Metric for Determining Home Value

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1. Introduction

1.1 Background

As housing prices skyrocket all across the USA and the world, people are looking more to purchase homes that provide good "value" for their money. The common process for families with young children looking to purchase a new home often begins with looking for the areas with the best schools. However, areas with highly rated schools often have high home prices as well. At that point, a family has to determine how much they're willing to pay to purchase a home with the best schools.

1.2 Problem

There is not an easy metric to determine the compare the "value" of purchasing a home in a particular area versus another.

1.3 Interest

Potential home-buyers would like to know which areas of a city provide the best "value", and potentially the best home value retention. The general assumption is that areas with better schools retain their value better than areas with less highly rated schools, as it increases demand.

2. Data acquisition

2.1 Data sources

There were two main sources of data required for this analysis. The first is Zillow home price data found here. Zillow aggregates home sale prices throughout the United States, broken up by city, state, zip code, and even neighborhood. A spreadsheet was pulled from Zillow containing home price data for the United States of America by zip code. Home pricing data was as of March 31, 2021. The spreadsheet was filtered by city (Bend, OR was the test city). All other city/zip data were removed from the spreadsheet, leaving 3 zip code records for Bend, OR.

The second data source was the school ratings from GreatSchools.org (Bend, OR public school data found here). The GreatSchools site provides a "school rating" for each school in a particular city/area based on a number of factors, including test scores and student progress. Due to the lack of an existing API, and the ratings being housed in images on the site, the school data was copy/pasted into a spreadsheet and the ratings added manually. A search for all public schools in Bend, OR, resulted in 26 records.

2.2 Data Selection
   After data acquisition, there were 26 schools in 3 different zip codes in Bend, OR. The relevant
   data points to be used are the average home price in each zip code and the average school
   ratings for each zip code in the city.

3. Data analysis

3.1 Relationship between average school rating and the average home price
   It is commonly assumed that the areas with better schools are going to have higher home
   prices. However, the data in Bend, OR did not match up with this hypothesis. The 97701 area
   code had a school average rating of 5.62 and an average home price of $488,588, resulting in a
   "Home Cost per Rating Point" of ~$87k. The 97702 area code had a school average rating of
   5.00 and an average home price of $561,122, resulting in a "Home Cost per Rating Point" of
   ~$112k. The 97703 area code had a school average rating of 6.50 and an average home price of
   $790,143, resulting in a "Home Cost per Rating Point" of ~$121.5k.

	RegionName	City	State	AvgHomePrice	RatingAverage	Home Cost per Rating Point
0	97701	Bend	OR	488558	5.615385	87003.479452
1	97702	Bend	OR	561122	5.000000	112224.400000
2	97703	Bend	OR	790143	6.500000	121560.461538

4. Results/Discussion

   The analysis of the school ratings versus the average home prices in differing zip codes provides
   a "value cost" for buying a home. If purchasing a home in the 97701 zip code, you would get the
   most value for your money as the "Home Cost per Rating Point" is the lowest. Whereas, if
   purchasing a home in the 97703 zip code, you would get the least value for your money, as the
   "Home Cost per Rating Point" is the highest. It is in line with prior assumptions that the zip
   code with the highest average school rating also has the highest average home price.
   However, it is interesting to note that the "Home Cost per Rating Point" for the 97703 zip
   code is significantly higher than the 97701 zip code. Additional analysis of the 97702 zip
   codes is warranted, as the average school rating is the lowest, but the "Home Cost per
   Rating Point" is higher than 97701. Perhaps there are location pockets where a few schools
   have high ratings/high home costs, along with other location pockets with lower rated
   schools, but not proportionally lower home prices.

5. Conclusion

   This analysis does not support the premise that higher school ratings results in higher home
   costs (see 97702). It does, however, provide another metric that can be used to determine if
   a potential home buyer is purchasing in an area with the highest "value".

6. Future analysis

Additional analysis, perhaps by a different geographical methodology or by neighborhood, would be helpful in determining if there are other factors in determining home cost. That said, the zip code with the highest average school ratings did have the highest home cost. This analysis gives families looking to buy a home another data point to help them determine where to buy a home in Bend, OR.

Additional data acquisition related to locations (latitude, longitude) of neighborhoods would help with a more granular analysis.