

# Significance of Basic Graphs in Data Visualization

## Bar Chart

Compares quantities across categories, making it easy to spot differences. Ideal for categorical data like product sales or country populations.

## Line Chart

Shows trends over time. Useful for visualizing progression, patterns, or cycles in data like stock prices, temperature, or revenue growth.

## Pie Chart

Displays parts of a whole. Good for understanding proportions among categories like market share, survey results, etc.

## Histogram

Shows frequency distribution of continuous data. Helps detect skewness, outliers, or patterns such as normal distribution.

## Scatter Plot

Reveals relationships between two continuous variables. Useful for finding correlations, trends, and clusters in data.

## Area Chart

Similar to a line chart but emphasizes the magnitude of change by filling the area under the line. Useful for cumulative data comparison.

## Box Plot (Box-and-Whisker Plot)

Summarizes data distribution through five-number summary: minimum, first quartile (Q1), median, third quartile (Q3), and maximum. Good for identifying outliers and spread.

## Heatmap

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Uses colors to represent values in a matrix. Useful for identifying patterns, correlations, and intensity variations across datasets.

## **Bubble Chart**

An extension of a scatter plot where a third variable is shown through the size of markers. Useful for multidimensional data comparisons.

## **Tree Map**

Displays hierarchical data as nested rectangles. Useful for showing proportions within hierarchical categories (e.g., company departments' revenue).