

## **Pandas challenge**

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**Conclusion 1:** While Charter schools tend to be smaller in terms of student quantity than District schools and have lower budgets per student (Image 11), Charter schools represent the top 5 highest overall passing among the 15 schools considered for this study (Image 3). The 5 lowest overall passing rates were identified in District Schools (Image 4). Taking a deeper look, the difference in performance between Charter schools and Districts schools becomes clearer when we consider the average math grades, average reading grades and percentage of students who passed math, reading or both (Image 10).

**Conclusion 2:** Looking at the data, the defining factor for performance seems to be the type of school (Charter or District) and not the spending per student (Image 8). The lowest funding bracket per student (less than \$585 per student), which happens to also be Charter schools, holds the best average math grades, average reading grades and percentage of students who passed math, reading or both. District schools tend to be larger, better funded and show lower overall student performance (Image 4).

**Conclusion 3:** Students seem to have better grades and better passing chances in reading than in math (Image 2). There is consistency in reading and math scores for all the grades in each school (Images 5 and 6).

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**Image 1 - Budget per school**

	School type	Total students	Total school budget in \$	Budget per student in \$
School name				
Wilson High School	Charter	2283	1319574	578.0
Holden High School	Charter	427	248087	581.0
Cabrera High School	Charter	1858	1081356	582.0
Wright High School	Charter	1800	1049400	583.0
Shelton High School	Charter	1761	1056600	600.0
Pena High School	Charter	962	585858	609.0
Griffin High School	Charter	1468	917500	625.0
Bailey High School	District	4976	3124928	628.0
Rodriguez High School	District	3999	2547363	637.0
Thomas High School	Charter	1635	1043130	638.0
Figueroa High School	District	2949	1884411	639.0
Ford High School	District	2739	1763916	644.0
Johnson High School	District	4761	3094650	650.0
Hernandez High School	District	4635	3022020	652.0
Huang High School	District	2917	1910635	655.0

**Image 2 - Per school summary:**

	School type	Total students	Total school budget in \$	Budget per student in \$	Average math score	Average reading score	% passing math	% passing read	% overall passing
Wilson High School	Charter	2283	1319574	578.0	83.3	84.0	93.9	96.5	90.6
Holden High School	Charter	427	248087	581.0	83.8	83.8	92.5	96.3	89.2
Cabrera High School	Charter	1858	1081356	582.0	83.1	84.0	94.1	97.0	91.3
Wright High School	Charter	1800	1049400	583.0	83.7	84.0	93.3	96.6	90.3
Shelton High School	Charter	1761	1056600	600.0	83.4	83.7	93.9	95.9	89.9
Pena High School	Charter	962	585858	609.0	83.8	84.0	94.6	95.9	90.5
Griffin High School	Charter	1468	917500	625.0	83.4	83.8	93.4	97.1	90.6
Bailey High School	District	4976	3124928	628.0	77.0	81.0	66.7	81.9	54.6
Rodriguez High School	District	3999	2547363	637.0	76.8	80.7	66.4	80.2	53.0
Thomas High School	Charter	1635	1043130	638.0	83.4	83.8	93.3	97.3	90.9
Figueroa High School	District	2949	1884411	639.0	76.7	81.2	66.0	80.7	53.2
Ford High School	District	2739	1763916	644.0	77.1	80.7	68.3	79.3	54.3
Johnson High School	District	4761	3094650	650.0	77.1	81.0	66.1	81.2	53.5
Hernandez High School	District	4635	3022020	652.0	77.3	80.9	66.8	80.9	53.5
Huang High School	District	2917	1910635	655.0	76.6	81.2	65.7	81.3	53.5

**Image 3 - Schools with higher overall passing:**

	School type	Total students	Total school budget in \$	Budget per student in \$	Average math score	Average reading score	% passing math	% passing read	% overall passing
Cabrera High School	Charter	1858	1081356	582.0	83.1	84.0	94.1	97.0	91.3
Thomas High School	Charter	1635	1043130	638.0	83.4	83.8	93.3	97.3	90.9
Griffin High School	Charter	1468	917500	625.0	83.4	83.8	93.4	97.1	90.6
Wilson High School	Charter	2283	1319574	578.0	83.3	84.0	93.9	96.5	90.6
Pena High School	Charter	962	585858	609.0	83.8	84.0	94.6	95.9	90.5

**Image 4 - Schools with lower overall passing:**

	School type	Total students	Total school budget in \$	Budget per student in \$	Average math score	Average reading score	% passing math	% passing read	% overall passing
Rodriguez High School	District	3999	2547363	637.0	76.8	80.7	66.4	80.2	53.0
Figueroa High School	District	2949	1884411	639.0	76.7	81.2	66.0	80.7	53.2
Huang High School	District	2917	1910635	655.0	76.6	81.2	65.7	81.3	53.5
Hernandez High School	District	4635	3022020	652.0	77.3	80.9	66.8	80.9	53.5
Johnson High School	District	4761	3094650	650.0	77.1	81.0	66.1	81.2	53.5

**Image 5 - Math scores per grade per school:**

	grade	10th	11th	12th	9th
school_name					
Bailey High School	77.0	77.5	76.5	77.1	
Cabrera High School	83.2	82.8	83.3	83.1	
Figueroa High School	76.5	76.9	77.2	76.4	
Ford High School	77.7	76.9	76.2	77.4	
Griffin High School	84.2	83.8	83.4	82.0	
Hernandez High School	77.3	77.1	77.2	77.4	
Holden High School	83.4	85.0	82.9	83.8	
Huang High School	75.9	76.4	77.2	77.0	
Johnson High School	76.7	77.5	76.9	77.2	
Pena High School	83.4	84.3	84.1	83.6	
Rodriguez High School	76.6	76.4	77.7	76.9	
Shelton High School	82.9	83.4	83.8	83.4	
Thomas High School	83.1	83.5	83.5	83.6	
Wilson High School	83.7	83.2	83.0	83.1	
Wright High School	84.0	83.8	83.6	83.3	

Image 6 - Reading scores per grade per school:

grade	10th	11th	12th	9th
school_name				
Bailey High School	80.9	80.9	80.9	81.3
Cabrera High School	84.3	83.8	84.3	83.7
Figueroa High School	81.4	80.6	81.4	81.2
Ford High School	81.3	80.4	80.7	80.6
Griffin High School	83.7	84.3	84.0	83.4
Hernandez High School	80.7	81.4	80.9	80.9
Holden High School	83.3	83.8	84.7	83.7
Huang High School	81.5	81.4	80.3	81.3
Johnson High School	80.8	80.6	81.2	81.3
Pena High School	83.6	84.3	84.6	83.8
Rodriguez High School	80.6	80.9	80.4	81.0
Shelton High School	83.4	84.4	82.8	84.1
Thomas High School	84.3	83.6	83.8	83.7
Wilson High School	84.0	83.8	84.3	83.9
Wright High School	83.8	84.2	84.1	83.8

**Image 7 - Schools per spending ranges:**

	School type	Total students	Total school budget in \$	Budget per student in \$	Average math score	Average reading score	% passing math	% passing read	% overall passing	Spending Ranges (Per Student)
Johnson High School	District	4761	3094650	650.0	77.1	81.0	66.1	81.2	53.5	\$645-680
Hernandez High School	District	4635	3022020	652.0	77.3	80.9	66.8	80.9	53.5	\$645-680
Huang High School	District	2917	1910635	655.0	76.6	81.2	65.7	81.3	53.5	\$645-680
Thomas High School	Charter	1635	1043130	638.0	83.4	83.8	93.3	97.3	90.9	\$630-645
Ford High School	District	2739	1763916	644.0	77.1	80.7	68.3	79.3	54.3	\$630-645
Figueroa High School	District	2949	1884411	639.0	76.7	81.2	66.0	80.7	53.2	\$630-645
Rodriguez High School	District	3999	2547363	637.0	76.8	80.7	66.4	80.2	53.0	\$630-645
Griffin High School	Charter	1468	917500	625.0	83.4	83.8	93.4	97.1	90.6	\$585-630
Pena High School	Charter	962	585858	609.0	83.8	84.0	94.6	95.9	90.5	\$585-630
Shelton High School	Charter	1761	1056600	600.0	83.4	83.7	93.9	95.9	89.9	\$585-630
Bailey High School	District	4976	3124928	628.0	77.0	81.0	66.7	81.9	54.6	\$585-630
Cabrera High School	Charter	1858	1081356	582.0	83.1	84.0	94.1	97.0	91.3	<\$585
Wilson High School	Charter	2283	1319574	578.0	83.3	84.0	93.9	96.5	90.6	<\$585
Wright High School	Charter	1800	1049400	583.0	83.7	84.0	93.3	96.6	90.3	<\$585
Holden High School	Charter	427	248087	581.0	83.8	83.8	92.5	96.3	89.2	<\$585

**Image 8 - Spending ranges per student versus overall passing:**

	Average math score	Average reading score	% passing math	% passing read	% overall passing
Spending Ranges (Per Student)					
<\$585	83.48	83.95	93.45	96.60	90.35
\$585-630	81.90	83.12	87.15	92.70	81.40
\$630-645	78.50	81.60	73.50	84.38	62.85
\$645-680	77.00	81.03	66.20	81.13	53.50

**Image 9 - Schools by size**

	School type	Total students	Total school budget in \$	Budget per student in \$	Average math score	Average reading score	% passing math	% passing read	% overall passing	Spending Ranges (Per Student)	Size label
Johnson High School	District	4761	3094650	650.0	77.1	81.0	66.1	81.2	53.5	\$645-680	Large (2000-5000)
Hernandez High School	District	4635	3022020	652.0	77.3	80.9	66.8	80.9	53.5	\$645-680	Large (2000-5000)
Huang High School	District	2917	1910635	655.0	76.6	81.2	65.7	81.3	53.5	\$645-680	Large (2000-5000)
Ford High School	District	2739	1763916	644.0	77.1	80.7	68.3	79.3	54.3	\$630-645	Large (2000-5000)
Figueroa High School	District	2949	1884411	639.0	76.7	81.2	66.0	80.7	53.2	\$630-645	Large (2000-5000)
Rodriguez High School	District	3999	2547363	637.0	76.8	80.7	66.4	80.2	53.0	\$630-645	Large (2000-5000)
Bailey High School	District	4976	3124928	628.0	77.0	81.0	66.7	81.9	54.6	\$585-630	Large (2000-5000)
Wilson High School	Charter	2283	1319574	578.0	83.3	84.0	93.9	96.5	90.6	<\$585	Large (2000-5000)
Thomas High School	Charter	1635	1043130	638.0	83.4	83.8	93.3	97.3	90.9	\$630-645	Medium (1000-2000)
Griffin High School	Charter	1468	917500	625.0	83.4	83.8	93.4	97.1	90.6	\$585-630	Medium (1000-2000)
Shelton High School	Charter	1761	1056600	600.0	83.4	83.7	93.9	95.9	89.9	\$585-630	Medium (1000-2000)
Cabrera High School	Charter	1858	1081356	582.0	83.1	84.0	94.1	97.0	91.3	<\$585	Medium (1000-2000)
Wright High School	Charter	1800	1049400	583.0	83.7	84.0	93.3	96.6	90.3	<\$585	Medium (1000-2000)
Pena High School	Charter	962	585858	609.0	83.8	84.0	94.6	95.9	90.5	\$585-630	Small (<1000)
Holden High School	Charter	427	248087	581.0	83.8	83.8	92.5	96.3	89.2	<\$585	Small (<1000)

**Image 10 - School type versus overall passing:**

	Average math score	Average reading score	% passing math	% passing read	% overall passing
School type					
Charter	83.49	83.89	93.62	96.57	90.41
District	76.94	80.96	66.57	80.79	53.66

**Image 11 - School type versus average budget per student:**

	Total students	Budget per student in \$
School type		
Charter	1524.2	599.5
District	3853.7	643.6