**Module 4: Data Analysis with Python**

**Background**

The Assignment included a comprehensive analysis of the district-wide standardized test results, specifically every student's math and reading scores for the city's 15 schools in the school district.

**Objective**

The main objective in the assignment was to aggregate and analyze the provided data to

1. **Identify Trends:** Determine patterns in student performance, such as variations in math and reading scores across different schools, grade levels, and demographics.
2. **Assess School Performance:** Evaluate how individual schools are performing relative to one another, identifying both high-performing schools and those that may require additional support or resources.

**Analysis / Findings**

1. **Student Performance**: Approximately 75% of students passed math, and 86% passed reading across the district. However, only 65% of students passed both subjects, indicating a significant drop in combined subject proficiency.
2. **School Type Comparison**: Charter schools consistently outperformed district schools in terms of the percentage of students passing math, reading, and both subjects. Despite having a higher per-student budget, district schools, particularly the worst-performing ones, showed lower performance. This raises questions about the efficiency of resource allocation within district schools.
3. **Class Size and Resource Allocation**: Top-performing schools tended to have smaller student populations, which may suggest that lower class sizes or a better student-to-teacher ratio contributed to higher academic performance. Additionally, it is possible that charter schools benefit from greater parent involvement and fundraising activities, providing them with resources not reflected in the official district budget data.
4. **Consistency Across Grades**: The average math and reading scores, as well as the percentage of students passing, were consistent across different grade levels, indicating uniform performance trends throughout the district.

**Limitations of the Analysis**

1. **Data Scope:** The analysis is limited to the available data, which primarily includes student performance on standardized tests and basic school information. Other potentially influential factors, such as student socio-economic background, teacher qualifications, extracurricular involvement, and school facilities, were not considered, which might affect the overall assessment.
2. **Per-Student Budget Data:** The analysis assumes that the per-student budget is a direct indicator of the resources available to students. However, it does not account for how these funds are actually utilized within schools. The efficiency of resource allocation and the specific areas where funds are invested (e.g., technology, infrastructure, special

While this report provides a comprehensive overview, several limitations should be considered as noted above. However, this data provide a high level overview on students’ academic performance across the District schools.