



SNS COLLEGE OF ENGINEERING



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Department of Information Technology

Course Name - 23ADT202 Fundamental of Data
science and Analytics

II Year / IV Semester

Unit 2 - Descriptive Analytics

Graphs





Introduction to Graphs



Graphs are powerful tools in descriptive analytics that help visualize data. They convert complex datasets into visual formats, making them easier to interpret. By identifying trends, patterns, and relationships, graphs allow for clearer decision-making. This presentation will explore various types of graphs and their practical applications.



Importance of Graphs



Graphs simplify complex data, providing a clear visual representation. They help highlight patterns and trends that might be hidden in raw numbers. Graphs also make it easier to spot anomalies and outliers. With these insights, stakeholders can make quicker, more informed decisions.



Common Types of Graphs



There are several common types of graphs used in descriptive analytics: bar charts, line graphs, pie charts, histograms, scatter plots, and boxplots. Each type serves a different purpose and is suited for specific kinds of data analysis. Choosing the right graph type is crucial for clear communication.



Bar Charts



Bar charts are used to represent categorical data. They display quantities with rectangular bars, where the length of each bar is proportional to the value it represents. For example, bar charts can show sales by product category or revenue by region. Bar charts are great for comparing categories.



Line Graphs



Line graphs connect data points with lines, making them ideal for showing trends over time. They are often used for time-series data such as monthly revenue, stock prices, or temperature changes. By observing the slopes and fluctuations, line graphs highlight the direction and magnitude of changes.



Pie Charts



Pie charts represent parts of a whole. The circle is divided into slices, with each slice representing a proportion of the total. They are best used to display market share or demographic breakdowns. However, pie charts are most effective when there are few categories, as too many slices can make interpretation difficult.



Histograms



Histograms are used to display the frequency distribution of continuous data. They help analyze how data is spread across different ranges, such as the distribution of test scores. Each bar in a histogram represents the frequency of data within a specific range, making it easy to spot patterns like skewness or normal distribution.



Scatter Plots & Boxplots



Scatter plots are used to examine relationships between two numerical variables, such as marketing spend and sales. They help identify correlations or trends. Boxplots, on the other hand, summarize data distributions, showing medians, quartiles, and potential outliers. They are useful for analyzing salary distributions or variations in test scores.



Practical Applications & Exercise



In business, bar charts can compare sales, and line graphs can track revenue growth. In education, histograms and boxplots help analyze test scores and student performance. Healthcare uses scatter plots to examine treatment effectiveness. Exercise: Create a bar chart for four products' sales (A=50, B=70, C=40, D=90) and a scatter plot for study hours vs. scores ([1,2,3,4,5] and [50,60,65,70,80]).



THANK YOU