

# USING COMMUNITY ANALYST ONLINE TO ANALYZE SCHOOL PERFORMANCE AND FINANCE

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# Agenda

- The mosaic of overlapping political jurisdictions that impacts school performance and finance
- School performance measures
- School finance measures
- Community Analyst Online
- Results of the analysis

# San Francisco Bay Area School Districts and Municipalities by County

Counties	School Districts			Municipalities
	Elementary	Secondary	Unified	
Alameda	1	1	17	14
Contra Costa	9	2	8	19
Marin County	15	3	2	11
Napa County	2	0	4	5
San Francisco County	0	0	1	1
San Mateo County	17	3	3	20
Santa Clara County	20	5	8	15
Solano County	0	0	9	7
Sonoma County	32	4	8	9
<b>TOTALS</b>	<b>96</b>	<b>18</b>	<b>60</b>	<b>101</b>

# School Status by County

## San Francisco Bay Area

County	Active	Closed	Merged	Pending	Total
Alameda	438	252	49		739
Contra Costa	295	134	20	1	450
Marin County	103	72	17		192
Napa County	54	28	11		93
San Francisco County	138	106	11	1	256
San Mateo County	208	107	18	2	335
Santa Clara County	461	240	48	4	753
Solano County	114	43	8	1	166
Sonoma County	230*	55	31	2	318
	2041	1037	213	11	3302

\*One school listed in Sonoma County was removed because it was obviously wrongly assigned. The county and overall totals reflect this correction.

# Types of Schools in the San Francisco Bay Area with a Reported API in 2011

Type	Number
Elementary	1055
Elementary-High School Combination	73
Intermediate School	226
High School	295
Ungraded	1
TOTAL	1650

# School Performance Measures

- The Academic Performance Index (API)
- See <http://www.cde.ca.gov/ta/ac/ap/>

# School Finance Measures

- Current Expenditures
- Average Daily Attendance (ADA)
- Current Expenditures per ADA

# School Districts in the City of San Jose

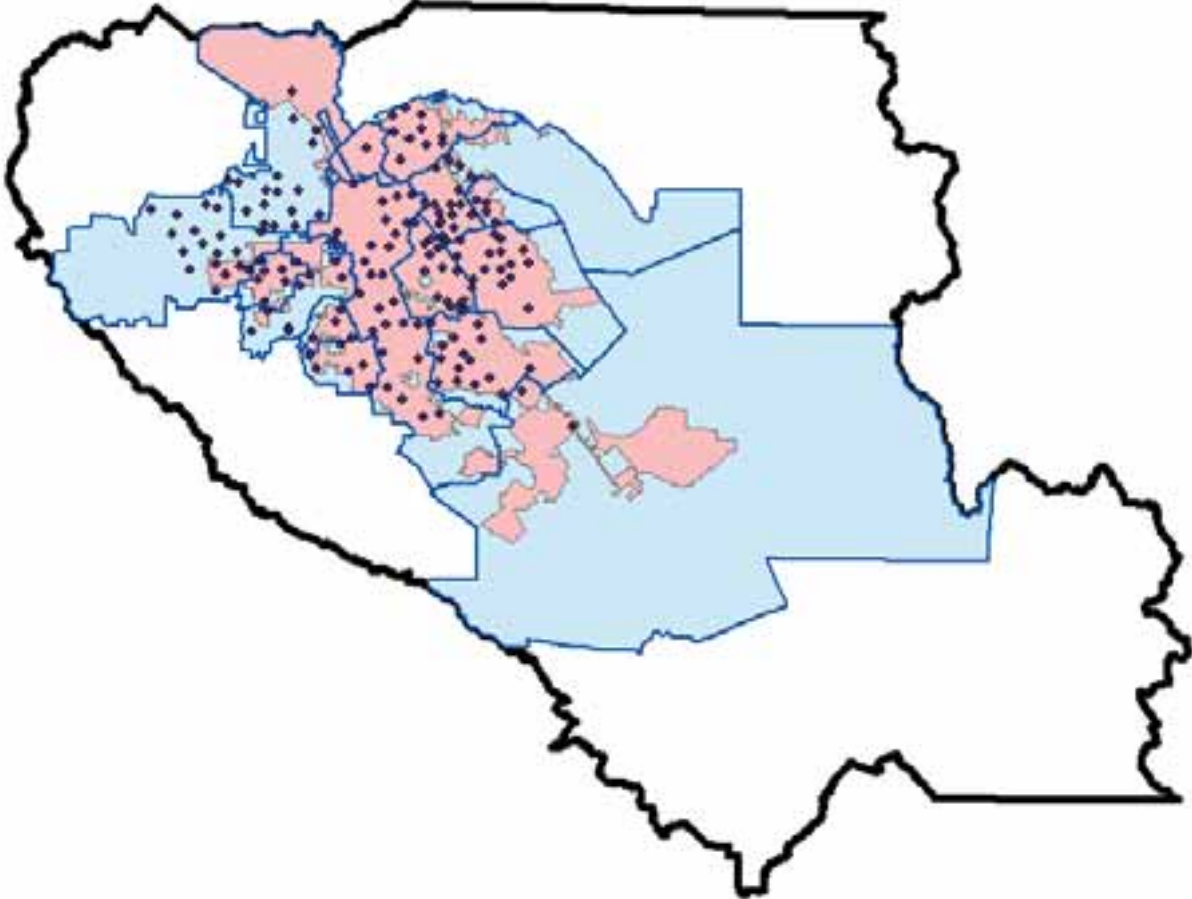
- Sixteen school districts operate elementary schools in the City of San Jose (three unified school districts and thirteen elementary school districts)
- Of these, one unified school district (San Jose Unified) and ten elementary school districts (Luther Burbank) operate schools only in the City of San Jose (although the district boundaries of the ten elementary school districts include areas outside the City of San Jose)
- The remaining school districts also operate elementary schools outside of the City of San Jose



# Elementary Schools in School Districts Touching the City of San Jose

Number of schools	168
Within City of San Jose	130
Outside City of San Jose	30
Enrollment	
Minimum	143
Maximum	700
Mean	393
Current Expenditure per ADA	
Minimum	\$6,772.52
Maximum	\$8,985.11
Mean	\$8,061.72
API	
Minimum	711
Maximum	998
Mean	849.8155

# Schools, School Districts, and the City of San Jose

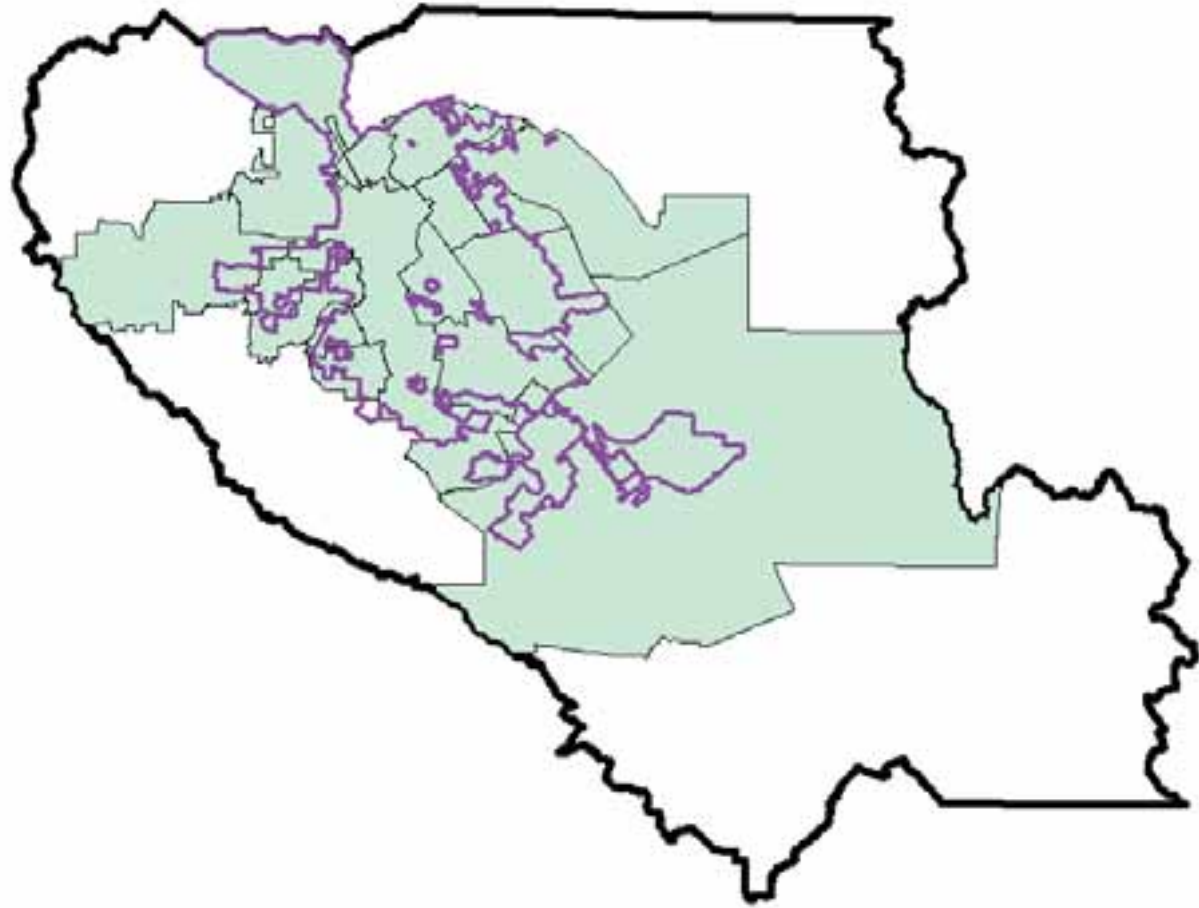


# School Districts in the City of San Jose

- Santa Clara Unified School District
- San Jose Unified School District\*
- Morgan Hill Unified School District
- Alum Rock Union Elementary School District\*
- Berryessa Union Elementary School District\*
- Cambrian Elementary School District\*
- Campbell Union Elementary School District
- Cupertino Union Elementary School District
- Evergreen Elementary School District\*
- Franklin-McKinley Elementary School District\*
- Luther Burbank Elementary School District\*
- Moreland Elementary School District\*
- Mount Pleasant Elementary School District\*
- Oak Grove Elementary School District\*
- Orchard Elementary School District\*
- Union Elementary School District\*

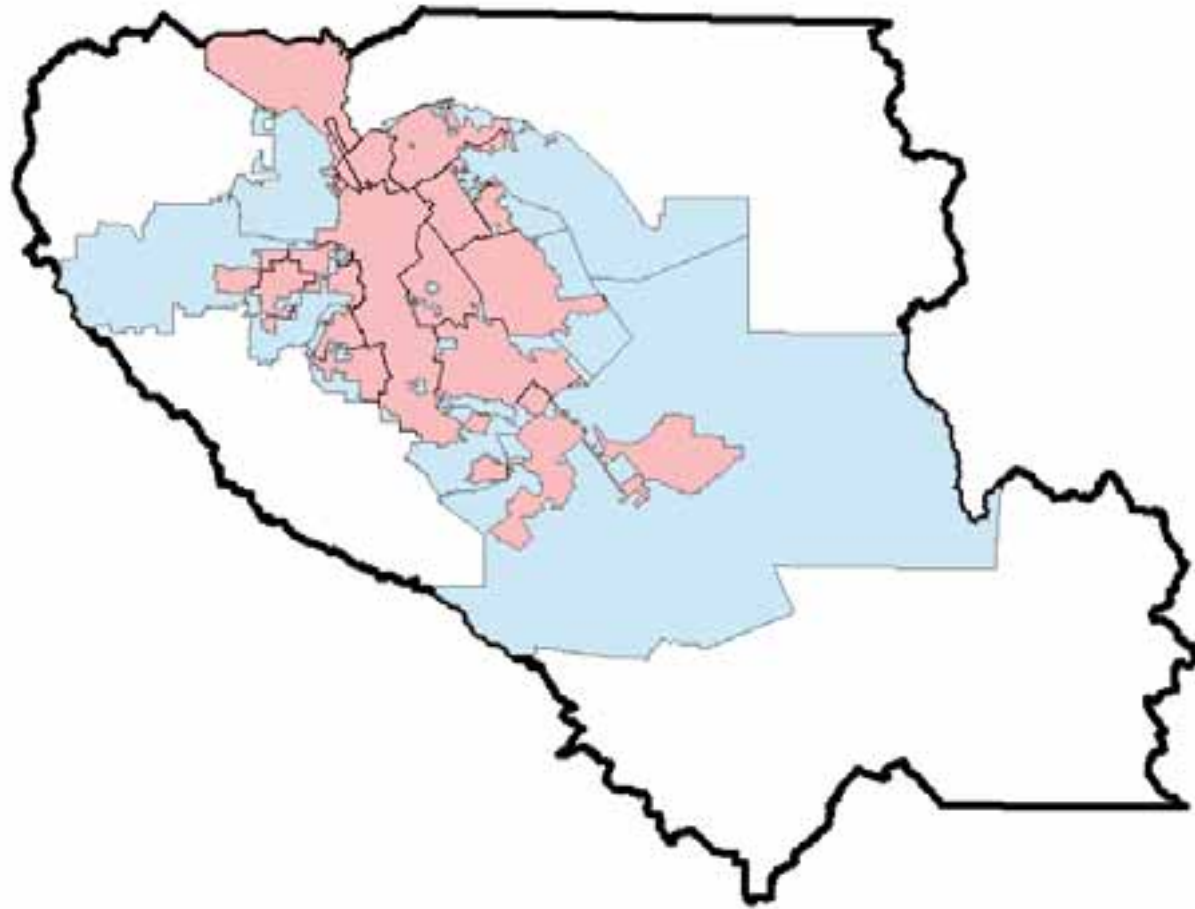
\*indicates that the sample includes only schools in the City of San Jose

# School Districts in the City of San Jose





# Parts of School Districts Inside (Pink) and Outside (Blue) of the City of San Jose



# Advantages of Community Analyst Online

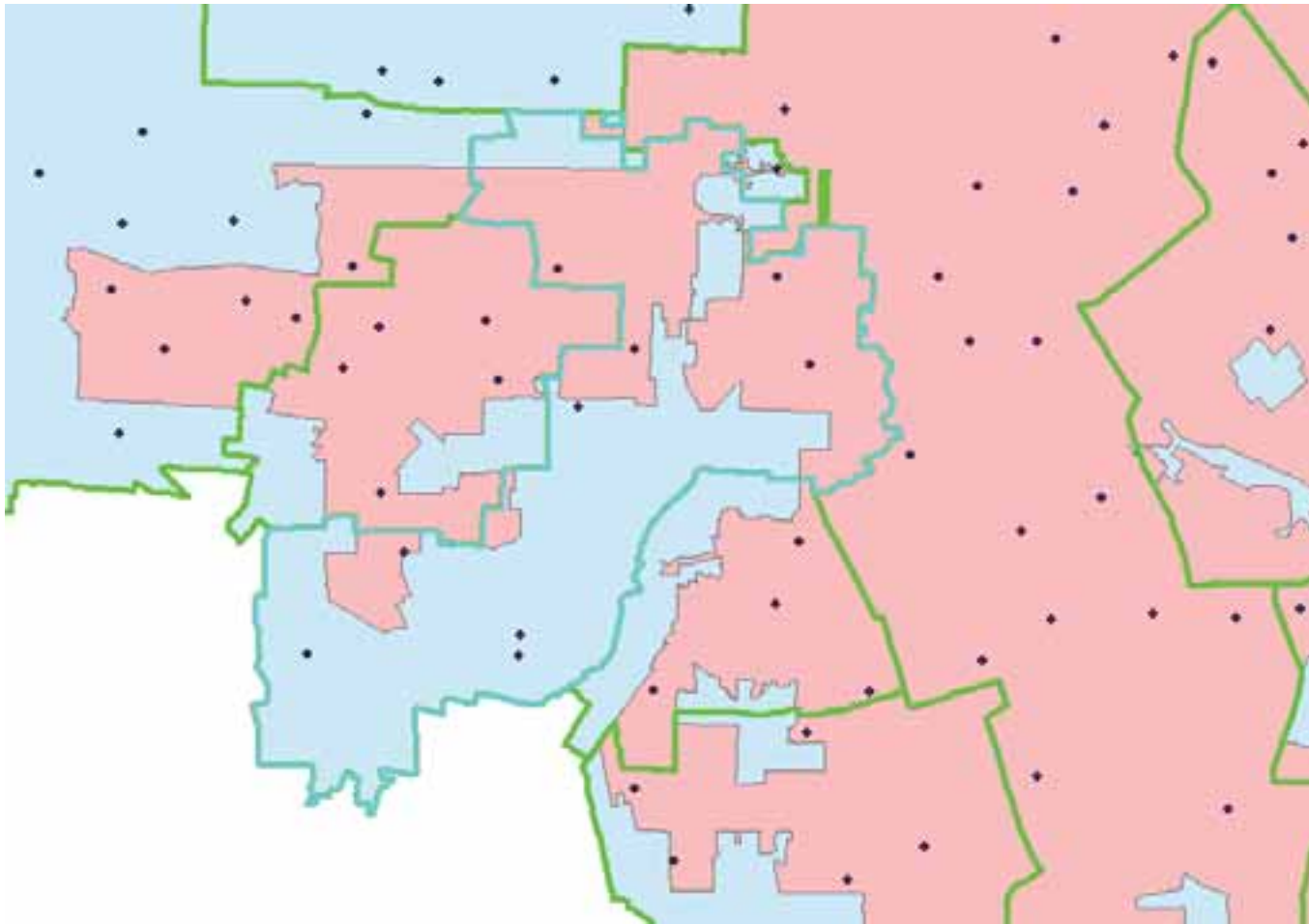
- Takes oddly shaped (non-standard) areas – like portions of school districts within or outside of municipal boundaries and provides current data about the areas

# Using Community Analyst Online to Look at Two Districts

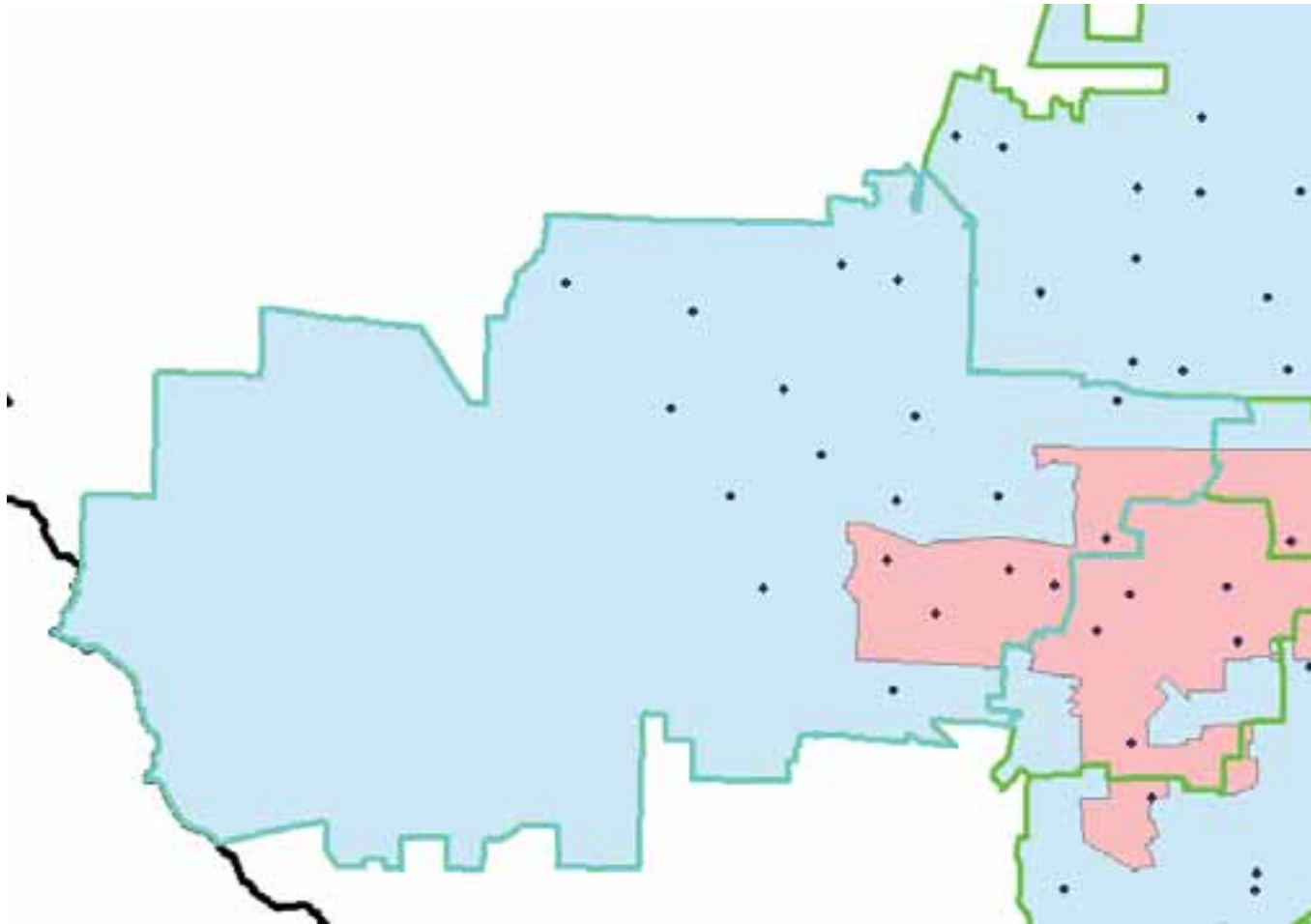
- Campbell Union Elementary School District has nine schools in the sample – five within the City of San Jose and four outside the City of San Jose
- Cupertino Union Elementary School District has eighteen schools in the sample – five within the City of San Jose and thirteen outside the City of San Jose




# Campbell Union Elementary School District



# Cupertino Union Elementary School District



# Campbell Union Elementary School District Within City of San Jose

		Demographic and Income Profile			
		Campbell Union Elementary School District_6			
		Area: 5.28 Square Miles			
Summary		Census 2010	2012	2017	
Population		52,554	53,804	56,635	
Households		20,644	21,151	22,419	
Families		12,178	12,333	13,198	
Average Household Size		2.50	2.50	2.48	
Owner Occupied Housing Units		8,102	7,972	8,678	
Renter Occupied Housing Units		12,542	13,179	13,741	
Median Age		34.8	34.8	35.2	
Trends: 2012 - 2017 Annual Rate		Area	State	National	
Population		1.03%	0.67%	0.68%	
Households		1.17%	0.66%	0.74%	
Families		1.36%	0.81%	0.72%	
Owner HHs		1.71%	1.03%	0.91%	
Median Household Income		4.06%	3.35%	2.55%	
Households by Income		2012		2017	
		Number	Percent	Number	Percent
<\$15,000		1,936	9.2%	1,855	8.3%
\$15,000 - \$24,999		1,707	8.1%	1,381	6.2%
\$25,000 - \$34,999		1,680	7.9%	1,284	5.7%
\$35,000 - \$49,999		3,062	14.5%	2,768	12.3%
\$50,000 - \$74,999		3,802	18.0%	3,791	16.9%
\$75,000 - \$99,999		2,433	11.5%	3,364	15.0%
\$100,000 - \$149,999		3,409	16.1%	4,142	18.5%
\$150,000 - \$199,999		1,659	7.8%	2,126	9.5%
\$200,000+		1,462	6.9%	1,708	7.6%
Median Household Income		\$62,044		\$75,713	
Average Household Income		\$86,347		\$100,021	
Per Capita Income		\$34,509		\$40,144	

# Campbell Union Elementary School District Outside City of San Jose



**esri**

## Demographic and Income Comparison Profile

Campbell Union Elementary School District\_7  
Area: 7.73 Square Miles


### Census 2010 Summary

Population	41,840
Households	16,946
Families	10,716
Average Household Size	2.46
Owner Occupied Housing Units	9,711
Renter Occupied Housing Units	7,235
Median Age	40.2

### 2012 Summary

Population	42,555
Households	17,208
Families	10,794
Average Household Size	2.46
Owner Occupied Housing Units	9,549
Renter Occupied Housing Units	7,659
Median Age	40.5
Median Household Income	\$86,151
Average Household Income	\$111,727

# Cupertino Union Elementary School District Within City of San Jose

		Demographic and Income Profile			
		Cupertino Union Elementary School District_7			
		Area: 3.11 Square Miles			
Summary		Census 2010	2012	2017	
Population		29,995	30,756	32,479	
Households		10,611	10,851	11,503	
Families		8,114	8,250	8,800	
Average Household Size		2.83	2.83	2.82	
Owner Occupied Housing Units		6,297	6,283	6,801	
Renter Occupied Housing Units		4,314	4,568	4,701	
Median Age		39.0	39.3	39.4	
Trends: 2012 - 2017 Annual Rate		Area	State	National	
Population		1.10%	0.67%	0.68%	
Households		1.17%	0.66%	0.74%	
Families		1.30%	0.81%	0.72%	
Owner HHs		1.60%	1.03%	0.91%	
Median Household Income		1.49%	3.35%	2.55%	
Households by Income		2012		2017	
		Number	Percent	Number	Percent
<\$15,000		736	6.8%	655	5.7%
\$15,000 - \$24,999		529	4.9%	399	3.5%
\$25,000 - \$34,999		581	5.4%	418	3.6%
\$35,000 - \$49,999		1,004	9.3%	841	7.3%
\$50,000 - \$74,999		1,370	12.6%	1,291	11.2%
\$75,000 - \$99,999		1,296	11.9%	1,692	14.7%
\$100,000 - \$149,999		2,475	22.8%	2,781	24.2%
\$150,000 - \$199,999		1,443	13.3%	1,765	15.3%
\$200,000+		1,418	13.1%	1,660	14.4%
Median Household Income		\$97,811		\$105,331	
Average Household Income		\$115,598		\$134,973	
Per Capita Income		\$40,448		\$47,389	

# Cupertino Union Elementary School District Outside City of San Jose



**esri**

## Demographic and Income Comparison Profile

Cupertino Union Elementary School District\_8  
 Area: 39.27 Square Miles

### Census 2010 Summary

Population	108,741
Households	38,262
Families	29,606
Average Household Size	2.82
Owner Occupied Housing Units	24,210
Renter Occupied Housing Units	14,052
Median Age	39.9

### 2012 Summary

Population	110,845
Households	38,871
Families	29,901
Average Household Size	2.83
Owner Occupied Housing Units	23,974
Renter Occupied Housing Units	14,897
Median Age	40.2
Median Household Income	\$118,277
Average Household Income	\$142,578

# Regression Analysis

- Regression Model

API = F(CE/ADA, Class Size, Ethnic Background,  
Parents' Education, Size of School)

- Rationale

- CE/ADA – expect positive relationship with API: increased performance with greater per student spending
- Class Size – expect negative relationship with API: larger class sizes reduce attention to each student
- Ethnic Background – different effects for different ethnic groups: focus on Asians and Hispanics
- Size of school – possible “diseconomies of scale”: negative relationship of school size (enrollment) with API

# Regression Analysis with Class Size

OBJECTID	Variable	Coef	StdError	t_Stat	Prob	Robust_SE	Robust_t	Robust_Pr	StdCoef
1	Intercept	823.8526	53.98754	15.26005	0	50.0762633	16.4519575	0	0
2	COFSJ_DUMM	3.346382	6.086729	0.549783	0.583313	4.941541462	0.67719392	0.499351868	0.01854
3	CEPERADA	0.007745	0.00394	1.965568	0.051244	0.004088192	1.89442094	0.06014714	0.077226
4	NPCT_AS	0.619182	0.182174	3.39884	0.000882	0.175461521	3.52887566	0.000567781	0.207276
5	NPCT_HI	-0.84154	0.311619	-2.70055	0.007738	0.4264772	-1.9732473	0.050352936	-0.3315
6	NACS_K3	-0.76405	0.675345	-1.13135	0.25976	0.665027254	-1.1489003	0.252473616	-0.03535
7	NACS_46	-0.35859	0.796508	-0.4502	0.653241	0.788864835	-0.4545657	0.650106242	-0.01312
8	NHSG	-0.51625	0.434984	-1.18684	0.23722	0.498458041	-1.0357033	0.302045804	-0.08969
9	NSOME_COL	-0.99188	0.41604	-2.38409	0.018397	0.570836056	-1.7375897	0.084398173	-0.12375
10	NCOL_GRAD	1.644666	0.485433	3.388037	0.000915	0.519994091	3.16285427	0.001908615	0.262953
11	NGRAD_SCH	0.769893	0.384887	2.000311	0.047318	0.433521863	1.77590425	0.07783682	0.231813
12	NENROLL	-0.03578	0.020131	-1.77749	0.077575	0.020663038	-1.7317222	0.08544178	-0.05552



# Regression Analysis with Class Size

OBJECTID	Diag_Name	Diag_Value	Definition
1	AIC	1474.783636	Akaike's Information Criterion: A relative measure of performance used to compare models; the smaller AIC indicates the superior model.
2	AICc	1477.311414	Corrected Akaike's Information Criterion: second order correction for small sample sizes.
3	R2	0.895587466	R-Squared, Coefficient of Determination: The proportion of variation in the dependent variable that is explained by the model.
4	AdjR2	0.887720769	Adjusted R-Squared: R-Squared adjusted for model complexity (number of variables) as it relates to the data.
5	F-Stat	113.8454146	Joint F-Statistic Value: Used to assess overall model significance.
6	F-Prob	0	Joint F-Statistic Probability (p-value): The probability that none of the explanatory variables have an effect on the dependent variable.
7	Wald	2479.864597	Wald Statistic: Used to assess overall robust model significance.
8	Wald-Prob	0	Wald Statistic Probability (p-value): The computed probability, using robust standard errors, that none of the explanatory variables have an effect on the dependent variable.
9	K(BP)	18.15928156	Koenker's studentized Breusch-Pagan Statistic: Used to test the reliability of standard error values when heteroskedasticity (non-constant variance) is present.
10	K(BP)-Prob	0.077957547	Koenker (BP) Statistic Probability (p-value): The probability that heteroskedasticity (non-constant variance) has not made standard errors unreliable.
11	JB	6.719074024	Jarque-Bera Statistic: Used to determine whether the residuals deviate from a normal distribution.
12	JB-Prob	0.034751345	Jarque-Bera Probability (p-value): The probability that the residuals are normally distributed.
13	Sigma2	608.2755745	Sigma-Squared: OLS estimate of the variance of the error term (residuals).

# Regression Analysis without Class Size

OBJECTID	Variable	Coef	StdError	t_Stat	Prob	Robust_SE	Robust_t	Robust_Pr	StdCoef
1	Intercept	785.1496	51.36223	15.28652	0	49.14398244	15.97652	0	0
2	COFSJ_DUMM	1.117586	5.989358	0.186595	0.852214	4.628032497	0.241482	0.80949702	0.006397
3	CEPERADA	0.006801	0.003862	1.761028	0.080174	0.003778356	1.799924	0.07378476	0.066503
4	NPCT_AS	0.680902	0.18898	3.603034	0.00043	0.178132391	3.822451	0.00019732	0.225998
5	NPCT_HI	-0.60147	0.310664	-1.93608	0.054642	0.408459185	-1.47253	0.14287664	-0.23869
6	NHSG	-0.48608	0.434556	-1.11858	0.265015	0.531393128	-0.91473	0.36171496	-0.08552
7	NSOME_COL	-0.92132	0.42109	-2.18794	0.030133	0.51798727	-1.77866	0.07722394	-0.11392
8	NCOL_GRAD	1.85176	0.483473	3.830123	0.000192	0.525022008	3.527014	0.00056015	0.300303
9	NGRAD_SCH	0.909902	0.386056	2.356917	0.019643	0.439538763	2.07013	0.04006129	0.270067
10	NENROLL	-0.03681	0.020547	-1.79131	0.075162	0.019797188	-1.85916	0.06486662	-0.05667

# Regression Analysis without Class Size

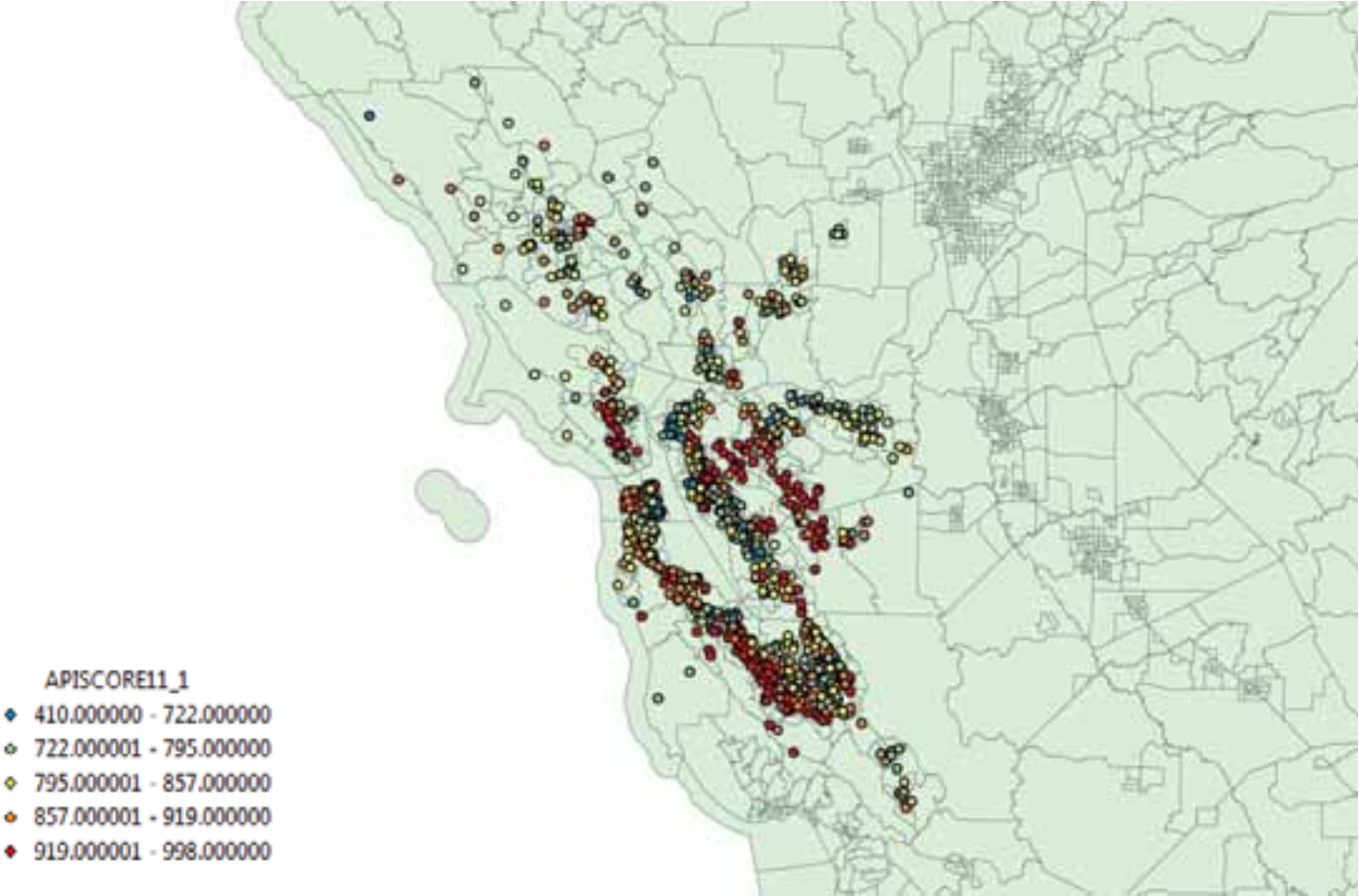
OBJECTID	Diag_Name	Diag_Value	Definition
1	AIC	1586.790365	Akaike's Information Criterion: A relative measure of performance used to compare models; the smaller AIC indicates the superior model.
2	AICc	1588.482673	Corrected Akaike's Information Criterion: second order correction for small sample sizes.
3	R2	0.878415244	R-Squared, Coefficient of Determination: The proportion of variation in the dependent variable that is explained by the model.
4	AdjR2	0.87148953	Adjusted R-Squared: R-Squared adjusted for model complexity (number of variables) as it relates to the data.
5	F-Stat	126.8338904	Joint F-Statistic Value: Used to assess overall model significance.
6	F-Prob	0	Joint F-Statistic Probability (p-value): The probability that none of the explanatory variables have an effect on the dependent variable.
7	Wald	2252.951773	Wald Statistic: Used to assess overall robust model significance.
8	Wald-Prob	0	Wald Statistic Probability (p-value): The computed probability, using robust standard errors, that none of the explanatory variables have an effect on the dependent variable.
9	K(BP)	13.06092054	Koenker's studentized Breusch-Pagan Statistic: Used to test the reliability of standard error values when heteroskedasticity (non-constant variance) is present.
10	K(BP)-Prob	0.159868994	Koenker (BP) Statistic Probability (p-value): The probability that heteroskedasticity (non-constant variance) has not made standard errors unreliable.
11	JB	31.41736113	Jarque-Bera Statistic: Used to determine whether the residuals deviate from a normal distribution.
12	JB-Prob	1.50594E-07	Jarque-Bera Probability (p-value): The probability that the residuals are normally distributed.
13	Sigma2	690.710132	Sigma-Squared: OLS estimate of the variance of the error term (residuals).

# Analysis of API

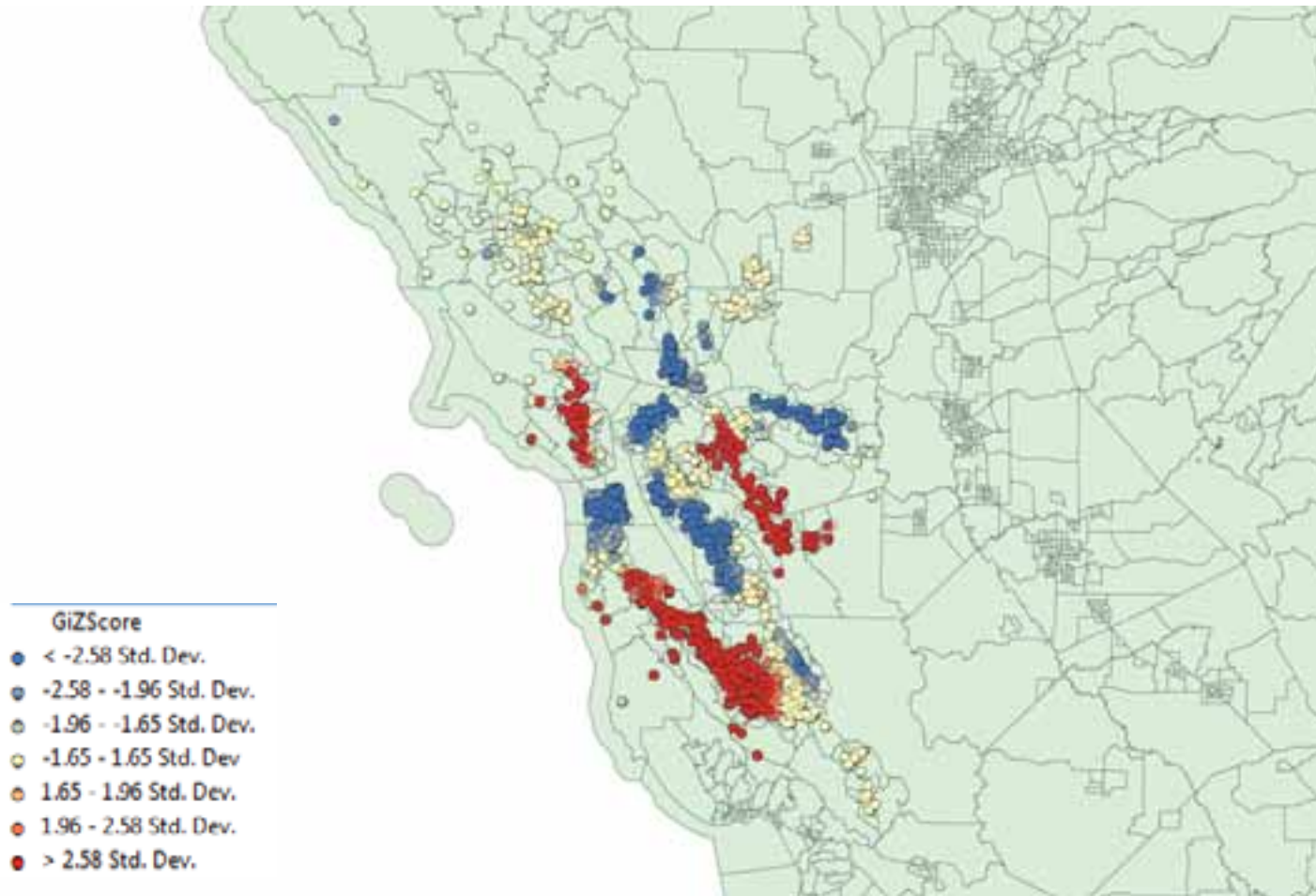
## Distance Bands for 1 Neighbor

Type	Distance in meters
Elementary	14816.8
Elementary-High School Combination	33460.1
Intermediate School	15992.4
High School	24754.5
Ungraded	NA

# The geographic distribution of API scores for elementary schools in the San Francisco Bay Area



# Hot Spot Map of API Scores



A detail of the Hot Spot map showing Santa Clara County and the boundary of the City of San Jose

