**Assignment 1**

**Data Analysis of Student Performance Dataset Results**

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1. Boxplot of Reading Scores by Race/Ethnicity

Analysis: This boxplot makes it easier to analyze how reading scores are distributed across different racial/ethnic groups. The visualization highlights key statistical values such as the median, quartiles, and potential outliers for each group, allowing for a clear comparison of performance across demographics. It can reveal patterns such as disparities in educational outcomes that might require further investigation into socio-economic or other contextual factors.

A diagram of a group of people

Description automatically generated

2. Histogram of Math Scores

Analysis: The histogram aids in understanding the overall distribution of math scores among students. It allows for a quick assessment of the central tendency (mean or median) and the spread (range, variance) of scores. This visualization makes it easy to spot whether the scores are normally distributed, skewed, or have clusters at specific intervals. Any extreme outliers or gaps in performance can also be identified.

A graph of a person with histogram

Description automatically generated

3. Stacked Bar Chart of Lunch Type by Gender

Analysis: This stacked bar chart simplifies the comparison of lunch preferences between genders. It clearly shows the proportion of students who opted for standard or free/reduced lunch within each gender group. The visual distinction between categories highlights trends, such as whether one gender predominantly chooses a certain type of lunch, which might indicate underlying socio-economic factors affecting nutritional choices.

A bar graph with text

Description automatically generated

4. Scatter Plot of Reading Scores vs. Writing Scores

Analysis: The scatter plot is useful for detecting the correlation between reading and writing scores. If the points align closely around a line, it suggests a strong correlation, meaning students who perform well in one area tend to do so in the other. The visualization enables easy detection of any consistency in academic performance across these two subjects and identifies outliers—students whose scores deviate significantly from the trend.

A graph showing a red line

Description automatically generated with medium confidence

5.Bar Chart of Test Preparation Course Completion

Analysis: This bar chart facilitates an easy comparison of how many students completed the test preparation course versus those who did not. By assessing the frequency counts, the chart helps determine whether the course is popular among students and offers insight into whether it might correlate with higher test scores in other subjects, leading to further analysis of its effectiveness.

A graph showing a bar chart

Description automatically generated