Analysis of District and School Data

For the Module 4 homework on Pandas, I was given two csv files containing school data and student data from a school district. These datasets were merged and calculations were made to provide a district summary and school summary. The objective was to assist the school board and the mayor in making decisions regarding future school budgets and priorities. The main analysis was on the highest performing and bottom performing schools, math and reading scores by grade, and scores by school spending, school size, and school type. Pandas was imported into a Jupyter Notebook for the analysis.

When completing the analysis for the highest and bottom performing schools, it was apparent that the highest performing schools (Figure 1) were all charter schools. This makes sense since charter schools often have more flexibility and personalized learning. The bottom performing schools (Figure 2) were all district schools and they also had more students than the charter schools. This leads to less one on one time with the teachers and a higher chance of struggling children to be overlooked.

Figure 1

school_name	School Type	Total Students	Total School Budget	Per Student Budget	Average Math Score	Average Reading Score	% Passing Math	% Passing Reading	% Overall Passing	School Size
Cabrera High School	Charter	1858	$1,081,356.00	582.0	83.061895	83.975780	94.133477	97.039828	91.334769	Medium (1000-2000)
Thomas High School	Charter	1635	$1,043,130.00	638.0	83.418349	83.848930	93.272171	97.308869	90.948012	Medium (1000-2000)
Griffin High School	Charter	1468	$917,500.00	625.0	83.351499	83.816757	93.392371	97.138965	90.599455	Medium (1000-2000)
Wilson High School	Charter	2283	$1,319,574.00	578.0	83.274201	83.989488	93.867718	96.539641	90.582567	Large (2000-5000)
Pena High School	Charter	962	$585,858.00	609.0	83.839917	84.044699	94.594595	95.945946	90.540541	Small (<1000)

Figure 2

school_name	School Type	Total Students	Total School Budget	Per Student Budget	Average Math Score	Average Reading Score	% Passing Math	% Passing Reading	% Overall Passing
Rodriguez High School	District	3999	$2,547,363.00	637.0	76.842711	80.744686	66.366592	80.220055	52.988247
Figueroa High School	District	2949	$1,884,411.00	639.0	76.711767	81.158020	65.988471	80.739234	53.204476
Huang High School	District	2917	$1,910,635.00	655.0	76.629414	81.182722	65.683922	81.316421	53.513884
Hernandez High School	District	4635	$3,022,020.00	652.0	77.289752	80.934412	66.752967	80.862999	53.527508
Johnson High School	District	4761	$3,094,650.00	650.0	77.072464	80.966394	66.057551	81.222432	53.539172

The analysis of the scores by school size (Figure 3) was also indicative that the larger schools had the lowest overall passing rate. Again, the more students in a school, the greater chance that they will not have the attention that is needed to receive higher grades.

Figure 3

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

The data from the scores by school spending (Figure 4) showed that the lower the spending ranges (per student), the higher the overall passing percentage the school had. This is contradictory to what I would hypothesize. It would be logical to believe that more spending per student, would increase the student grades.

Figure 4

	Spending Ranges (Per Student)	Average Math Score	Average Reading Score	% Passing Math	% Passing Reading	% Overall Passing
0	<$585	83.455399	83.933814	93.460096	96.610877	90.369459
1	$585-630	81.899826	83.155286	87.133538	92.718205	81.418596
2	$630-645	78.518855	81.624473	73.484209	84.391793	62.857656
3	$645-680	76.997210	81.027843	66.164813	81.133951	53.526855

Based on the conclusions stated above, the school board and mayor may decide to increase the number of charter schools and consider the spending per student when reviewing budgets. If the charter schools are showing better results, then additional research could be done on the charter schools to find out what factors allow for less spending per student and higher grades.