Student Performance Analysis Summary

Project Summary

This project presents a comprehensive analysis of student performance across three academic subjects - Math, Reading, and Writing - using both Exploratory Data Analysis (EDA) in Python and interactive data visualization in Tableau.

The dataset includes various demographic and social factors such as gender, race/ethnicity, parental level of education, lunch type, and test preparation course completion. The objective was to explore patterns and correlations to understand what factors influence academic performance.

Key Objectives

- Analyze student performance across different subjects.
- Explore the effect of gender, lunch, race, and parental education.
- Investigate the impact of test preparation on scores.
- Check correlation among math, reading, and writing scores.
- Visualize insights using Tableau and Python.

Key Insights

1. Gender Differences:
   - Females outperform males in reading and writing.
   - Males slightly outperform females in math.

2. Test Preparation Course:
   - Students who completed test prep scored 10-15 points higher on average in each subject.

3. Lunch Type:
   - Students receiving standard lunch consistently performed better than those with free/reduced lunch.

4. Parental Education:
   - Higher levels of parental education (Bachelor's/Master's degrees) are associated with higher student

scores.

5. Race/Ethnicity:

- Group E showed the highest average scores.
- Group A had the lowest performance among the five race/ethnicity groups.

6. Subject Correlation:

- There is a strong positive correlation between scores in math, reading, and writing.
- High performers in one subject tend to do well in others.

7. Combined Score Patterns:

- Students with standard lunch, test preparation, and parents with higher education had the highest total average scores.

Tools Used

- Python (Google Colab): For EDA using Pandas, Seaborn, and Matplotlib.
- Tableau Public: For creating dashboards and interactive visualizations.
- GitHub: For project hosting, version control, and presentation.

Dataset Source

Kaggle: Student Performance in Exams

https://www.kaggle.com/datasets/spscientist/students-performance-in-exams