# Summary

Hackney has experienced the fastest housing price growth rate of all boroughs of London; an average of 9.25% yearly. Second is City of London, with an average annual growth rate of 8.77%. City of London has a slightly higher monthly average percent increase than Hackney, 0.75% to 0.74%, respectively, but the housing prices of City of London are much more volatile than Hackney. Comparing the two boroughs over since 2000; an average house in Hackney in 2020 is worth 4.29 times as much as in the year 2000, while an average house in City of London is worth 3.78 times as much.

The other boroughs experience slower growth, with the slowest being Bexley. However, Bexley also experienced the smallest housing value drop (in percentage) of all boroughs.

A visualization dashboard highlighting these findings is on the last page.

Table

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# Explanation of Analysis

What follows is a chronological explanation of the analysis process and the thought processes behind the analysis. It follows the Jupyter Notebook closely. The notebook is available at (URL).

The data was downloaded from the London Datastore website (<https://data.london.gov.uk/>). The specific .xls file is available at <https://data.london.gov.uk/download/uk-house-price-index/70ac0766-8902-4eb5-aab5-01951aaed773/UK%20House%20price%20index.xls>.

The data used for this analysis is from the “Average price” sheet of the Excel workbook.

The imported DataFrame contains a column of average house prices for each of London’s 32 boroughs and the City of London, as well as average house prices for Inner and Outer London, each of England’s 9 government regions, and England itself. The data starts in January 1995 and goes through May 2020. There are 305 monthly observations.

The DataFrame was reindexed by the Date column to make it easier to plot and slice. It was cleaned to get rid of empty columns and a row of location codes that was not useful. Another melted DataFrame was created. This melted DataFrame would eventually be useful to aggregate values.

The data was visually examined, starting with England as a whole and then narrowing to identify national, regional, and London-specific trends. The global recession from 2008-2010 was visible in all plots.

* London housing prices are much higher than other regions
* Inner London housing prices are much higher than in Outer London
* Kensington & Chelsea remains the most expensive borough, and Barking & Dagenham remains the least expensive; they are noticeably separate from the other boroughs on the line plots (see the dashboard on the last page)

Maximum monthly growth, mean monthly growth, median monthly growth, and greatest monthly decrease were all examined.

* City of London had the highest one month increase of 0.3%
* City of London had the highest mean increase of 0.009%
* Hackney had the highest median increase of 0.01%
* City of London had the highest monthly loss of -0.3%; Bexley had the lowest maximum loss, -0.03%

Histograms of City of London, Hackney, and Bexley were examined, showing that City of London was far more volatile than the other boroughs, and Bexley had quite low volatility.

When using monthly percent change, City of London grew by approximately 984% since 1995, while Hackney grew by 934% and Bexley grew by 523% in that same time period. When using the yearly percent change, Hackney grew by 911% from January 1995 to May 2020, while City of London and Bexley grew by 818% and 515%, respectively.

The table of average yearly and monthly growth rates for each borough, on the Summary page of this document, was then created. Bar plots of these were created but did not convey more information than the table itself and so are not included in this report.

A function was defined that easily allows a user to find the ratio between the average house price in an area in 2020 to the average house price in 2000.

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|  | **Hackney** | **City of London** |
| **2020 Average Price** | £572,410 | £899,831 |
| **Ratio to 2000 Price** | 4.29 | 3.78 |
| **Yearly Growth Rate** | 9.24 | 8.77 |
| **Volatility** | 0.08 | 0.19 |
| **Monthly Growth Rate** | 0.74 | 0.75 |
| **Volatility** | 0.02 | 0.07 |

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