London Borough Project

Which boroughs of London have seen the greatest increase in housing prices, on average, over the last two decades?

Project Problem

Which boroughs of London have seen the greatest increase in housing prices, on average, over the last two decades?

Project Plan

Context: Over time, the price of houses in the London Boroughs has increased. The price in some boroughs has increased more, while in others the price has not increased as drastically.

Criteria for Success: Identify the borough with the greatest average increase in house price.

Scope of solution space: The scope of analysis for this project is limited to the London Boroughs over the span from 1995-2020.

Constraints within the solution space: NaN values present for some entries

Key data sources: London House Price Data

Data Exploration

Initial Dataset: raw data contained NaN values and irrelevant data called "Unknown:*"

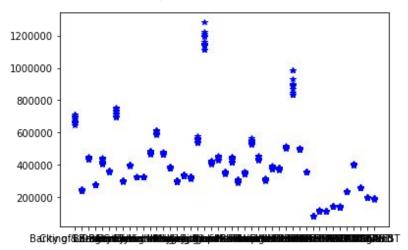|	Unnamed: 0	City of London	Barking & Dagenham	Barnet	Bexley	Brent	Bromley	Camden	Croydon	Ealing	...	NORTH WEST	YORKS & THE HUMBER
0	NaT	E09000001	E09000002	E09000003	E09000004	E09000005	E09000006	E09000007	E09000008	E09000009	...	E12000002	E12000003
1	1995-01-01	91449	50460.2	93284.5	64958.1	71306.6	81671.5	120933	69158.2	79885.9	...	43958.5	44803.4
2	1995-02-01	82202.8	51085.8	93190.2	64787.9	72022.3	81657.6	119509	68951.1	80897.1	...	43925.4	44528.8
3	1995-03-01	79120.7	51269	92247.5	64367.5	72015.8	81449.3	120282	68712.4	81379.9	...	44434.9	45200.5
4	1995-04-01	77101.2	53133.5	90762.9	64277.7	72965.6	81124.4	120098	68610	82188.9	...	44267.8	45614.3

5 rows × 49 columns

Cleaned DataFrame: transformed, columns and rows named informatively, necessary removals made, average price calculated (Price), Year extracted from Date

	Borough	ID	Date	Price	Year
14538	EAST OF ENGLAND	E12000006	2020-03-01	291253.8878	2020
14539	LONDON	E12000007	2020-03-01	485794.0806	2020
14540	SOUTH EAST	E12000008	2020-03-01	323353.0524	2020
14541	SOUTH WEST	E12000009	2020-03-01	263360.0167	2020
14543	England	E92000001	2020-03-01	248271.1877	2020

Grouped Data: grouped by Borough and Year for clarity

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                                       Price
Borough               Year
Barking & Dagenham    1995     51817.969390
                      1996     51718.192690
                      1997     55974.262309
                      1998     60285.821083
                      1999     65320.934441
...                                      ...
YORKS & THE HUMBER    2016    149015.573233
                      2017    154819.791333
                      2018    159936.248338
                      2019    163424.168033
                      2020    163092.808067
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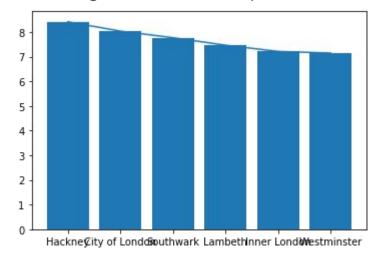
Data Visualization

Average house price for each borough from 1995-2018. Each column has all years worth of data for one borough.

The greatest increase in price was $1,280,683.09 and occurred in Kensington & Chelsea

Ratio of house prices (2008/1995) for all boroughs and sorted from highest to lowest. Here the highest six ratios are plotted.

The max housing price ratio was 8.42 and occured in Hackney.

Interpretation of Results

Clearly, the meaning of the phrase "greatest increase" is of the utmost importance here since I was able to yield arguably different results with different methods. This is a great example of why clarity of the task and how the information will be used is essential.

While initially I thought I was getting contradicting results, I was really observing the fact that the greatest increase in price did not necessarily correlate to the ratio. I disproved this to myself through the following numerical example:

numerical example with greatest difference: 9/4 = 2.25, 9-4 = 5

numerical example with greatest ratio: 6/2.5 = 2.4. 6-2.5 = 3.5

This is an important observation since the result that should be utilized depends upon how the information will be used.