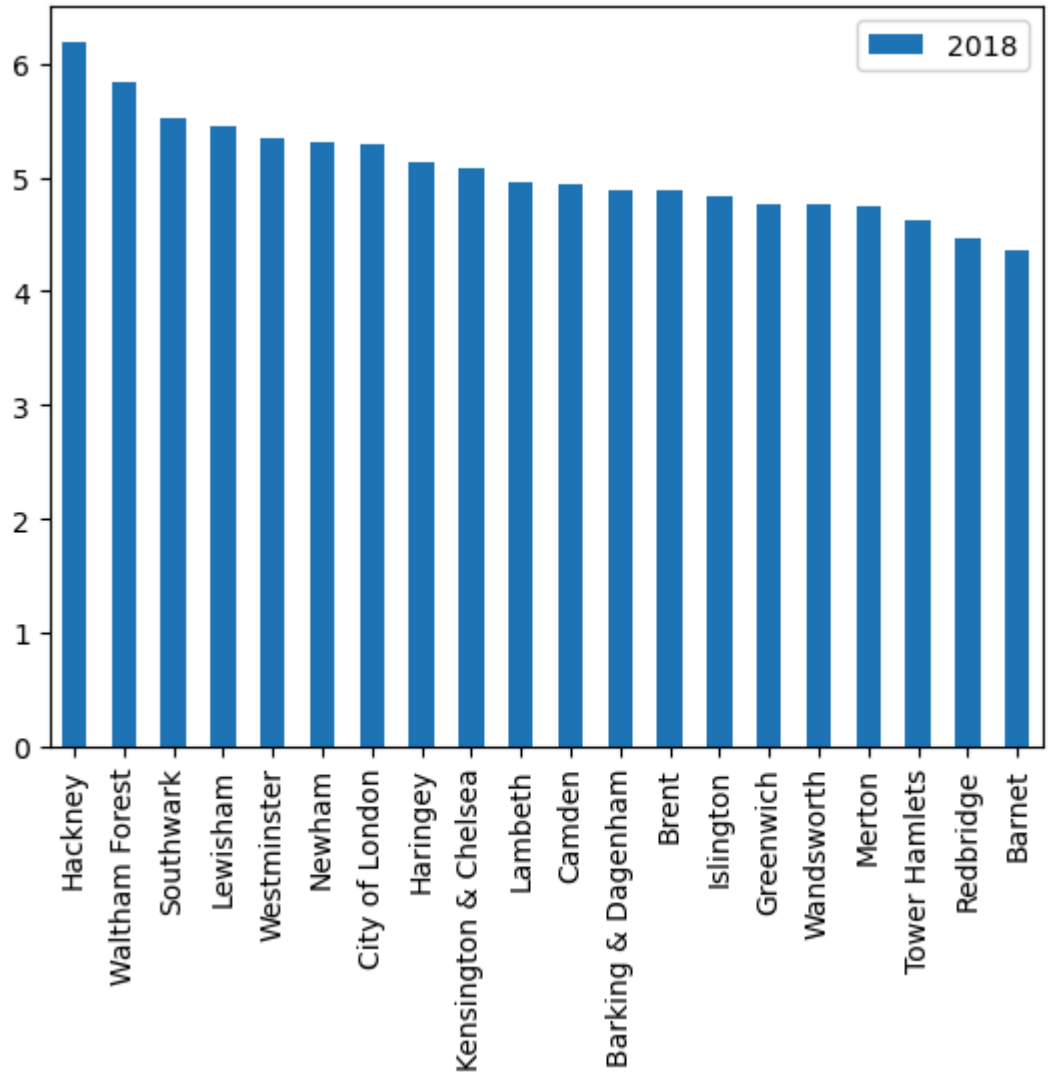
Yaw Asamoah
8/1/2024
Data Science Project #1

My Findings:

Highest Growth (ratios)

Hackney, Waltham Forest, and Southwark, had the most growth when we compare the ratios of prices in 1998 to prices at 2018.
The y-axis demonstrates the ratio between 2018 prices and 1998 prices, so the higher the ratio the more growth you have seen.



Highest growth (Compound annual growth rates - CAGR)
In terms of growth rates expressed in compound annual growth rates. These are the rates below:

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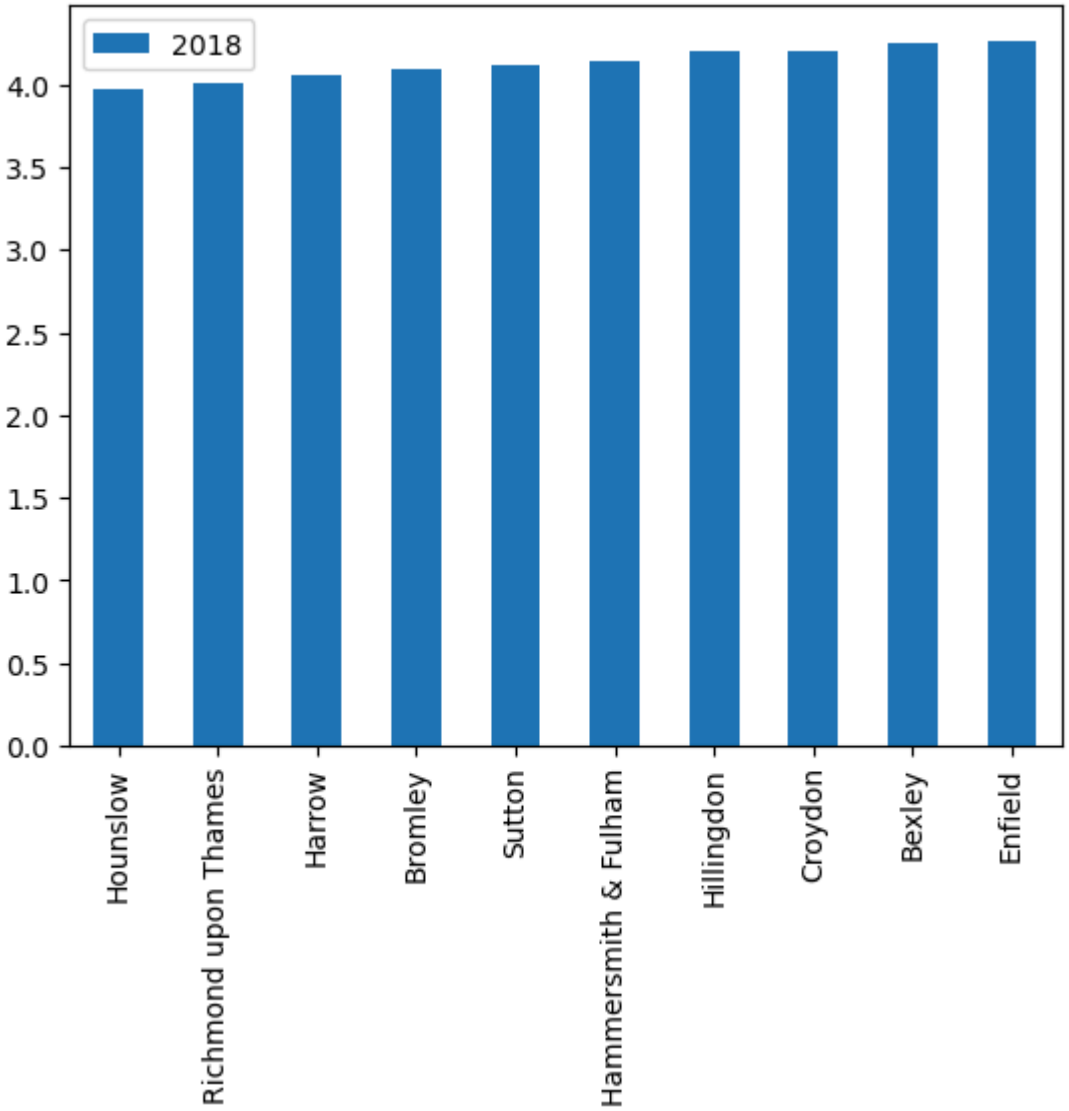
```
top_growth_10 = df_CAGR.sort_values(by='CAGR',ascending=False).head(10)
print(top_growth_10)
```

```
          London_Borough   CAGR
11                Hackney  9.55%
30         Waltham Forest  9.22%
27              Southwark  8.91%
22               Lewisham  8.85%
32            Westminster  8.75%
24                 Newham   8.7%
6          City of London   8.7%
13               Haringey  8.52%
19  Kensington & Chelsea   8.47%
21                Lambeth  8.33%
```

Slowest Growth

In terms of the least growing areas, they are Hounslow, Richmond upon Thames, and Harrow



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If we look at growth rates, in these lower growth areas, you won't see 9% growth rates, you'll see 7% to 7.5% growth rates:

	London_Borough	CAGR
17	Hounslow	7.15%
26	Richmond upon Thames	7.18%
14	Harrow	7.26%
4	Bromley	7.3%
28	Sutton	7.33%
12	Hammersmith & Fulham	7.36%
16	Hillingdon	7.44%
7	Croydon	7.44%
2	Bexley	7.5%
9	Enfield	7.52%

The Borough that's the most expensive:

Kensington & Chelsea is the most expensive Borough in London as of 2018
The average house price is $1,363,880

```
df_2018 = df[df['Year'] == 2018]
df_group_2018 = df_2018.groupby('London_Borough')['Average_price'].mean().reset_index()
```

```
most_expensive = df_group_2018.sort_values(by='Average_price', ascending=False)
```

```
top_10_expensive = most_expensive.head(10)
print(top_10_expensive)
```

	London_Borough	Average_price
19	Kensington & Chelsea	1.363880e+06
32	Westminster	1.020025e+06
5	Camden	8.424104e+05
6	City of London	7.848089e+05
12	Hammersmith & Fulham	7.255253e+05
26	Richmond upon Thames	6.526654e+05
18	Islington	6.498241e+05
31	Wandsworth	5.966491e+05
13	Haringey	5.515606e+05
11	Hackney	5.446405e+05

Interesting Trends

Even though Hackney is only the 10th most expensive city, it has the highest compound annual growth rate (9.55%!). Hackney is an **"up and coming area".**

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Hammersmith & Fulham is the 6th most expensive boroughs, but it has one of the slowest growth rates of any area in the London Boroughs.

Bexley, Sutton, and Hounslow are one of the cheapest boroughs, and have a relatively slow growth rate.

How I arrived at my conclusion

I checked the most and least expensive cities then I looked at the fastest and slowest growth rates.

Main challenges I encountered

Syntax, errors, and getting data displayed the right way.

What could I not overcome

I wanted the indexes to be from least expensive to most expensive but I couldn't figure out how to do that.

```
]: most_expensive.tail(10) #cheapest boroug
```

]:

	London_Borough	Average_price
16	Hillingdon	410266.079010
9	Enfield	396631.717802
17	Hounslow	396631.179788
10	Greenwich	388344.325126
28	Sutton	379262.580582
7	Croydon	370298.543320
15	Havering	370248.750770
24	Newham	359022.512777
2	Bexley	342603.605654
0	Barking & Dagenham	295196.673612

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Anything I’d like to investigate deeper

I would like to see which attributes affect housing prices (room sizes, chimney, crime, approximation to industry, etc.)