# PyCity Schools Analysis

The first table gives us a sample snapshot of student demographics and academic performance across multiple schools, which could be valuable for making data-driven decisions about education policy and practice.

|  | **Student ID** | **student\_name** | **gender** | **grade** | **school\_name** | **reading\_score** | **math\_score** | **School ID** | **type** | **size** | **budget** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **6464** | 6464 | Michelle Smith | F | 12th | Shelton High School | 76 | 83 | 2 | Charter | 1761 | 1056600 |
| **21514** | 21514 | Nancy Ross | F | 9th | Bailey High School | 96 | 61 | 7 | District | 4976 | 3124928 |
| **9572** | 9572 | Bernard Collins | M | 9th | Hernandez High School | 91 | 62 | 3 | District | 4635 | 3022020 |
| **20643** | 20643 | Sarah Howell | F | 10th | Bailey High School | 92 | 93 | 7 | District | 4976 | 3124928 |
| **23099** | 23099 | Jennifer White | F | 11th | Holden High School | 91 | 93 | 8 | Charter | 427 | 248087 |
| **20656** | 20656 | Elizabeth Dixon | F | 9th | Bailey High School | 84 | 75 | 7 | District | 4976 | 3124928 |
| **3465** | 3465 | Mr. Victor Duarte | M | 11th | Figueroa High School | 86 | 79 | 1 | District | 2949 | 1884411 |
| **17084** | 17084 | Adam Walker DVM | M | 9th | Cabrera High School | 75 | 97 | 6 | Charter | 1858 | 1081356 |
| **20453** | 20453 | Melissa Schultz | F | 9th | Bailey High School | 69 | 69 | 7 | District | 4976 | 3124928 |
| **11543** | 11543 | Taylor Moody | F | 10th | Hernandez High School | 95 | 94 | 3 | District | 4635 | 3022020 |

# District Summary

There are a total of 15 schools included in the dataset, and they have a combined student population of 39,170. In terms of budget, the schools have a total budget of $24,649,428.00, which is an important consideration when thinking about resource allocation and investment in education. The table also includes information about academic performance. The average math score across all schools is 78.99, while the average reading score is 81.88. These numbers provide a rough sense of the academic performance of students in these schools. Additionally, the table provides information about the percentage of students passing math and reading, as well as the overall passing rate. Specifically, 74.98% of students are passing math, while 85.81% are passing reading. The overall passing rate is 65.17%, which takes into account both math and reading scores.

|  | **Total Schools** | **Total Students** | **Total Budget** | **Average Math Score** | **Average Reading Score** | **% Passing Math** | **% Passing Reading** | **% Overall Passing** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **0** | 15 | 39,170 | $24,649,428.00 | 78.985371 | 81.87784 | 74.980853 | 85.805463 | 65.172326 |

# School Summary

| **School Type** | **Total Students** | **Total School Budget** | **Per Student Budget** | **Average Math Score** | **Average Reading Score** | **% Passing Math** | **% Passing Reading** | **% Overall Passing** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **school\_name** |  |  |  |  |  |  |  |  |  |
| **Bailey High School** | District | 4976 | $3,124,928.00 | $628.00 | 77.048432 | 81.033963 | 66.680064 | 81.933280 | 54.642283 |
| **Cabrera High School** | Charter | 1858 | $1,081,356.00 | $582.00 | 83.061895 | 83.975780 | 94.133477 | 97.039828 | 91.334769 |
| **Figueroa High School** | District | 2949 | $1,884,411.00 | $639.00 | 76.711767 | 81.158020 | 65.988471 | 80.739234 | 53.204476 |
| **Ford High School** | District | 2739 | $1,763,916.00 | $644.00 | 77.102592 | 80.746258 | 68.309602 | 79.299014 | 54.289887 |
| **Griffin High School** | Charter | 1468 | $917,500.00 | $625.00 | 83.351499 | 83.816757 | 93.392371 | 97.138965 | 90.599455 |
| **Hernandez High School** | District | 4635 | $3,022,020.00 | $652.00 | 77.289752 | 80.934412 | 66.752967 | 80.862999 | 53.527508 |
| **Holden High School** | Charter | 427 | $248,087.00 | $581.00 | 83.803279 | 83.814988 | 92.505855 | 96.252927 | 89.227166 |
| **Huang High School** | District | 2917 | $1,910,635.00 | $655.00 | 76.629414 | 81.182722 | 65.683922 | 81.316421 | 53.513884 |
| **Johnson High School** | District | 4761 | $3,094,650.00 | $650.00 | 77.072464 | 80.966394 | 66.057551 | 81.222432 | 53.539172 |
| **Pena High School** | Charter | 962 | $585,858.00 | $609.00 | 83.839917 | 84.044699 | 94.594595 | 95.945946 | 90.540541 |
| **Rodriguez High School** | District | 3999 | $2,547,363.00 | $637.00 | 76.842711 | 80.744686 | 66.366592 | 80.220055 | 52.988247 |
| **Shelton High School** | Charter | 1761 | $1,056,600.00 | $600.00 | 83.359455 | 83.725724 | 93.867121 | 95.854628 | 89.892107 |
| **Thomas High School** | Charter | 1635 | $1,043,130.00 | $638.00 | 83.418349 | 83.848930 | 93.272171 | 97.308869 | 90.948012 |
| **Wilson High School** | Charter | 2283 | $1,319,574.00 | $578.00 | 83.274201 | 83.989488 | 93.867718 | 96.539641 | 90.582567 |
| **Wright High School** | Charter | 1800 | $1,049,400.00 | $583.00 | 83.682222 | 83.955000 | 93.333333 | 96.611111 | 90.333333 |

After analyzing the table of top-performing schools, we can conclude that the schools with the highest overall passing rates are all charter schools. These schools also have smaller student populations and lower per-student budgets compared to the district schools. The top 3 schools with the best results are Cabrera High School, Thomas High School, and Pena High School. These schools have high average math and reading scores and high percentages of students passing both subjects, as well as an overall passing rate of over 90%. This suggests that smaller class sizes and more personalized attention to students may contribute to better academic performance.

# Highest-Performing Schools (by % Overall Passing)

The top five performing schools in the table are all charter schools, with Cabrera High School ranking the highest with an overall passing rate of 91.33%

|  | **School Type** | **Total Students** | **Total School Budget** | **Per Student Budget** | **Average Math Score** | **Average Reading Score** | **% Passing Math** | **% Passing Reading** | **% Overall Passing** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **school\_name** |  |  |  |  |  |  |  |  |  |
| **Cabrera High School** | Charter | 1858 | $1,081,356.00 | $582.00 | 83.061895 | 83.975780 | 94.133477 | 97.039828 | 91.334769 |
| **Thomas High School** | Charter | 1635 | $1,043,130.00 | $638.00 | 83.418349 | 83.848930 | 93.272171 | 97.308869 | 90.948012 |
| **Griffin High School** | Charter | 1468 | $917,500.00 | $625.00 | 83.351499 | 83.816757 | 93.392371 | 97.138965 | 90.599455 |
| **Wilson High School** | Charter | 2283 | $1,319,574.00 | $578.00 | 83.274201 | 83.989488 | 93.867718 | 96.539641 | 90.582567 |
| **Pena High School** | Charter | 962 | $585,858.00 | $609.00 | 83.839917 | 84.044699 | 94.594595 | 95.945946 | 90.540541 |

# Bottom Performing Schools (By % Overall Passing)

We can see that charter schools tend to perform better in terms of academic achievement and passing rates compared to district schools, which generally have lower scores and passing rates.

|  | **School Type** | **Total Students** | **Total School Budget** | **Per Student Budget** | **Average Math Score** | **Average Reading Score** | **% Passing Math** | **% Passing Reading** | **% Overall Passing** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **school\_name** |  |  |  |  |  |  |  |  |  |
| **Rodriguez High School** | District | 3999 | $2,547,363.00 | $637.00 | 76.842711 | 80.744686 | 66.366592 | 80.220055 | 52.988247 |
| **Figueroa High School** | District | 2949 | $1,884,411.00 | $639.00 | 76.711767 | 81.158020 | 65.988471 | 80.739234 | 53.204476 |
| **Huang High School** | District | 2917 | $1,910,635.00 | $655.00 | 76.629414 | 81.182722 | 65.683922 | 81.316421 | 53.513884 |
| **Hernandez High School** | District | 4635 | $3,022,020.00 | $652.00 | 77.289752 | 80.934412 | 66.752967 | 80.862999 | 53.527508 |
| **Johnson High School** | District | 4761 | $3,094,650.00 | $650.00 | 77.072464 | 80.966394 | 66.057551 | 81.222432 | 53.539172 |

# Math Scores by Grade

Based on the data provided in the table, it can be observed that some high schools, such as Holden High School and Pena High School, consistently outperform others across all four grades:

|  | **9th** | **10th** | **11th** | **12th** |
| --- | --- | --- | --- | --- |
| **Bailey High School** | 77.083676 | 76.996772 | 77.515588 | 76.492218 |
| **Cabrera High School** | 83.094697 | 83.154506 | 82.765560 | 83.277487 |
| **Figueroa High School** | 76.403037 | 76.539974 | 76.884344 | 77.151369 |
| **Ford High School** | 77.361345 | 77.672316 | 76.918058 | 76.179963 |
| **Griffin High School** | 82.044010 | 84.229064 | 83.842105 | 83.356164 |
| **Hernandez High School** | 77.438495 | 77.337408 | 77.136029 | 77.186567 |
| **Holden High School** | 83.787402 | 83.429825 | 85.000000 | 82.855422 |
| **Huang High School** | 77.027251 | 75.908735 | 76.446602 | 77.225641 |
| **Johnson High School** | 77.187857 | 76.691117 | 77.491653 | 76.863248 |
| **Pena High School** | 83.625455 | 83.372000 | 84.328125 | 84.121547 |
| **Rodriguez High School** | 76.859966 | 76.612500 | 76.395626 | 77.690748 |
| **Shelton High School** | 83.420755 | 82.917411 | 83.383495 | 83.778976 |
| **Thomas High School** | 83.590022 | 83.087886 | 83.498795 | 83.497041 |
| **Wilson High School** | 83.085578 | 83.724422 | 83.195326 | 83.035794 |
| **Wright High School** | 83.264706 | 84.010288 | 83.836782 | 83.644986 |

# Reading Score by Grade

From the below obtained table, it is shown that the highest-performing school across all grades was Cabrera High School with an average score of 84.0, while the lowest-performing school was Rodriguez High School with an average score of 80.9.

| **9th** | **10th** | **11th** | **12th** |
| --- | --- | --- | --- |
| **Bailey High School** | 81.303155 | 80.907183 | 80.945643 | 80.912451 |
| **Cabrera High School** | 83.676136 | 84.253219 | 83.788382 | 84.287958 |
| **Figueroa High School** | 81.198598 | 81.408912 | 80.640339 | 81.384863 |
| **Ford High School** | 80.632653 | 81.262712 | 80.403642 | 80.662338 |
| **Griffin High School** | 83.369193 | 83.706897 | 84.288089 | 84.013699 |
| **Hernandez High School** | 80.866860 | 80.660147 | 81.396140 | 80.857143 |
| **Holden High School** | 83.677165 | 83.324561 | 83.815534 | 84.698795 |
| **Huang High School** | 81.290284 | 81.512386 | 81.417476 | 80.305983 |
| **Johnson High School** | 81.260714 | 80.773431 | 80.616027 | 81.227564 |
| **Pena High School** | 83.807273 | 83.612000 | 84.335938 | 84.591160 |
| **Rodriguez High School** | 80.993127 | 80.629808 | 80.864811 | 80.376426 |
| **Shelton High School** | 84.122642 | 83.441964 | 84.373786 | 82.781671 |
| **Thomas High School** | 83.728850 | 84.254157 | 83.585542 | 83.831361 |
| **Wilson High School** | 83.939778 | 84.021452 | 83.764608 | 84.317673 |
| **Wright High School** | 83.833333 | 83.812757 | 84.156322 | 84.073171 |

# Scores by School Spending

Below table shows that schools in the lower spending bracket, below $585, appear to have the highest math and reading scores, as well as the highest percentage of students passing both subjects, with an overall passing rate of 90.37%. In contrast, schools in the higher spending range, between $645 and $680, have lower average math and reading scores and the lowest percentage of students passing math, reading, and overall.

|  | **Average Math Score** | **Average Reading Score** | **% Passing Math** | **% Passing Reading** | **% Overall Passing** |
| --- | --- | --- | --- | --- | --- |
| **Spending Ranges (Per Student)** |  |  |  |  |  |
| **<$585** | 83.455399 | 83.933814 | 93.460096 | 96.610877 | 90.369459 |
| **$585-630** | 81.899826 | 83.155286 | 87.133538 | 92.718205 | 81.418596 |
| **$630-645** | 78.518855 | 81.624473 | 73.484209 | 84.391793 | 62.857656 |
| **$645-680** | 76.997210 | 81.027843 | 66.164813 | 81.133951 | 53.526855 |

# Scores by School Size

From the obtained below table, we can conclude that small and medium-sized schools have higher average math and reading scores, as well as higher percentages of students passing math and reading, resulting in higher overall passing rates.

|  | **Average Math Score** | **Average Reading Score** | **% Passing Math** | **% Passing Reading** | **% Overall Passing** |
| --- | --- | --- | --- | --- | --- |
| **School Size** |  |  |  |  |  |
| **Small (<1000)** | 83.821598 | 83.929843 | 93.550225 | 96.099437 | 89.883853 |
| **Medium (1000-2000)** | 83.374684 | 83.864438 | 93.599695 | 96.790680 | 90.621535 |
| **Large (2000-5000)** | 77.746417 | 81.344493 | 69.963361 | 82.766634 | 58.286003 |

# Scores by School Type

The last table reveals that charter schools perform better academically than district schools, with higher average math and reading scores, and higher passing rates for both math and reading, as well as overall passing rate.

|  | **Average Math Score** | **Average Reading Score** | **% Passing Math** | **% Passing Reading** | **% Overall Passing** |
| --- | --- | --- | --- | --- | --- |
| **School Type** |  |  |  |  |  |
| **Charter** | 83.473852 | 83.896421 | 93.620830 | 96.586489 | 90.432244 |
| **District** | 76.956733 | 80.966636 | 66.548453 | 80.799062 | 53.672208 |

# Conclusion

After analyzing all the obtained tables, it's clear that the number of students and budget allocation varies greatly between the district and charter schools. Larger student populations were found to have lower academic performance in both reading and math scores, as well as passing rates, emphasizing the importance of class sizes. Surprisingly, an increase in budget per student appeared to have a negative correlation with academic performance in both math and reading, indicating that there are other factors that influence academic success beyond just funding. It seems that smaller schools may have a stronger sense of community and a more personalized approach to education, which can contribute to a more positive and supportive learning environment.