**REPORT ON SCHOOL DISTRICT SPENDING WITH RELATION TO STUDENT GRADES**

**Summary**

We were tasked with analyzing the standardized test scores of each school in the district as a way to determine how the districts budget should be reallocated. We tested each schools overall passing rate for these tests against factors like the student population of each school, whether the school was a District or Charter, and the budget allocated to each school. We found that the Type of School had the most pronounced effect on overall passing rates, with District Schools having very low passing rates compared to Charter Schools

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**1. Introduction**

Recently, the School District has been discussing where it should prioritize the budget for each School in said District. Given that the results of the Standardized Tests for Math and Reading had come in just prior, a decision was made for these test scores to be used as a starting point for where to allocate budget. The analysis upon which this Report is derived from is meant to assist in this line of inquiry by looking at both the test scores across the district as well as each schools budget

**2. Methodology**

Since the Test Scores were the factor the district seemed most concerned about (given that it would be used to determine spending), we decided this is what we would primarily be looking at. We would also be focusing on Budget, since this district is also concerned with it and, as mentioned earlier, these concerns will directly affected by what we observe with Test Scores. Since no specific question was provided to be answered, we decided it was best to cast as wide a net as possible. Thus, we elected to take into account everything present in the provided csv files for both the School Districts stats and Each Students Test Scores for each subject.

What this resulted in was 2 dataframes, one which consisted of a single row containing overall stats about the district, with columns including the number of schools, number of students within the district, Total budget across all schools, the average scores for the Math and Reading Tests, and the percentage of students who passed each subject (and those who passed both)

The second dataframe included many of the same columns as the first one, but with 15 rows, one for each school in the district, with the dataframe recording the same stats for these specific schools

With both an overarching view of the district and a more specific view of each school in the district, we commenced to perform some basic analysis of this data as a way to “cast a wide net” as mentioned earlier, with us looking at the highest and lowest performing schools in the district as well as what each grade level scored on average. We then went on to measure each schools test scores against various other factors to try and identify any correlation, including the number of students attending each school, whether the school was a Charter or District school, and (arguably most importantly), the average amount of budget allocated to each school, split among its student body

**3. Results and Observations**

Please consult the provided jupyter notebook before reading this

* On average, Schools that spend more per student have lower overall passing rates, with there being a substantial decrease after $630 worth of spending
  + Most of this decrease seems to come from math, with passing rates decreasing at a fairly sizable 6%-13% between each of the four spending ranges in the dataframe
  + If budget increases but student count stays the same, then the spending per student will increase. If the student count increases but budget stays the same, then spending per student decreases. Therefore, schools with high per student spending and low student count are the exception to the above observation and have relatively high passing rates (Thomas high school and Pena high school are the most notable examples of this trend)
  + All District schools spend more than $630 per student (Bailey High School is the exception, though still rather close at $628 per student).
  + The Charter school with the highest overall budget is still lower then the District School with the lowest overall Budget
* Schools with Larger Sizes have lower overall passing rates, with there being a rather dramatic decrease in the overall passing rate and the math passing rate in Schools between 2000-5000 students
  + All District Schools have 2000-5000
* District Schools have a very low overall passing rate compared to charter schools. When sorting schools by highest overall passing rate, the lowest scoring Charter school is 34.58% higher than the highest scoring District School
* The Number of students for each school and each Schools budget seem to be in a linear relationship, with higher student correlating to higher budgets
* Passing rates for Reading never dip below 80%. This is true for all of the dataframes we created
* Wilson High School (Charter) and Ford High School (District) are quite similar in terms of budget and size (the most similar of the two school types), and yet Ford High School still has a very low overall passing rate then Wilson High School
* It is highly suggested that further analysis utilizing data visualization be used to more articulately analyze these relationships.

**4. Conclusions**

It appears as though whether the school is a District or a Charter school plays a huge role in how many students end up Passing their standardized tests. It’s hard to say why this is the case based solely on the data provided, it may have something to do with higher student populations (the observation of Wilson High School and Ford High School being a potential counterpoint)

While increasing the funds for District schools might be a possible course of action, we would be warry of this option since the budgets for District schools are already quite large. Besides, given that the per student spending of each District school was rather high on and yet their passing rates are still low, we would argue that budget might be less of a factor in passing rates then expected