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Pandas Challenge

Written Report

In our district here, we have 15 schools, and a total of 39,170 students. The total district budget its $$24,649,428. The average math score is: 78.9%, the average reading score is: 81.8, the passing math rate is: 74.9%, the reading passing rate is: 85.81% and the overall passing rate is: 65.17%. The district contains 7 charter schools and 8 district schools. We will examine the data to see if school size, per student budget and school type weights in on math and reading scores.

**District schools are :**

Huang High School

Figueroa High School

Hernandez High School

Bailey High School

Wright High School

Rodriguez High School

Johnson High School

Ford High School

**Charter Schools are:**

Shelton High School

Griffin High School

Wilson High School

Cabrera High School

Holden High School

Pena High School

Thomas High School

**Top 5 performing schools are and their overall passing rates are:**

Cabrera High School 91.33%

Thomas High School 90.94%

Griffin High School 90.59%

Wilson High School 90.58%

Pena High School 90.54%

All top 5 performing schools are charter schools.

**Bottom 5 performing schools with their overall passing rates are:**

Rodriguez High School 52.98%

Figueroa High School 53.20%

Huang High School 53.51%

Hernandez High School 53.52%

Johnson High School 53.53%

Charter schools perform better than district schools across all categories with overall passing rates of 90% and 54% respectively.

All 5 lowest performing schools are district schools, and all top 5 performing schools are charter schools. It is unclear exactly why charter schools outperform district schools in our current district but the trend is clear. This warrants further investigation to see what the cause of this discrepancy is.

**School sizes are listed below:**

Bailey High School 4976

Johnson High School 4761

Hernandez High School 4635

Rodriguez High School 3999

Figueroa High School 2949

Huang High School 2917

Ford High School 2739

Wilson High School 2283

Cabrera High School 1858

Wright High School 1800

Shelton High School 1761

Thomas High School 1635

Griffin High School 1468

Pena High School 962

Holden High School 427

When comparing school size to overall passing rate, there is a clear correlation. All the top performing schools have a smaller student population, and all bottom performing schools have a larger student population. In addition, charter schools are predominately smaller than district schools, compounding the correlation between school type, size and outcome. There is no real statistical difference for school student populations below 1000 and between 1000-2000. Their reading, and math scores are statistically identical and the overall passing rate is about 90% for both sizes. However when school sizes grow beyond 2000 there is a clear drop in reading and math scores. The overall passing rate drops to 58%. The most affected subject for this dynamic is math with only about 70% of students passing. We do not have information about class size, student demographics or teaching quality, and it would be necessary gather more information to perform further analysis.

School spending per student is shown below:

Bailey High School $628.0

Cabrera High School $582.0

Figueroa High School $639.0

Ford High School $644.0

Griffin High School $625.0

Hernandez High School $652.0

Holden High School $581.0

Huang High School $655.0

Johnson High School $650.0

Pena High School $609.0

Rodriguez High School $637.0

Shelton High School $600.0

Thomas High School $638.0

Wilson High School $578.0

Wright High School $583.0

Superficial analysis of per student spending surprisingly shows that schools that spend less on their students actually achieve better outcomes. This is counterintuitive. More information would be needed to determine how the schools are spending their budgets. Perhaps higher performing schools are putting their budgets to better use. It would be useful to get school budget information across the district to determine if how schools spend their budgets affects student outcomes. It would also be prudent to collect and analyze demographic information for student families in the schools to see if this is some how related to spending and outcomes, or if perhaps there is some other factor at play.

When examining math and reading scores by grade there doesn’t seem to be a statistical difference. Schools that perform well do so across all grades, and likewise for underperforming schools.

With the information we have we can come to reasonably confident conclusions that school size has a much larger effect on student outcomes than district spending. Schools with under 2000 students perform markedly better than larger ones.