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Data Analytics Bootcamp – H2 2024

Module 4 Challenge: PyCitySchools

Data Source

Module 4 Challenge files

Summary

School data was analyzed to determine student performance statistical trends:

- District Summary
- School Summary
- Top 5 Performing Schools by % Overall Passing
- Bottom 5 Performing Schools by % Overall Passing
- Math Scores by Grade
- Reading Scores by Grade
- Scores by School Spending
- Scores by School Size
- Scores by School Type

Observations

- The **Top 5** performing schools by % Passing Overall are **Charter** schools; whereas the **Bottom 5**, respectively, are all **District** schools.
 - i.e. Charter schools tend to perform *better* than District schools.
- **Math Scores** by grade **do not indicate any significant fluctuation** within grade levels.
 - i.e. the math scores, per respective school, tend to be consistent across grade levels.
- **Reading Scores** by grade **do not indicate any significant fluctuation** within grade levels.
 - i.e. the reading scores, per respective school, tend to be consistent across grade levels.
- Scores by **Spending Range per Student** indicate a **negative correlation** between increased spending per student and % Passing Overall.
 - i.e. the *more* money spent per student, the *less* students are succeeding overall.
 - **37% spread** between highest and lowest overall passing %.
 - In particular, the **Math scores** were significantly affected with a **27% spread**, driving down overall passing rates.
 - Whereas **Reading scores** are tightly grouped, with a **3% spread**.
- Scores by **School Size** indicate a **negative correlation** between school size and % Passing Overall.
 - i.e. the *larger* the school, the *less* students are succeeding overall.
 - The **Small and Medium school size** bands were **tightly grouped**.
 - Nearly identical test scores, % passing Math, % passing Reading, and % passing Overall (**<1% spread**).
 - The **Large school size** band performed **significantly worse**, particularly in **Math** and **Overall** passing rates:
 - Math scores were ~6 points reduced.
 - Reading scores were closer at ~2.5 points reduced.
 - % Passing Math was ~23% worse.
 - % Passing Reading was ~14% worse.
 - % Passing Overall was ~32% worse.

- Scores by **School Type** indicate **consistent and significantly better performance** within **Charter schools**, versus District schools.
 - Math and reading scores, while relatively worse for District schools, were not hugely different:
 - Math shows a bigger spread (~5 points) than reading (~3 points).
 - % Passing are larger differentials, with ~27% spread Passing Math, ~16% Passing Reading, and ~37% spread Passing Overall.
 - The larger differential in Passing Overall indicates that while District students are performing closer on a single subject basis, District students fail to pass *both* subjects simultaneously.
 - i.e. District students tend to pass Math or Reading, but struggle to pass both subjects.