

The Effect of School Ratings on Real Estate Property Values

A study of Indian Hills Subdivision in Cobb County, Ga

Indian Hills

- ▶ Indian Hills was one of the first planned unit developments in Cobb County. It was begun in 1969 and originally planned for 500 homes. Today it has grown to 1680 homes on over 2,000 acres. Due to its very large size, there is always an active real estate market generating data.
- ▶ The subdivision is unique in that it straddles two school districts that are different in perceived quality.
- ▶ My thesis is that homes in the superior school district will command a much better price

Two different school districts

To the right are some of the area schools and scores from a number of ranking agents

It was helpful to see more data than needed. It helped me realize that ratings from Niche.com suffered from “grade inflation”

I also dropped the US News rankings because I suspected they focused on Wheeler’s Magnet school

I averaged the Great School and School digger ratings

	Great Schools Rating	GS Ranking Pct	US News Rankings	of	Ranking Pct	Niche.com	School Digger	SD Total	Ranking Pct
Sope Creek	9	0.9				A	23	1234	0.98
Brumby	4	0.4				B	991	1234	0.20
East Side	9	0.9				A	37	1234	0.97
Timber Ridge	9	0.9				A	10	1234	0.99
Mount Bethel	9	0.9				A	18	1234	0.99
Murdock	10	1				A	15	1234	0.99
East Valley	6	0.6					288	1234	0.77
Powers Ferry	5	0.5				B	960	1234	0.22
		0							
Dickerson	9	0.9				A	6	551	0.99
East Cobb	6	0.6				A-	251	551	0.54
Dodgen	10	1				A	5	551	0.99
Hightower Trail	10	1				A	8	551	0.99
Simpson	8	0.8				A	17	551	0.97
		0							
Wheeler	7	0.7	5	281	0.98	A+	90	435	0.79
Walton	9	0.9	4	281	0.99	A+	6	435	0.99
Pope	9	0.9	25	281	0.91	A	8	435	0.98
Sprayberry	8	0.8	87	281	0.69	A	104	435	0.76
Lassiter	10	1	10	281	0.96	A+	4	435	0.99

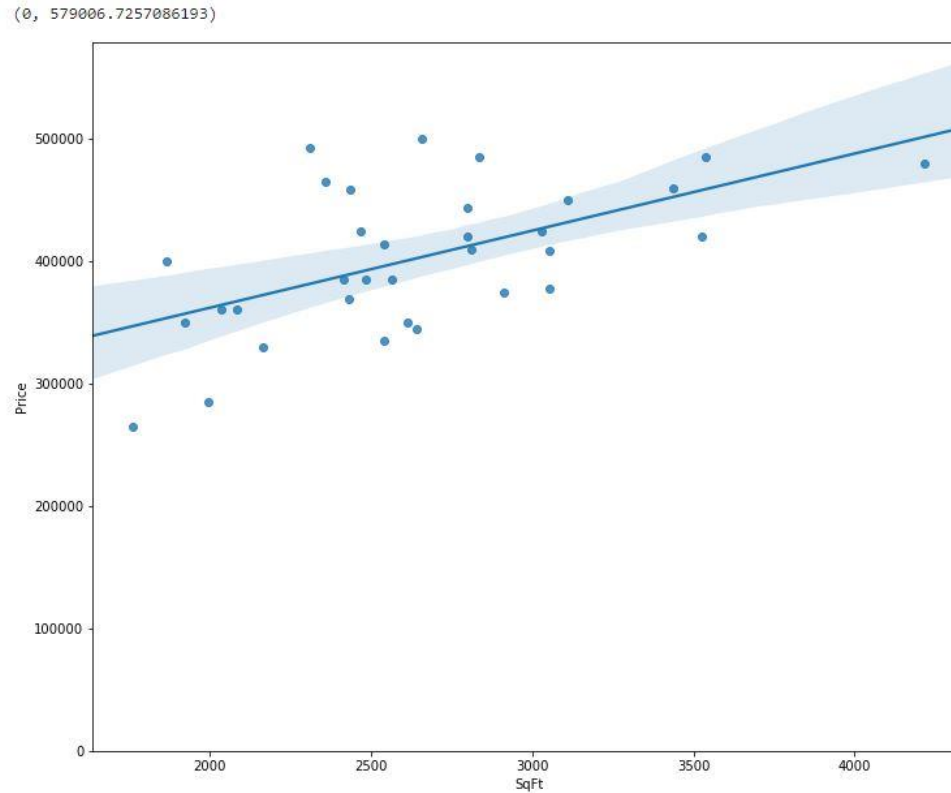
Combined Ratings for the Overall District

Since the school districts are composed of different elementary, middle and high schools, I averaged the results for each district

	Elementary Rating	Middle Rating	High Rating	District Rating
East Valley - East Cobb - Wheeler	0.68	0.57	0.75	0.67
Eastside - Dickerson - Walton	0.94	0.94	0.94	0.94

Data Exploration

The regression analysis to the right plots price vs square footage suggesting that with the addition of more independent variables a better result could be reached



Multiple Linear Regression Analysis

Using the sklearn package to solve for the multiple regression equation:

$$\hat{Y} = a + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4$$

We can see the effect of the independent variables:
bedrooms, baths, square footage, unfinished basement square footage, finished basement square footage and district rating:

$$\text{Price} = 83545 + \text{Beds} \times -140.98 + \text{Bath} \times 13.73 + 5.94 \times \text{SqFt} + -3.94 \times \text{Bsm Unf} + 3.52 \times \text{Bsmt Fin} + 1.44 \times \text{District Rating}$$

Data Correlations

The correlations of the independent variables was not impressively strong.

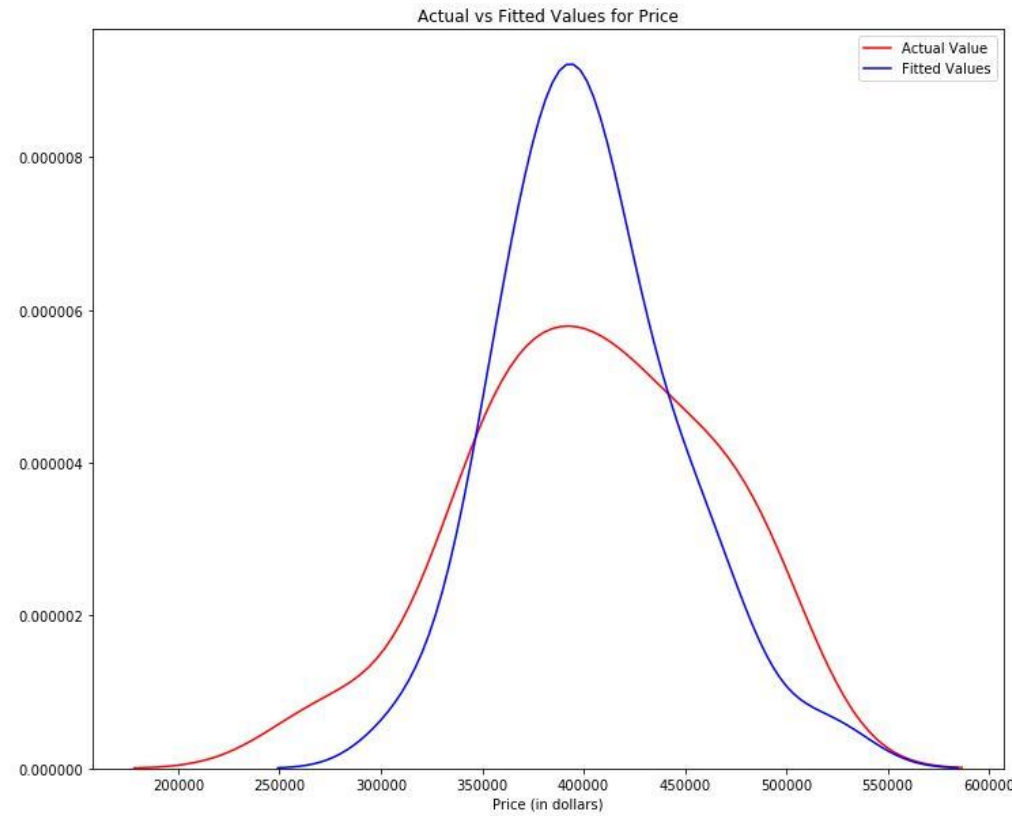
The best was square footage at .57 (closer to 1 is better, zero means no correlation)

	Beds	Bath	SqFt	Bmt Unf	Bsmt Fin	District Rating	Price
Beds	1.000000	0.471253	0.429308	-0.012818	0.154308	0.151462	0.359360
Bath	0.471253	1.000000	0.120469	-0.061944	0.077231	0.166639	0.318249
SqFt	0.429308	0.120469	1.000000	0.144286	0.253866	-0.022870	0.572481
Bmt Unf	-0.012818	-0.061944	0.144286	1.000000	-0.086308	0.209340	-0.006134
Bsmt Fin	0.154308	0.077231	0.253866	-0.086308	1.000000	-0.057610	0.356935
District Rating	0.151462	0.166639	-0.022870	0.209340	-0.057610	1.000000	0.306800
Price	0.359360	0.318249	0.572481	-0.006134	0.356935	0.306800	1.000000

Model Evaluation

The model evaluation was not particularly strong either

The data did not yield a high actual vs fitted value for price with only 54% of the price explained by the multiple linear regression “multi-fit”



Strengthening the Data

- ▶ More home sales data could have made for stronger results. This could be achieved by:
 - ▶ Making price adjustments to include historical data from this neighborhood
 - ▶ Including other neighborhoods bisected by school districts although this might be difficult and might open up disparities in location, home age, home style, etc.
 - ▶ Making quantitative evaluations on subjective things such as view, curb appeal, floor plan, etc.

Conclusion

- ▶ Although weak and perhaps arguable, the data seems to indicate that school district is not a significant factor in determining final home sales price.
 - ▶ For Real Estate Agents this might highlight the need to educate buyers, especially those unfamiliar with the area to the consequences of their buying decision.
 - ▶ For Real Estate Appraisers it might mean further study is merited to see if school districts should be included in valuation decisions.