**Assignment-1**

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**Q2: Explain what kind analysis has become easier with each of the visualizations.**

The visualizations shows valuable insights into how different factors influence student performance. The **histogram of math scores** highlights the distribution, concentration, and outliers in students' performance, providing a clear view of overall achievement. The average math, reading, and writing scores of male and female students can be easily compared using **the gender score comparison bar chart**, which also highlights any performance discrepancies based on gender. Outliers, median performance, and score distribution are all revealed by the box plot that compares math scores according **to test preparation status**. It demonstrates unequivocally that test preparation is helpful because students who finished the course typically has higher median scores and a smaller score range. The violin plot of math scores by **parental education level** offers a deep analysis of score distributions within each category. It visualizes not only the median and interquartile range but also the density of scores, highlighting where most students performance is concentrated. This makes us easier to identify variations in performance linked to parental education. The line chart displaying performance across different **race/ethnicity groups** enables trend analysis of average scores in math, reading, and writing. It reveals performance progression among groups, highlighting which groups excel in specific subjects and helping identify where additional academic support might be needed. Together, these visuals make it easier to analyse demographic, preparation, and parental aspects that influence student achievement.

**Visualization:** A graph of a distribution of math scores

AI-generated content may be incorrect.

A graph of a bar chart

AI-generated content may be incorrect.

A graph showing a graph of a test preparation

AI-generated content may be incorrect.

A chart of different colors of math scores

AI-generated content may be incorrect.

A graph with colored lines and white text

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