Drew Billington  
7/14/2024  
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.