

Module 4 Challenge – Pandas and Jupyter Notebook Analysis

This report contains a summaries and key findings of an initial analysis on data for the district's schools. The report contains an Analysis Summary, Key Findings and a Tables of Results sections.

Analysis Summary

Based on the data provided an overall analysis summary on the district-level and school-level is as follows.

District Summary

There are a total of 39,170 students across 15 schools with a total spending budget of approximately 25 million USD. The average Math score is 79% with a 75% pass rate, whilst the average Reading score is 82% with an 86% pass rate. The overall pass rate for both Math and English is 65%.

These details are captured in Table 1.

Schools Summary

A breakdown of the above district-wide summary on a per-school basis is provided in Table 2. This table also specifies the whether a school is of the District or Charter type on the "School Type" column.

Key Findings

- Results in "Table 3: Scores by School Spending" clearly indicate a lower Spending Range (per student) correlated with better academic outcomes. For example schools with per student spending in the category <\$580 had an overall passing rate greater than 90% whilst the highest spending bracket had an overall passing rate of 53.5%.
- When considering Tables 4 and 5 which look at scores by school size, it is clear Small and Medium size schools have similar outcomes whilst Large Schools (2000-5000 students) have poorer outcomes relative to Small and Medium.
- Table 6 considers scores by School Type which shows that Charter schools outperform District schools as an overall trend.
- Table 7 and 8 looks at scores according to which Grade students are in. This table shows that within a given school, there is minimal variation between the results of the various Grades 9th, 10th, 11th and 12th.

Tables of Results

Table 1: District Summary

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

Table 2: Schools Summary

	School Type	Total Students	Total School Budget	Per Student Budget	Average Math Score	Average Reading Score	% Passing Math	% Passing Reading	% Overall Passing
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

Table 3: Scores by School Spending

Spending Ranges (Per Student)	Average Math Score	Average Reading Score	% Passing Math	% Passing Reading	% Overall Passing
<\$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

Table 4: Scores by School Size

	School Type	Total Students	Total School Budget	Per Student Budget	Average Math Score	Average Reading Score	% Passing Math	% Passing Reading	% Overall Passing	School Size	
	Bailey High School	District	4976	\$3,124,928.00	\$628.00	77.048432	81.033963	66.680064	81.933280	54.642283	Large (2000-5000)
	Cabrera High School	Charter	1858	\$1,081,356.00	\$582.00	83.061895	83.975780	94.133477	97.039828	91.334769	Medium (1000-2000)
	Figueroa High School	District	2949	\$1,884,411.00	\$639.00	76.711767	81.158020	65.988471	80.739234	53.204476	Large (2000-5000)
	Ford High School	District	2739	\$1,763,916.00	\$644.00	77.102592	80.746258	68.309602	79.299014	54.289887	Large (2000-5000)
	Griffin High School	Charter	1468	\$917,500.00	\$625.00	83.351499	83.816757	93.392371	97.138965	90.599455	Medium (1000-2000)
	Hernandez High School	District	4635	\$3,022,020.00	\$652.00	77.289752	80.934412	66.752967	80.862999	53.527508	Large (2000-5000)
	Holden High School	Charter	427	\$248,087.00	\$581.00	83.803279	83.814988	92.505855	96.252927	89.227166	Small (<1000)
	Huang High School	District	2917	\$1,910,635.00	\$655.00	76.629414	81.182722	65.683922	81.316421	53.513884	Large (2000-5000)
	Johnson High School	District	4761	\$3,094,650.00	\$650.00	77.072464	80.966394	66.057551	81.222432	53.539172	Large (2000-5000)
	Pena High School	Charter	962	\$585,858.00	\$609.00	83.839917	84.044699	94.594595	95.945946	90.540541	Small (<1000)
	Rodriguez High School	District	3999	\$2,547,363.00	\$637.00	76.842711	80.744686	66.366592	80.220055	52.988247	Large (2000-5000)
	Shelton High School	Charter	1761	\$1,056,600.00	\$600.00	83.359455	83.725724	93.867121	95.854628	89.892107	Medium (1000-2000)
	Thomas High School	Charter	1635	\$1,043,130.00	\$638.00	83.418349	83.848930	93.272171	97.308869	90.948012	Medium (1000-2000)
	Wilson High School	Charter	2283	\$1,319,574.00	\$578.00	83.274201	83.989488	93.867718	96.539641	90.582567	Large (2000-5000)
	Wright High School	Charter	1800	\$1,049,400.00	\$583.00	83.682222	83.955000	93.333333	96.611111	90.333333	Medium (1000-2000)

Table 5: Average Scores by School Size

	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

Table 6: Scores by School Type

	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

Table 7: Math Scores by Grade

	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

Table 8: Reading Scores by Grade

	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