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SpringBoard

London Housing Case Study Conclusion and Analysis

- **What did you find? Which borough is the most expensive? Any other interesting trends? And what did you conclude?**

After cleaning the data and modeling in a way that focuses on the average price by borough, we were able to come up with a more condensed and simplified table. This table's columns consisted of only the 32 boroughs and their average price for every year between 1995 and 2018. For this study, we will only focus on the change between 1998 and 2018. After performing certain manipulations with the final table, we observed:

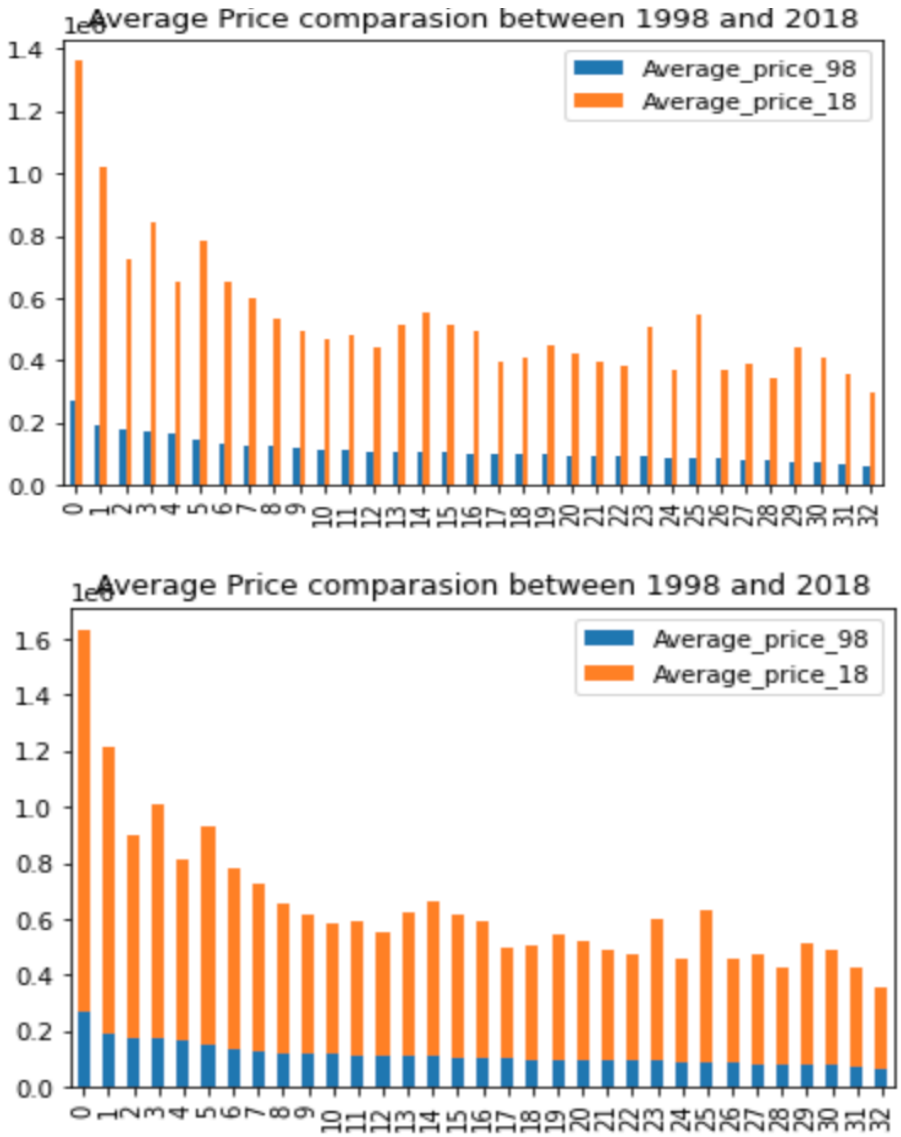
1-The increase in price in all boroughs was an obvious conclusion from the table.

```
In [124]: #merge the tables then subset it to only look at the average prices!
          comparasion = price98.merge(price18,on="London_Borough",suffixes=("_98","_18"))

In [126]: #Subsetting the table to only focus on the price and borough
          price_table=comparasion[["London_Borough","Average_price_98","Average_price_18"]]

In [134]: price_table
```

Out[134]:

	London_Borough	Average_price_98	Average_price_18
0	Kensington & Chelsea	268350.122142	1.363880e+06
1	Westminster	190531.949942	1.020025e+06
2	Hammersmith & Fulham	175340.921250	7.255253e+05
3	Camden	170688.973933	8.424104e+05
4	Richmond upon Thames	162956.066025	6.526654e+05
5	City of London	148031.894542	7.848089e+05
6	Islington	134148.973300	6.498241e+05
7	Wandsworth	125406.807233	5.966491e+05
8	Barnet	122359.468033	5.332665e+05
9	Kingston upon Thames	116399.769158	4.970910e+05
10	Harrow	114778.250067	4.659075e+05

This table is sorted in descending order for the Average price and based on the 1998 prices. Kensington and Chelsea was and is still the most expensive borough, while Barking & Dagenham was and still is the least expensive. However, multiple boroughs moved up in their price ranking, and we will be able to see that based on these two graphs. Both these graphs a serving the same purpose, however, it makes it clearer to look at it from two different angles.



The numbers on the x-axis represent the boroughs ranked by their average price back in 1998. Therefore, every bar taller than the ones on its left is considered a borough that surpassed another borough or more in the average housing price.

2-Ratio of change (final_df):

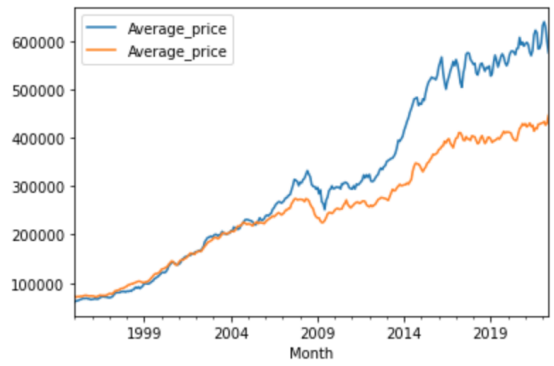
```
In [73]: #Lets take a look at the final list after sorting it!
final_df= final_df.sort_values(by='ratio',ascending=False)
final_df
```

	Borough	ratio
11	Hackney	6.198286
30	Waltham Forest	5.834756
27	Southwark	5.516485
22	Lewisham	5.449221
32	Westminster	5.353565
24	Newham	5.305390
6	City of London	5.301620
13	Haringey	5.134625
19	Kensington & Chelsea	5.082465
21	Lambeth	4.957751
5	Camden	4.935353
0	Barking & Dagenham	4.896619

We can notice from this table that all ratio values were over 4, which clearly shows the increase in the price of houses in every single borough of London. In other words, every borough has at least quadrupled its average housing price in the past 20 years. Hackney was the borough that had the most change in its price, which is now more than 6 times its price 20 years ago. The previous graphs clearly show that bar number 25, which represents Hackney, is taller than multiple other bars to its left, which shows the important increase in its price. While boroughs like 17, Hounslow, did not have as much progress as we can see in the graphs but also on the ratio table, with only a 3.9 ratio. The graph below shows the progress in price between Hackney, the blue line, and Hounslow.

```
In [141]: hackney_prices = df[df['London_Borough'] == 'Hackney']
hounslow_prices = df[df['London_Borough'] == 'Hounslow']

graph1 = hackney_prices.plot(kind='line',x='Month',y='Average_price')
graph2 = hounslow_prices.plot(ax=graph1,kind='line',x='Month',y='Average_price')
graph1.plot()
graph2.plot()
```

```
Out[141]: []
```



Conclusion:

Most big cities in the world are experiencing an increase in their housing prices, due to them being attractive destinations for all professionals. In London, we noticed a linear increase, where most of the expensive boroughs are still the most expensive. However, looking at the middle of the list, we noticed a lot of changes in ranking based on price throughout the past 20 years. This information could be useful to determine why certain boroughs' housing price rate of change is higher than others if we combine it with more data from the city/government. Are these neighborhoods receiving more financial help? Is this a segregation issue? Are certain neighborhoods becoming more gentrified?

Challenges:

While working on this challenge, I had a hard time guiding my work to a certain final goal. Instead of jumping right into cleaning the Data, I should have decided what the end result was in order to focus on what is important. I spent a lot of time deciding what the next step is, while I could have drawn a path to follow beforehand.

The second issue I had was finding enough information to make an analysis. It is common knowledge for everyone that housing prices are most likely going to increase across the world and especially in a big city like London. After looking at the trends and the ratios, I was able to come up with more observations, however, more data like investments in the area or the number of schools, hospitals, means of transportation, etc.

With more information, I would love to dig deeper into understanding how some neighborhoods gained value more than others. I would also look into the demographics of the neighborhoods and the crime rate to come up with a full analysis of the London housing case.