EDS Practice Session Assignment

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1. Bar Chart

Significance:

- **Clear Comparisons:** Helps easily compare quantities across different categories.
- **Versatile:** Can be horizontal or vertical; suitable for both nominal and ordinal data.
- **Highlighting Differences:** Quickly highlights the largest, smallest, or average values.
- **Usage:** Population comparison, sales per product, marks scored per subject.

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2. Line Chart

Significance:

- **Time-Series Analysis:** Ideal for understanding changes over continuous intervals (e.g., time, temperature, stock prices).
- **Trend Detection:** Helps detect upward, downward, and cyclical trends.
- **Multiple Series:** Multiple lines can compare trends across different groups.

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3. Pie Chart

Significance:

- **Visualizing Composition:** Makes it easy to see how a whole is divided among categories.
- **Quick Understanding:** Instantly communicates percentage share without reading numbers.
- **Limitation Awareness:** Best used for a small number of categories (ideally < 5-6).

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4. Histogram

Significance:

- **Distribution Shape:** Shows how data points are distributed (normal, skewed, bimodal, etc.).
- **Spread & Skewness:** Quickly understand data spread, outliers, and patterns.
- **Grouping Data:** Bins group continuous data into ranges.

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5. Scatter Plot

Significance:

- **Correlation Detection:** Identify positive, negative, or no correlation between variables.
- **Outlier Identification:** Quickly spot data points that deviate from the pattern.
- **Cluster Detection:** Reveals patterns, groups, and anomalies.

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6. Box Plot (Box and Whisker Plot)

Significance:

- **Outlier Detection:** Clearly shows extreme values.
- **Median and Quartiles:** Visualizes central tendency and spread.
- **Comparison Across Groups:** Effective for comparing distributions across different categories.

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7. Area Chart

Significance:

- **Trend + Magnitude:** Similar to line charts but with an emphasis on the quantity.
- **Cumulative View:** Best when you want to see how the overall sum evolves.
- **Layered Comparisons:** Can compare multiple groups stacked on top of each other.

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8. Heatmap

Significance:

- **Pattern Recognition:** Makes it easy to spot clusters and high/low value areas.
- **Density View:** Ideal for correlation matrices or site traffic density maps.
- **Color Encoding:** Color intensity helps viewers quickly grasp differences.

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9. Bubble Chart

Significance:

- **Multivariable Display:** Represents three variables (X-axis, Y-axis, size).
- **Priority Highlight:** Bigger bubbles naturally attract attention to significant points.
- **Clear Comparison:** Useful when one wants to compare proportions across two variable.

10. Radar Chart (Spider Chart)

Significance:

- **Profile Visualization:** Perfect for comparing different entities across multiple features.
- **Multidimensional Data:** Shows strengths and weaknesses across different axes.
- **Area Comparison:** The size and shape of the radar help in quick comparison

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11. Treemap

Significance:

- **Hierarchy + Proportion:** Quickly visualizes proportions within a hierarchy.
- **Space Optimization:** Uses space efficiently, fitting large amounts of data.
- **Visual Impact:** Larger areas signify greater values.

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12. Violin Plot

Significance:

- **Distribution + Summary:** Shows both distribution shape and basic summary stats.
- **Comparative Analysis:** Useful when comparing the distribution of multiple groups.
- **Symmetry & Shape:** Helps detect multimodal distributions (multiple peaks).
