristics of data.

- Enabling analysts to understand and describe the data distribution.
- Aid in identifying patterns, trends, and potential outliers.

2. Risk Assessment:
    - In finance and insurance,
        - Help assess risk by identifying skewed or heavy-tailed distributions.
    - Extreme events or market volatility.

3. Decision-Making:
    - Important information for decision-making.
    - Percentiles and quartiles help establish benchmarks.
    - Assess the performance of individuals or entities relative to the population.

4. Comparisons:
    - Allow for meaningful comparisons between different datasets or groups.
    - Skewness and kurtosis aid in comparing the distribution of variables across different time periods or regions.

5. Data Visualization:
    - Assist in visualizing data through
        - Histograms, box plots, or other graphical representations.
    - Visualizations help communicate insights.