

The pie chart represents the distribution of parental education levels, with **some college (22.6%)** being the most common, followed by **associate's degree (22.2%)** and **high school (19.6%)**. A smaller portion attended **some high school (17.9%)**, while fewer parents obtained a **bachelor's (11.8%)** or **master's degree (5.9%)**. This indicates that most parents have some college experience, but fewer pursued higher education.

The scatter plot shows a **strong positive correlation** between reading and math scores, indicating that students who excel in reading tend to perform well in math. The points are color-coded by gender, revealing similar score distributions for males and females. Most scores range between **40 and 100**, with a few outliers at lower values.

The histogram shows the distribution of **writing scores**, with most students scoring between **60 and 80**, following a roughly normal distribution. Few students have extremely **low (below 40)** or **high (above 90)** scores. The KDE curve highlights this trend, indicating a well-balanced score distribution.

The box plot visualizes the distribution of **total scores** across different **race/ethnicity groups**. Each box represents the interquartile range (IQR), with the median marked inside. Whiskers show score variability, while outliers appear as individual points. The plot highlights differences in score distribution among groups, with some having higher median scores and less variability.

The bar chart displays the distribution of students based on **test preparation course completion**. The first bar, which is taller, represents students who **did not complete the course**, while the shorter bar represents those who **completed it**. This indicates that more students skipped the test preparation course than those who took it.

The visualizations simplify different types of analysis: **pie charts** highlight categorical distributions, **scatter plots** reveal correlations between variables, and **histograms** show score distributions. **Box plots** help compare group performance with medians and outliers, while **bar charts** make categorical comparisons easier. Together, they enhance trend analysis, performance evaluation, and data interpretation.