

Academy of Py

I am the Chief Data Scientist for the city's school district. The mayor and the school board has asked me to assist with the strategic decisions regarding future school budgets and priorities.

My first task was to analyze the district-wide standardized test results. I was given access to every student's math and reading scores, as well as various information on the schools they attend. I was tasked to aggregate the data to and showcase obvious trends in school performance.

The file to use is PyCitySchools.ipynb

My findings were as follows:

Overall data across all districts show that average reading score is higher and as a result the percentage of students pass is higher.

	Total Schools	Total Students	Total Budget	Average Math Score	Average Reading Score	% Passing Math	% Passing Reading	Overall Passing Rate
0	15	39170	\$24,649,428.00	78.99	81.88	74.98%	85.81%	80.43%

When you group by schools and sort by Overall passing rate, the top 5 performers are charter schools while the bottom 5 performers are District schools

	School Type	Total Students	Total Budget	Per Student Budget	Average Math Score	Average Reading Score	% Passing Math	% Passing Reading	Overall Passing Rate
Pena High School	Charter	962	585858	609.0	83.839917	84.044699	94.594595	95.945946	83.942308
Wright High School	Charter	1800	1049400	583.0	83.682222	83.955000	93.333333	96.611111	83.818611
Holden High School	Charter	427	248087	581.0	83.803279	83.814988	92.505855	96.252927	83.809138
Thomas High School	Charter	1635	1043130	638.0	83.418349	83.848930	93.272171	97.308869	83.633639
Wilson High School	Charter	2283	1319574	578.0	83.274201	83.989488	93.867718	96.539641	83.631844

	School Type	Total Students	Total Budget	Per Student Budget	Average Math Score	Average Reading Score	% Passing Math	% Passing Reading	Overall Passing Rate
Rodriguez High School	District	3999	2547363	637.0	76.842711	80.744686	66.366592	80.220055	78.793698
Huang High School	District	2917	1910635	655.0	76.629414	81.182722	65.683922	81.316421	78.906068
Ford High School	District	2739	1763916	644.0	77.102592	80.746258	68.309602	79.299014	78.924425
Figueroa High School	District	2949	1884411	639.0	76.711767	81.158020	65.988471	80.739234	78.934893
Johnson High School	District	4761	3094650	650.0	77.072464	80.966394	66.057551	81.222432	79.019429

This was apparent when you look at the data by school type. Charter Schools had higher average math and reading scores, percentage of students passing both Math and Reading.

	Average Math Score	Average Reading Score	% Passing Math	% Passing Reading	Overall Passing Rate
School Type					
Charter	83.473852	83.896421	93.620830	96.586489	83.685136
District	76.956733	80.966636	66.548453	80.799062	78.961685

Interestingly, when you slice the data by school spending per student, those schools that spend less than \$580 per student have higher passing rates in both Math and Reading.

	Average Math Score	Average Reading Score	% Passing Math	% Passing Reading	Overall Passing Rate
School Spending					
< \$580	83.274201	83.989488	93.867718	96.539641	83.631844
\$581to610	83.549353	83.903238	93.686876	96.340888	83.726296
611to640	79.474551	82.120471	77.139934	87.468080	80.797511
641to670	77.023555	80.957446	66.701010	80.675217	78.990501

When you look at the data based on the size of the school, smaller schools (school size less than 1000) had highest Math and Reading scores and Overall Passing Rate but mediums size schools had the highest percent of students that had passing Math and Reading scores.

	Average Math Score	Average Reading Score	% Passing Math	% Passing Reading	Overall Passing Rate
School Size					
Small (< 1000)	83.821598	83.929843	93.550225	96.099437	83.875721
Medium (1001-2500)	83.357937	83.885280	93.644365	96.748840	83.621608
Large (2501-5000)	76.956733	80.966636	66.548453	80.799062	78.961685