**Overview of the school district analysis**

Background:

The school board has notified Maria and her supervisor that the student complete file shows evidence of academic dishonesty; specifically, reading and math grades for Thomas High School ninth graders appear to have been altered. Although the school board does not know the full extent of the academic dishonesty, they want to uphold state-testing standards

Purpose:

The purpose of this challenge is to:

* Filter Data Frames using logical operators.
* Replace the incorrect values with NaN.
* Explain how your PyCitySchools analysis changes after you handle the incorrect data.

**Results**

1. How is the district summary affected?

Before Data Cleanup - Average Math Score, Average Reading Score, % Passing Math, % Passing Reading, % Overall Passing: 79.0, 81.9, 75, 86, 65

After Data Cleanup - Average Math Score, Average Reading Score, % Passing Math, % Passing Reading, % Overall Passing: 78.9, 81.9, 74, 85, 64

There is a slight downward change in district averages.

1. How is the school summary affected?

Before Data Cleanup: Thomas High School's % Overall Passing = 91, placing second.

After Data Cleanup: % Overall Passing = 65, placing eighth.

Overall ranking order change due to Thomas High School, which slipped from 2nd to 13th position, with the other intervening schools moving up.

1. How does replacing the ninth graders’ math and reading scores affect Thomas High School’s performance relative to the other schools?

Relative ranking for Thomas High School changed from 2nd to 8th, as it's % overall passing number decreased from 91% to 65%.

1. How does replacing the ninth-grade scores affect the following:
   * + Math and reading scores by grade
2. Before cleanup: Thomas High School 1635
3. After cleanup: Thomas High School 1174
4. Percentage passing score is reduced as total number of students denominator remains unchanged, but total passing value numerator is reduced by the number of removed 9th grade scores.
   * + Scores by school spending
5. Before cleanup: Thomas High School 1635
6. After cleanup: Thomas High School 1174
7. Percentage passing score is reduced as total number of students denominator remains unchanged, but total passing value numerator is reduced by the number of removed 9th grade scores.
   * + Scores by school size
8. Thomas High School is in the "Medium (1000-2000)" size bucket
9. Removing 9th grade scores reduces the "% Passing Math", "% Passing Reading" and "% Overall Passing" scores for size bucket "Medium (1000-2000)" as follows:

Before Cleanup: 94, 97, 91 & After Cleanup: 88, 91, 85

Graphical user interface

Description automatically generated with medium confidence

* + - Scores by school type

1. Thomas High School is in the "CHARTER" type bucket
2. Removing 9th grade scores reduces the "% Passing Math", "% Passing Reading" and "% Overall Passing" scores for type bucket "CHARTER" as follows:

Before Cleanup:94, 97, 90 & After Cleanup: 90 93 87

Table

Description automatically generated

**Summary**

* Slight downward change in district averages
* Overall ranking order change due to Thomas High School, which slipped from 2nd to 13th position, with the other intervening schools moving up.
* Relative ranking for Thomas High School changed from 2nd to 8th, as it's % overall passing number decreased from 91% to 65%.
* Total number of students denominator remains unchanged, but total passing value numerator is reduced by the number of removed 9th grade scores