



## Exploratory Data Analysis

# Housing Value & Academic Performance Los Angeles, CA

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# How House Price & School Performance related?

## Analysis Questions:

1. Evaluate academic performance index (API 1-10): CA standard test score, graduation rate, college going rate. By School, Zip Code, School District.
2. House value versus API by Zip Code
3. Changing in house pricing over 10 years v.s. API
4. Top ten zip codes with highest API for house buyers (\$500K, \$600K, \$700K, \$800K)

## Finding Summary:

1. Most LA houses are in the range of \$500K - 900K
2. School API: >60% from 4 – 6, 30% from 7-10
3. High graduation rate does not mean high going to college rate
4. Areas with higher house value have higher school API & college going rate
5. In the same house value range: house price increased over 10 years not proportional to school API (higher API – lower value increased)

# Data Set

Data Files	Description	Raw Data Size	Source
Single House Value	Monthly value 1996-2021, all CA zip codes	30,311 x 311	Zillow
School Location	CA school codes & addresses, 2019	2,992 x 10	California Assessment of Student Performance and Progress
California Standard Test Scores	STD Math & English Test scores, by grade 3-11 for CA schools, 2019	3,576,491 x 32	
High School Graduation Rate	Graduation rate – CA high schools, 2019	241,058 x 34	California Department of Education
College Going Rate	Going to college rate – LA high schools, 2018	452 x 11	

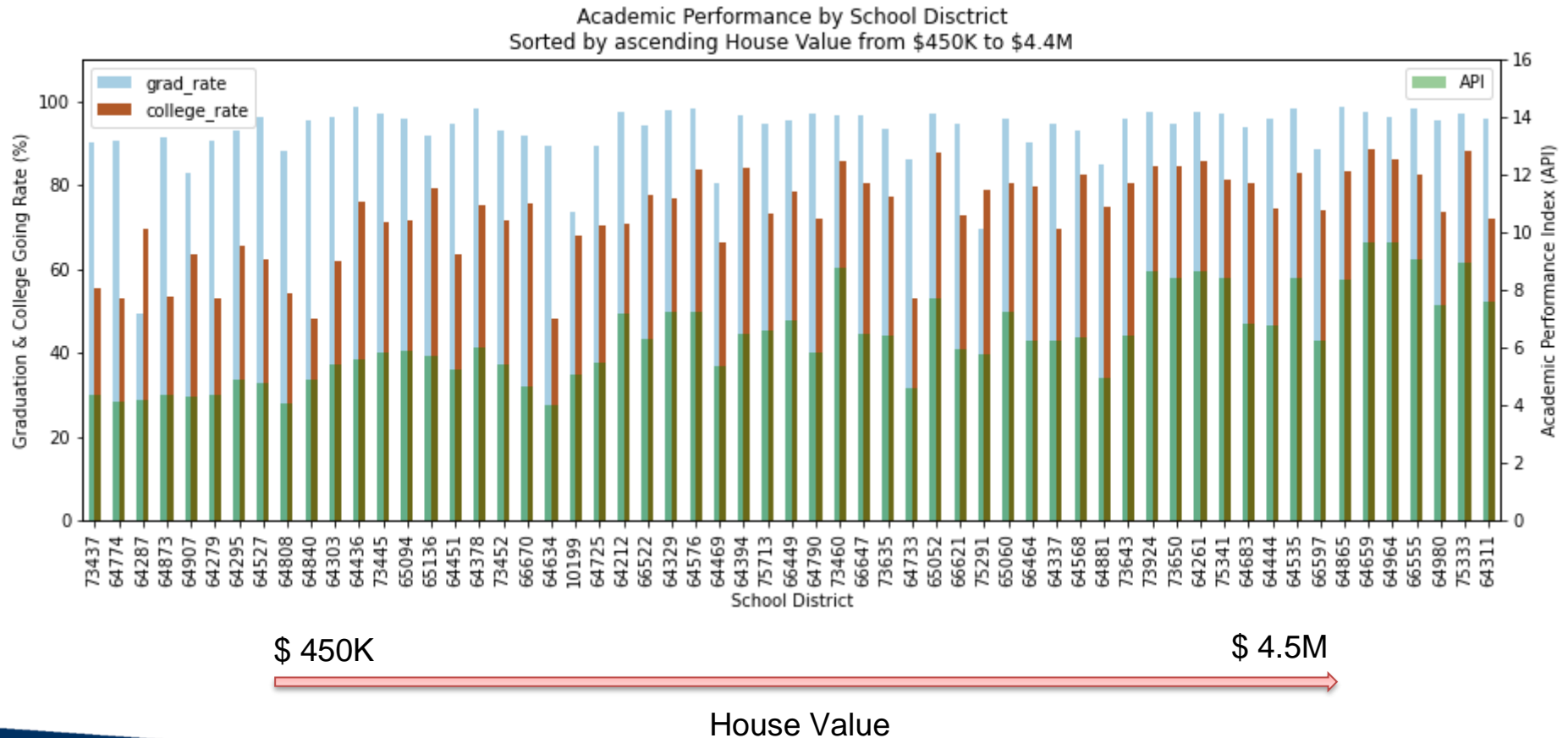
# Data Processing & Analysis

- Calculate average house value by years
- Calculate School API from STD test score, graduation rate, college going rate. Grouped by each school & type of school (elementary, middle, high school)
- Merge & group datasets by Zip Codes, School District Codes
- Challenges: understand datasets, clean-up (i.e., nonstandard schools), define & calculate API

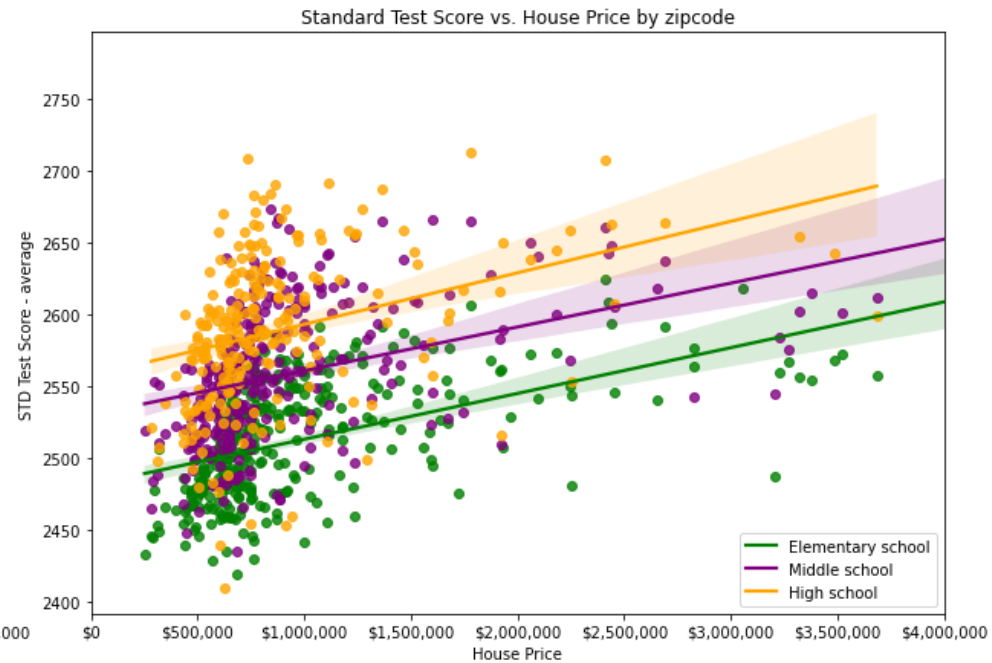
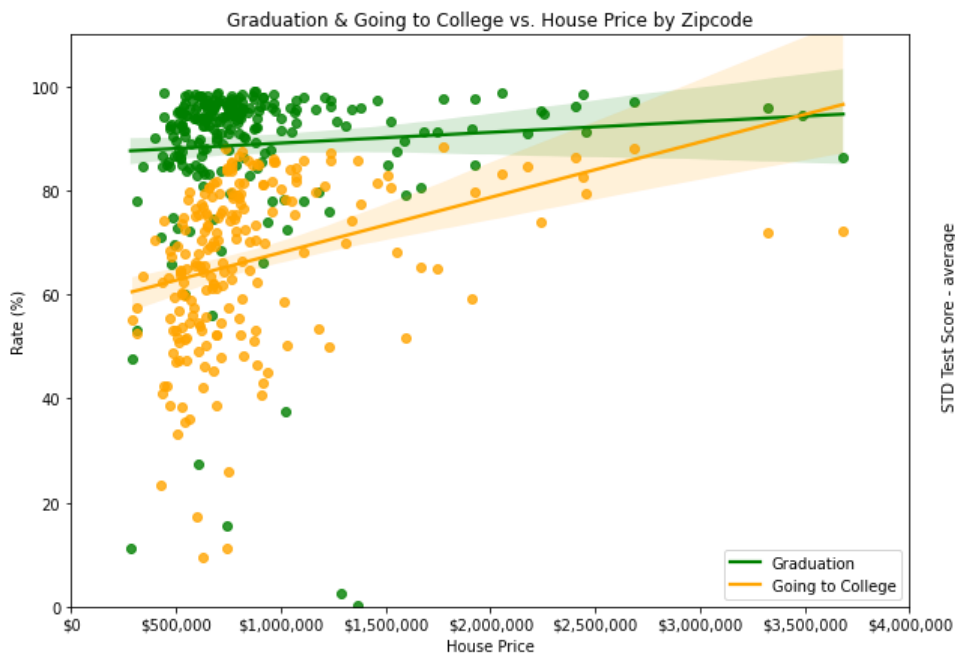
**59 School Districts, 344 Zip Codes, 2443 Schools**

API score for each group	Elementary rating						Middle School rating						High School rating			
	Grade 3		Grade 4		Grade 5		Grade 6		Grade 7		Grade 8		Grade 11		Graduation Rate	College Going
	English	Math	English	Math	English	Math	English	Math	English	Math	English	Math	English	Math		
1	2114	2189	2131	2204	2201	2219	2210	2235	2258	2250	2288	2265	2299	2280	0	0
2	2198	2253	2226	2273	2281	2298	2292	2314	2332	2328	2354	2345	2364	2368	40	20
3	2283	2317	2321	2342	2362	2376	2375	2394	2405	2406	2421	2424	2428	2455	70	35
4	2367	2381	2416	2411	2442	2455	2457	2473	2479	2484	2487	2504	2493	2543	83	50
5	2400	2409	2445	2448	2472	2492	2494	2513	2516	2526	2527	2545	2538	2586	93	60
6	2432	2436	2473	2485	2502	2528	2531	2552	2552	2567	2567	2586	2583	2628	94	70
7	2447	2452	2488	2501	2522	2541	2553	2567	2576	2584	2592	2603	2608	2651	95	75
8	2461	2469	2503	2517	2542	2554	2575	2581	2601	2601	2618	2620	2633	2673	96	80
9	2476	2485	2518	2533	2562	2566	2596	2596	2625	2618	2643	2636	2657	2696	98	85
10	2490	2501	2533	2549	2582	2579	2618	2610	2649	2635	2668	2653	2682	2718	99	90
MAX	2623	2621	2663	2659	2701	2700	2724	2748	2745	2778	2769	2802	2795	2862	100	100
API Weights	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	35%	35%	15%	15%

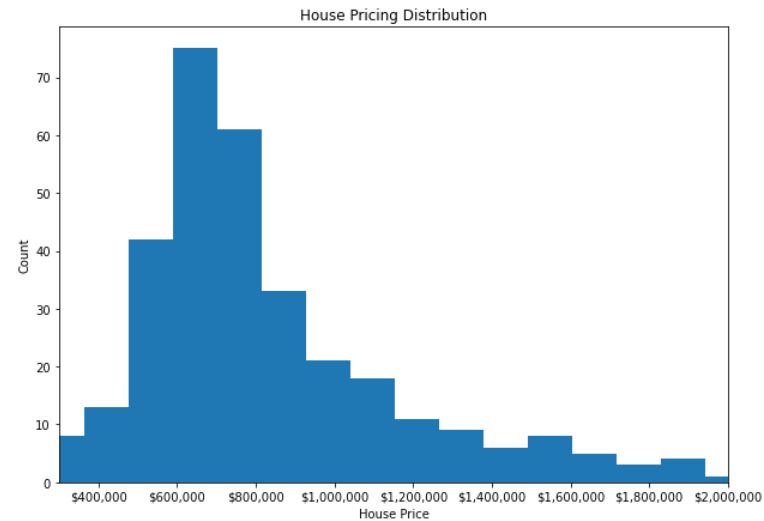
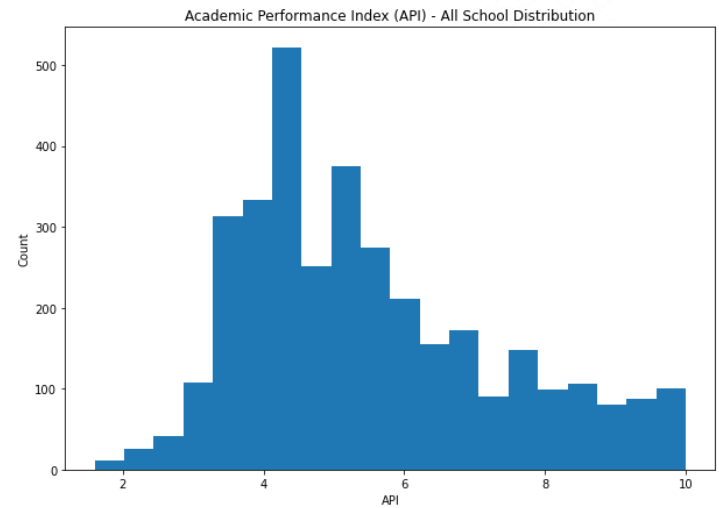
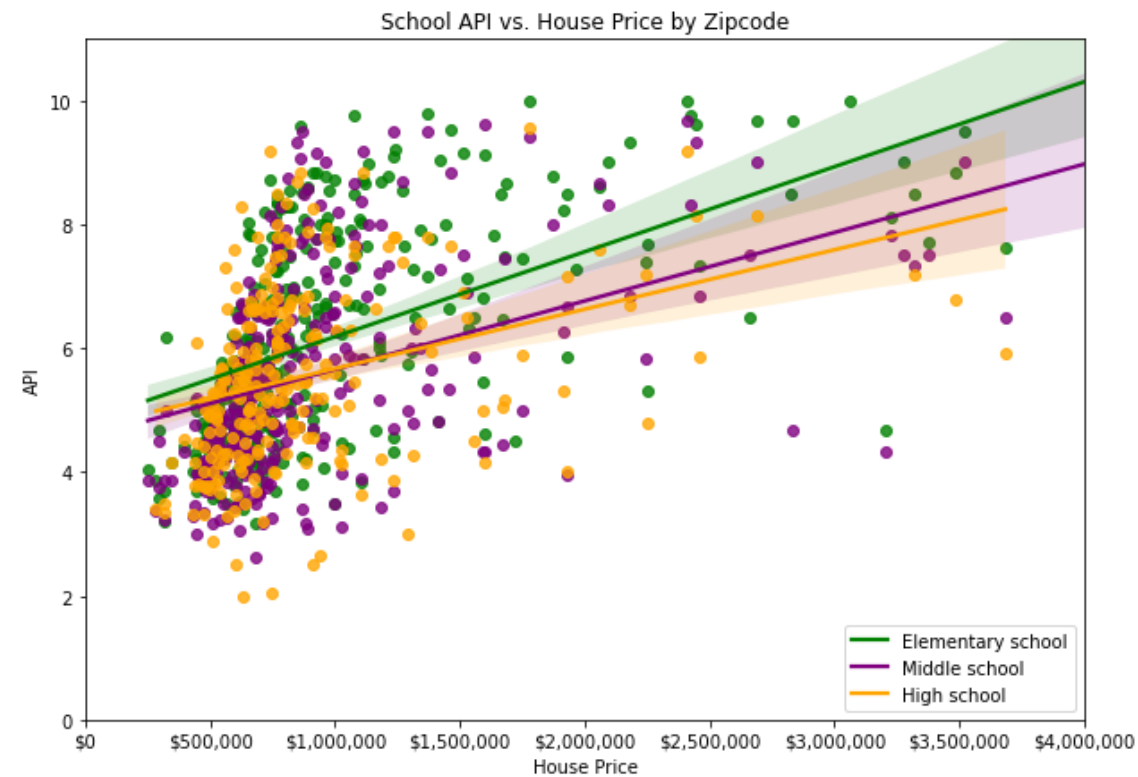
# School Performance by school district



# House Price & Standard Test Score



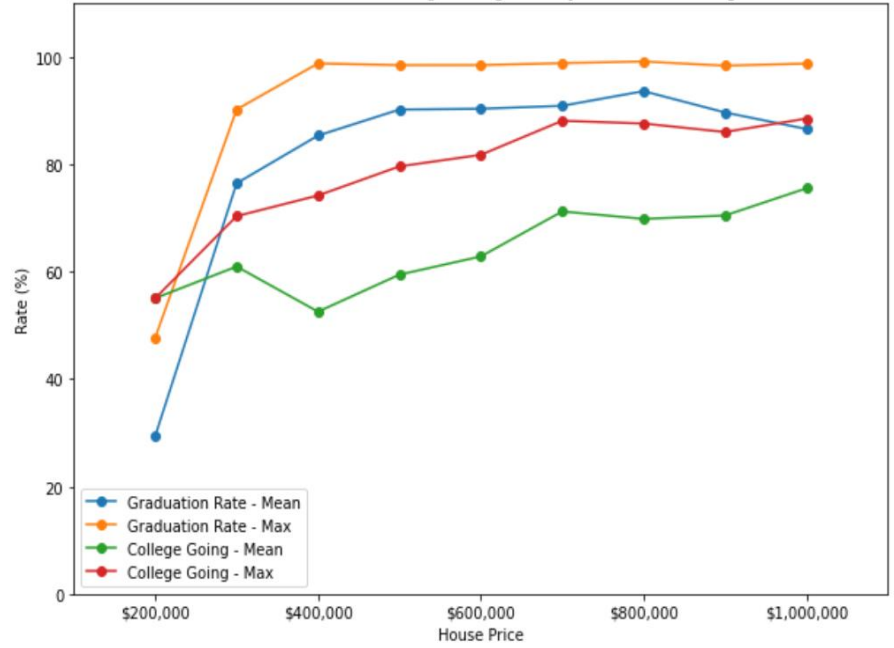
# House Price & API



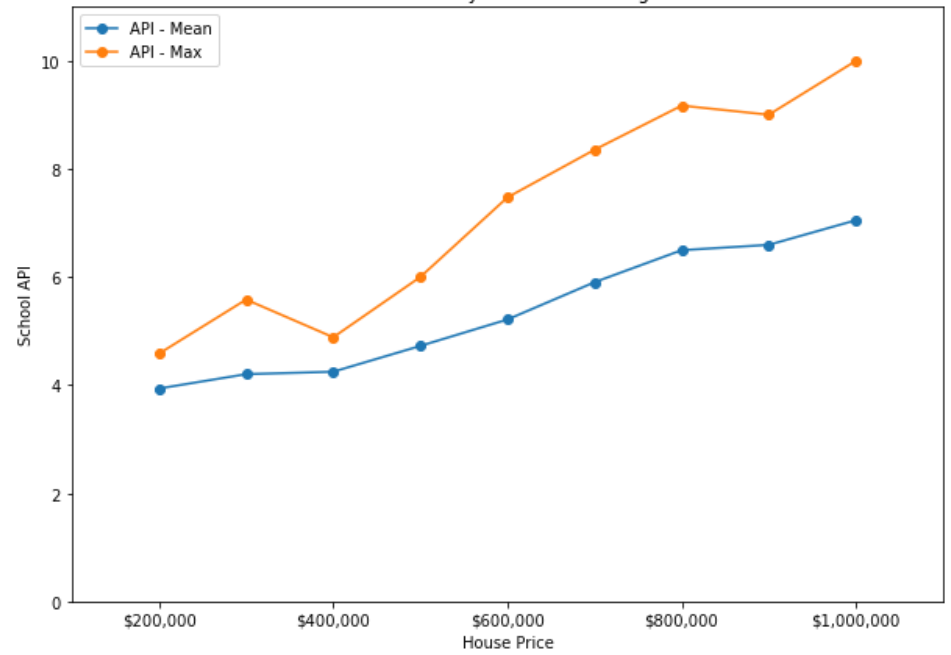


# School Performance by House Value Range

Graduation Rate & College Going Rate by House Price Range

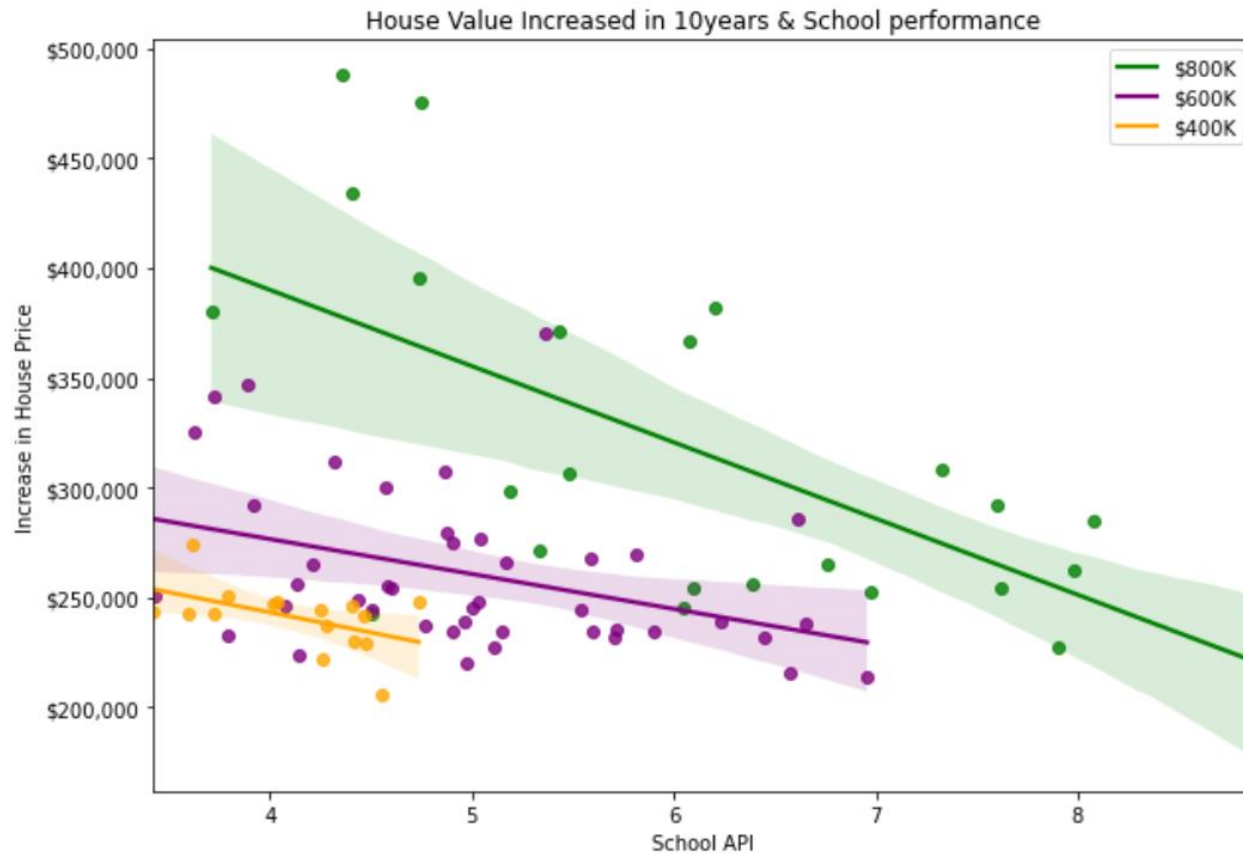


School API by House Price Range

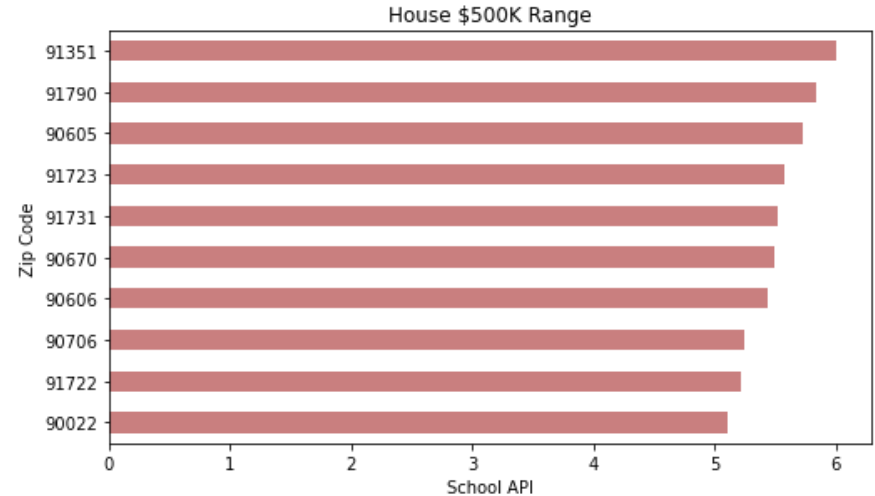
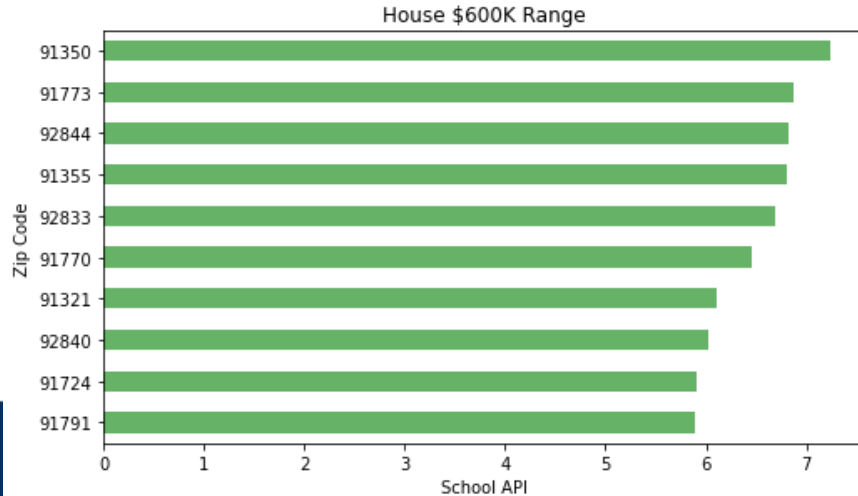
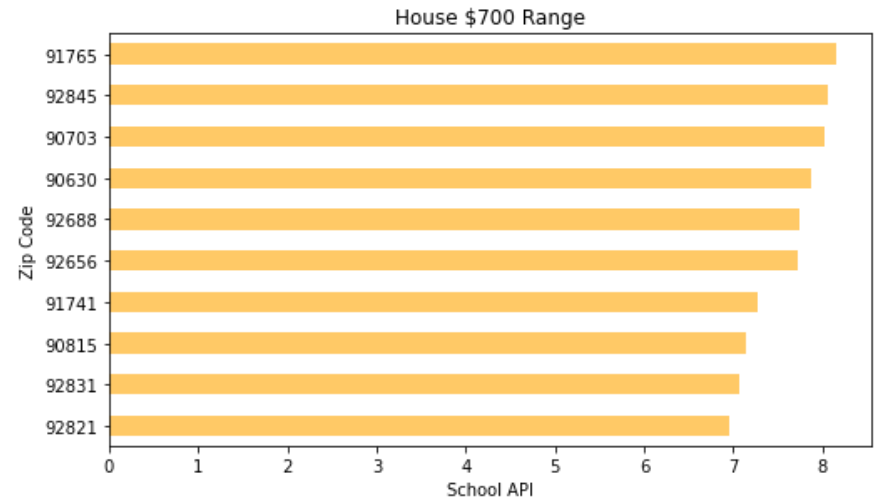
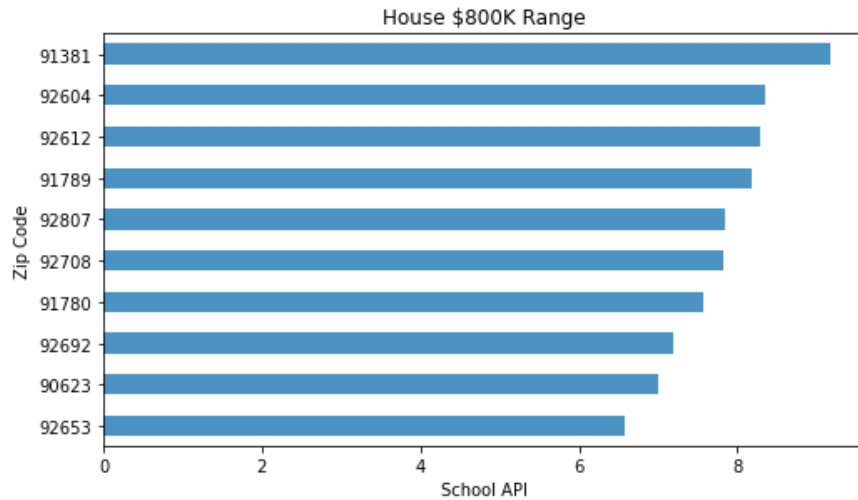




# House value changes over past 10 years



# Top 10 Zip Codes – Best API



## Conclusions

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Question?

Thank you!