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Data Visualization

- Data visualization uses graphical representations like graphs, charts, and maps to analyze data effectively.
- Visuals help identify patterns, distributions, correlations, and outliers in complex datasets.
- Data visualization is crucial in decision-making processes, bringing data to life with insightful plots and charts.
- Despite its use, detailed data analyses often fail to captivate the audience.
- The design of a graph, including colors, layout, and size, significantly affects how people perceive it.
- Data storytelling, an innovative approach, uses visuals, narrative, and data to turn data insights into action.

Types of Data Visualization Analysis

- **Univariate analysis:** Summarizes behavior of one variable at a time.
- **Bivariate analysis:** Studies relationship between two variables.
- **Multivariate analysis:** Allows analysis of more than two variables simultaneously.

Line Plots

- Track variable evolution over time.
- Created by placing time variable on x-axis and analyzing variable on y-axis.

Bar Plots Overview

- Bar charts rank data based on multiple categories.
- Comprises rectangles proportional to each category's value.
- Prominent for easy reading.
- Used in business comparisons like brand market share or region revenue.
- Types include vertical, horizontal, and clustered bar plots.

Histograms

- Show numerical variable's distribution with bars.
- Data divided into ranges or bins.
- Frequency of occurrence of each range counted.
- Horizontal axis represents range, vertical axis represents frequency.
- Shows skewed or peak distribution of a variable.
- Examples from Data Demystified Series on Data Visualizations.

Scatter plots

- Visualize relationship between two continuous variables.
- Each point represents a single data point.
- Position on x and y-axis represents variables' values.
- Helps understand data and identify potential correlations.

Tree Maps

- Show part-to-whole relationships in data.
- Display hierarchical data as rectangles.
- Each rectangle represents a category within a variable.
- Area of rectangle proportional to category size.
- Considered more intuitive than pie charts.

Heat Maps

- Graphical representation of relationship between variables.
- Color code indicates correlation degree.

Word clouds

- Visualize common words in text or data.
- Similar to bar plots but visually appealing.
- Helps identify important themes in large text.
- Understands overall sentiment or tone of writing.
- Explores patterns or trends in data.
- Communicates key ideas visually.

Network Diagrams

- Utilizes graphs for data analysis in networks like online social networks and transportation networks.
- Network analytics is a subdomain of data science that uses graphs for network study.
- Components of network graphs: nodes and edges, or relationships.

GitHub Repository Link: [Automobile Data Visualization](#)