COVID-19 and London's Housing Market: A Comparative Study
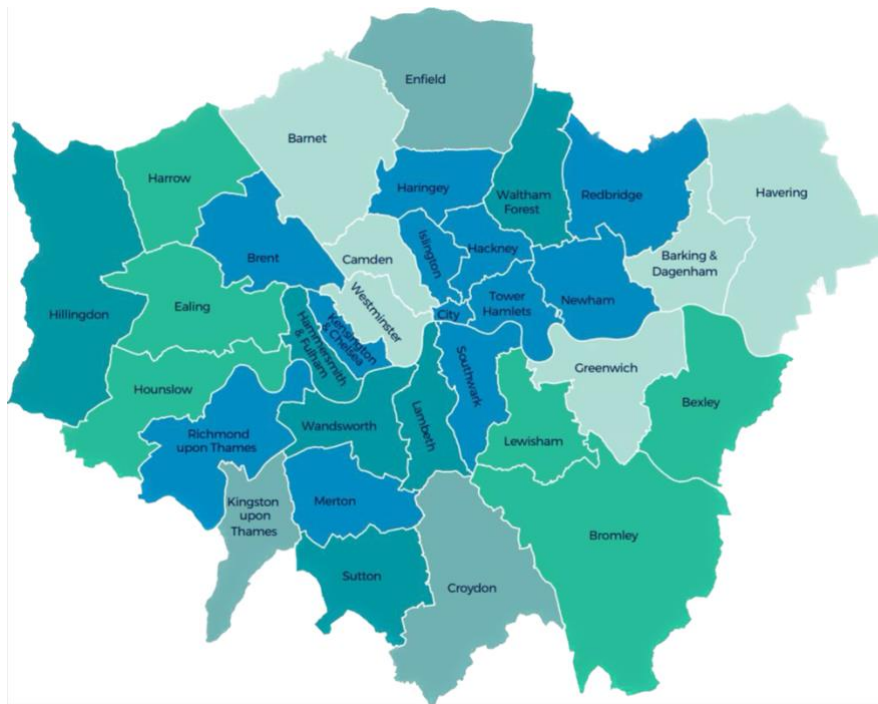
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How did COVID-19 impact London boroughs' average house prices and property types compare to the UK as a whole?

INTRODUCTION

The housing market is just one of the many facets of living that have been significantly impacted by the COVID-19 pandemic. This study examines how COVID-19 has changed the typical home price and property type in London districts in comparison to the rest of the UK. The research question being explored is: How did COVID-19 impact London boroughs' average house prices and property types compare to the UK as a whole?

The results will be presented in a clear and succinct manner using data visualization techniques and dashboard design. Through the use of data visualization, trends, patterns, and connections in the data can be found that might not otherwise be visible through conventional data analysis techniques.

This study aims to thoroughly overview the COVID-19 pandemic's effects on the London housing market. Bar charts, line graphs, pie charts, and maps are just a few of the visuals that will be included in the report to help show the results in a clear and understandable way. This will offer information that policymakers, real estate experts, and people seeking to buy or sell a property in London can use to guide their future decisions.

Overall, this report aims to shed light on the effect of the COVID-19 pandemic on the London housing market, highlighting important findings and making recommendations for future research and action.

RESEARCH QUESTION

The research question is focused on examining the impact of COVID-19 on London boroughs' average house prices and property types compared to the United Kingdom as a whole. The goal is to explore any differences or trends that may have emerged as a result of the pandemic.

DATA ACQUISITION

The data for this study was obtained from the UK government website https://data.london.gov.uk/dataset/uk-house-price-index, particularly the tables labelled "Average Price" and "By Type." The dataset provides information on the average house prices and property types in London boroughs and the rest of the UK, covering a period of more than two decades.

The dataset contains two main tables: "Average Prices" and "By Type." The "Average Prices" table provides monthly information on average house prices in each London borough and the rest of the UK, whereas the "By Type" table provides quarterly information on the kinds of properties sold in each London borough and the rest of the UK. Both charts span the time period from January 1995 to the present.

The "Average Prices" table has 49 columns, including the date, the names of all London boroughs and regions in the UK, and the average home prices and index numbers for each. The "By Type" table has 16 columns, including the date, the kinds of properties sold (detached, semi-detached, terraced, and flat), and the average prices and index values for each.

The data appears to be of high quality, as it is given by the official authority in charge of compiling and publishing house price data in the United Kingdom. It is essential to note, however, that the data is subject to revisions and updates, which may impact the analysis findings.

The initial step in any data analysis project is Exploratory Data Analysis (EDA). This process involves gaining a deeper understanding of the dataset, identifying potential issues that might need to be addressed, and exploring the relationships between variables.

Analysis of the "Average Prices" table revealed that average house prices in London were consistently higher than in the rest of the UK. Additionally, there was an increasing trend in average house prices across both London and the UK over the last two decades, with varying rates of increase between different regions and boroughs. This suggests that the impact of COVID-19 on the housing market may differ across different areas.

The "By Type" table showed that flats were the most commonly sold property type across both London and the rest of the UK, followed by terraced houses. There were also differences in the proportion of property types sold between London and the rest of the UK. For example, London

had a higher proportion of flats sold, while the rest of the UK had a higher proportion of detached houses sold.

Overall, the EDA provided valuable insights into the distribution and characteristics of the dataset. These findings guided the development of data visualizations, which will be discussed in the following sections.

DATA PREPARATION

- Data Cleaning

For the data cleaning part, I first imported the dataset into Power BI. To do this, I opened Power BI and selected "Import Excel workbook." From there, I selected the tables labelled "Average Price" and "By Type" and clicked "Transform Data."

Figure1. Selecting tables from the dataset

Figure 2. The figure shows how the dataset looked before it was cleaned. You can clearly see that the column names were not so clear, also the data type was "text" instead of "decimal"
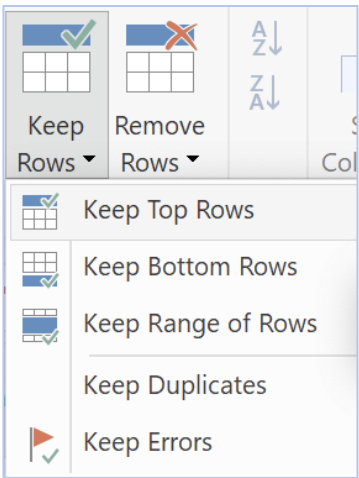

Then, I removed the first row, in order to have cleaner data.

Figure 3. Removing unnecessary rows

Once I had loaded the "By Type" table, I noticed that it contained some columns that were not relevant to my analysis. Specifically, I only needed information on the London property type's average price, so I removed the other columns using the "Remove Columns" option in Power BI. This helped to simplify the data and ensure that I was only working with the relevant variables for my analysis. I also renamed some columns.

Overall, this step in the data cleaning process was important to ensure that my analysis was focused on the variables of interest and to reduce the complexity of the dataset. By removing unnecessary columns, I was able to streamline the data and make it more manageable for analysis and visualization.
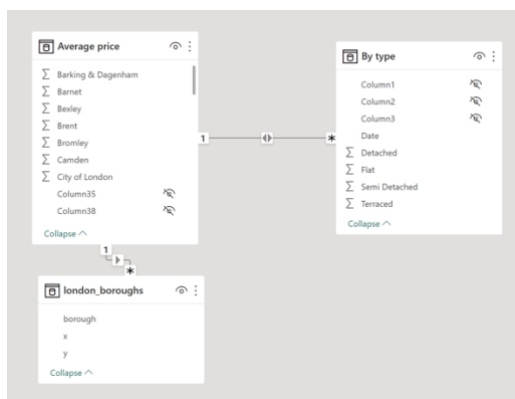
To visualize the data based on London boroughs, a relationship was created between two datasets. The first dataset contained information about the average prices of different property types in various regions of the UK, while the second dataset included the latitude and longitude values of the London boroughs. By connecting the two tables, it was possible to create a map showing the average property prices in each London borough. The second dataset was obtained from the London Datastore, specifically the London Boroughs dataset, which contains location data for each of the 32 London borough

Defining relationships between tables

- Data Transformation

I discovered that some of the columns in the "Average Price" and "By Type" tables were saved as *text* rather than *decimal values* during the data transformation stage. I needed to alter the data type for these columns because doing so could lead to complications later on when attempting to plot graphs or conduct calculations.

I chose the pertinent columns in Power BI and used the "Change Type" option to convert them from text to decimal number notation. The values in these columns were able to be accurately rendered as numbers rather than text strings thanks to this.

Overall, this process was important to make sure the data was correctly formatted and prepared for analysis. I was able to create precise graphs and carry out insightful calculations by transforming the data types in this manner, and this gave me important new insights into how COVID-19 affected house values in London boroughs and the UK as a whole.

- Data Filtering

I filtered the data to concentrate on the relevant time periods. The first filter was used to display the average house prices and property types from 2016 to 2019, allowing me to investigate how prices and property types varied in various zones of London and the United Kingdom prior to the COVID-19 pandemic. The second filter was used to display data from 2020 to 2022, allowing me to investigate how the pandemic affected average house prices and property types in these regions.
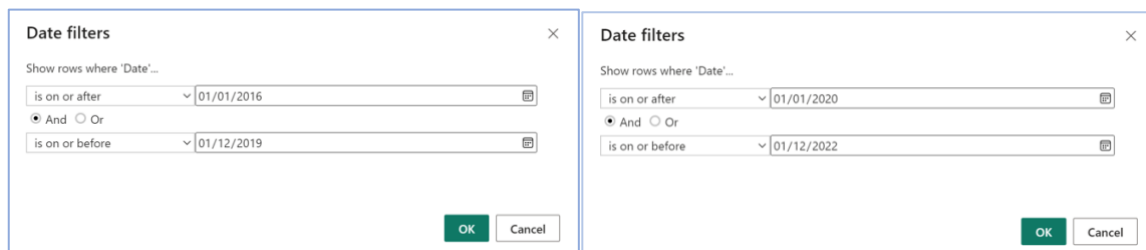

Figure 4. Filtering the data before and after the pandemic

DATA ANALYSIS

Data visualisation is an essential component of any data analysis project because it allows complicated information to be communicated in a simple and clear manner. It helps to communicate insights and patterns in the data that may be difficult to comprehend through just a table of numbers. When done correctly, visualisation can aid in the identification of trends, patterns, and outliers, allowing decision-makers to make informed decisions based on the data at hand.

To create effective visualisations, it is essential to follow some basic principles. Firstly, it is important to select the right type of chart for the data being presented. Different types of charts work better for different types of data, and it's important to select the right one to ensure the data is conveyed in the clearest and most accessible way possible. Secondly, using appropriate colours, labels, and formatting is also crucial to ensure the visualisation is easy to read and understand. Poor use of colour, confusing labels, and cluttered designs can all make it difficult for the viewer to grasp the information being presented.

In my data analysis project, I used various types of charts to visualise the data before the epidemic. I used line charts to display the trend of average house prices in different zones of

London and the UK over time. This allowed me to see how the prices have fluctuated over the years and identify any patterns or trends that may have emerged. I also used bar charts to compare the average prices of different property types. This allowed me to see which property types were more expensive than others and how the prices compared across different regions.

I further utilised column charts to compare the prices of London boroughs and the rest of the UK. This allowed me to see how the prices varied across different regions of the country and which regions were more expensive than others. Additionally, I employed pie charts to show the proportion of each property type sold in different zones. This enabled me to see which property types were more popular in different regions and how the market for each type of property differed across the country.

In conclusion, data visualisation is an important aspect of any data analysis project as it can help make complex data accessible and easy to understand. By using various charts and graphs, it is possible to identify trends, patterns, and outliers in the data, allowing decision-makers to make informed choices based on the information available. It is crucial to follow best practices when creating visualisations, such as selecting the right type of chart and using appropriate colours and labels to ensure the information is presented clearly and effectively.

VISUALISATION

Figure 5. Area Chart: A comparison of property types during 2016-2019
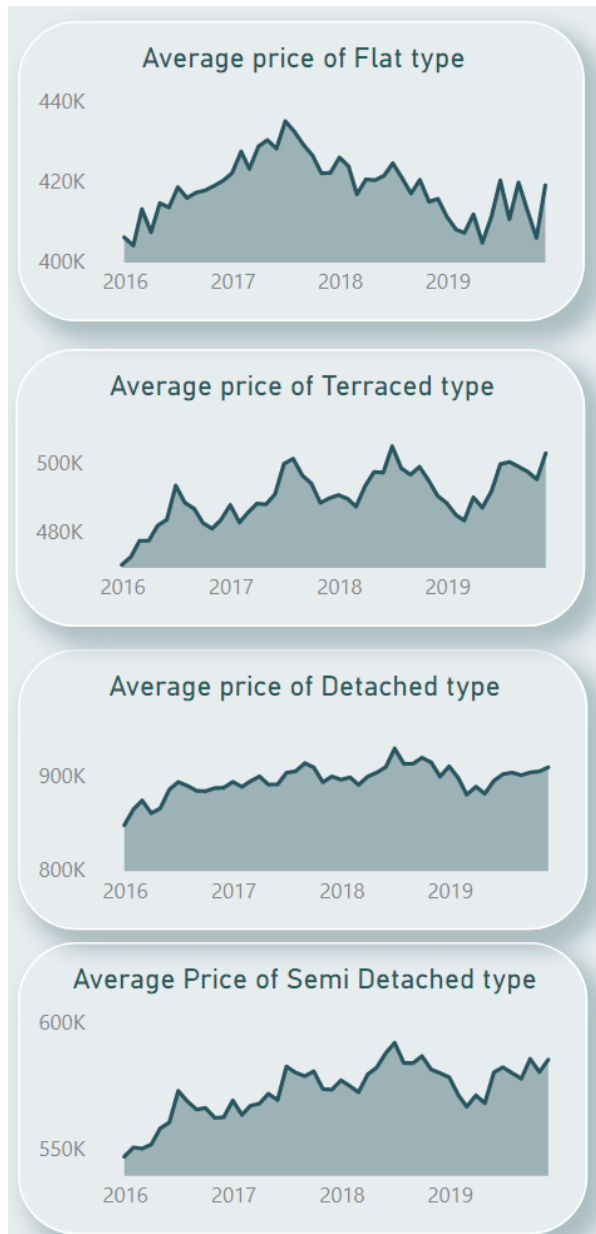
The property type "Flat" experienced the longest period of growth (+16.014) between January 2016 – January 2017.

The property type "Terraced" trended up n a 6.9% increase between January 2016 to December 2019. It also trended up on June 2019, 2.24% in 6 months.

The property type "Detached" trended with an increase of 7,31% between January 2016 – December 2019. It also increased by 0.62% from August in 4 months. "Detached" jumped from 846,955.50 to 893,102 during its steepest incline between January 2016 to July 2016.

The property type "Semi-Detached" rose by 4,871.56 on the last day. It peaked in July 2018, after hitting a low point of 546,757 in January 2016.

From those Area Charts, we can say that the property type "Flat" experienced the longest period of growth between January 2016 and January 2017. Terraced and Detached properties trended upwards over the 2016-2019 period, with terraced properties also showing a 2.24% increase in the last 6 months of 2019. Semi-detached properties peaked in July 2018, after a low point in January 2016.

The dashboard displays the average prices of different property types across various regions in the UK before and after the COVID-19 pandemic. The stacked column chart showcases the pre-

pandemic average prices, with the West Midlands region exhibiting the most interesting trend, experiencing a significant increase of 12.97% between 2016 and 2019. The Terraced property type had the highest increase of 2.44% during the same period and saw a peak increase from 481,496.40 to 493,244.96. To compare, the London region had a 0.83% increase in average prices during the same time period.

Figure 6: Dashboard: The housing market before the pandemic

The average prices in the housing market during the pandemic

The line chart depicts that Flat properties experienced the greatest price rise from 2020 to 2022, with a steady increase peaking at 5.52% in 2022. This suggests an increased demand for Flat properties, resulting in a significant price increase. In summary, the line chart highlights that Flat properties have been the most interesting property type to follow in terms of price trends from 2020 to 2022 in the UK.

Figure 7. Line Chart: the average property types since the pandemic started

The line chart for Inner London demonstrates a consistent upward tendency in average property prices from 2020 to 2022. The total increase was 5.85%, or £411,186.45. During the highest incline between 2020 and 2022, Inner London saw a rise from £7,028,679.83 to £7,439,866.28. This indicates that, despite the pandemic, Inner London's property market stayed strong, with a significant increase in property prices over the two-year period.
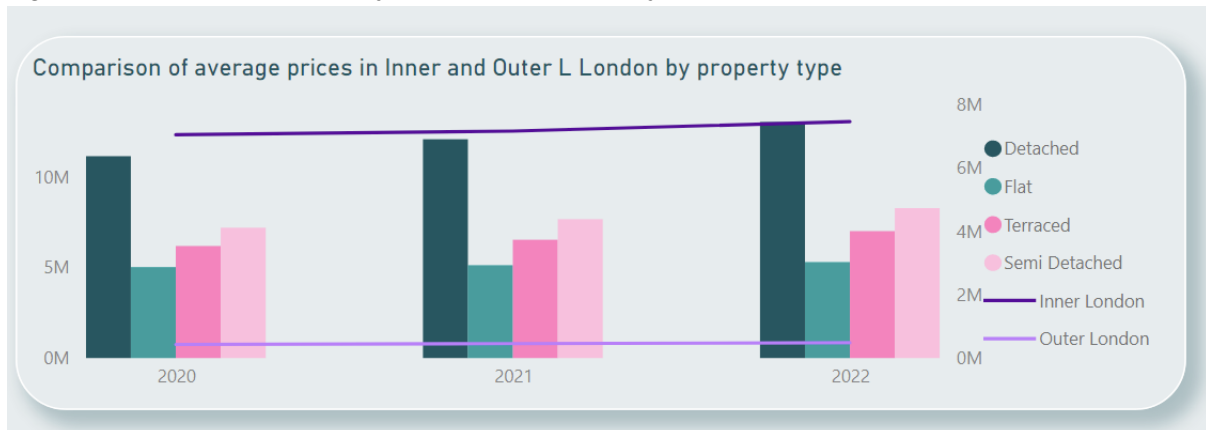

Figure 8. Combination of column and Line charts to show how the average prices have changed in Inner and Outer London for different property types.

According to the statistics, Westminster's prices increased by 3.36% between 2020 and 2022. The graph shows that property prices in Westminster have been gradually increasing since 2020, with a sharp increase between 2020 and 2022. The chart's highest point correlates to a price of 11,912,644.75, a significant rise from the initial price of 11,525,630.62 in 2020. This indicates that there has been an increase in demand for Westminster properties, resulting in a price increase. Overall, the line chart shows that in terms of property price trends in the United Kingdom from 2020 to 2022, Westminster has been the most interesting region to watch.

Figure 9. Column chart: average house prices in the most significant London boroughs

According to the line chart, the South West area started trending upward in June 2022, resulting in a 3.37% (10,785.41) increase over the next six months. Meanwhile, the steepest rise in the East of England region came between July 2021 and December 2022, when it increased from 310,158.03 to 362,194.34. This indicates a significant increase in value, indicating that demand for properties in the East of England region is increasing. Overall, the chart reveals interesting trends in both regions over the last year, with the East of England experiencing the most dramatic rise in value.
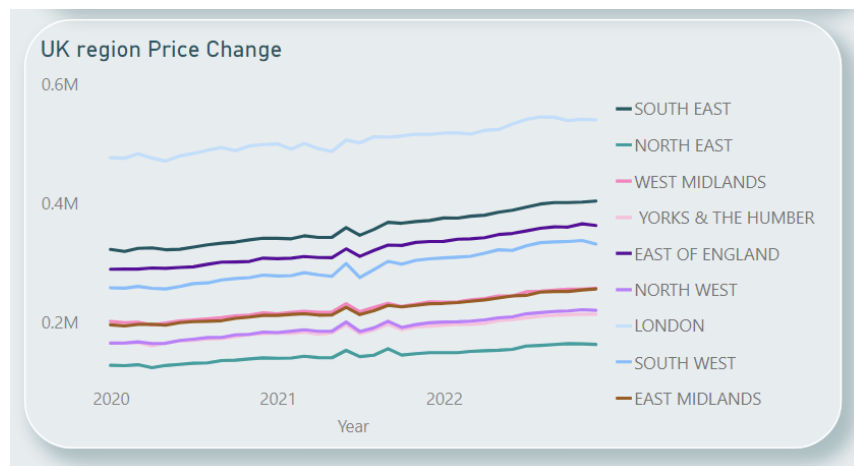

Figure 10: Average Prices in the UK

To highlight the most significant boroughs with the highest increase in prices, I created visualizations using four different charts for each property type. The area charts show the trend of average house prices in Westminster and other selected boroughs in London over time, with Westminster having the most interesting recent trend, rising by 3.36% in two years. The bar charts compare the average prices of different property types in Westminster and other selected boroughs. The column charts compare the prices of Westminster and other selected boroughs with the rest of the UK, while the pie charts show the proportion of each property type sold in Westminster and other selected boroughs. These visualizations provide a clear understanding of the price trends

in Westminster and other selected boroughs, making it easier to identify significant changes and patterns in the housing market.
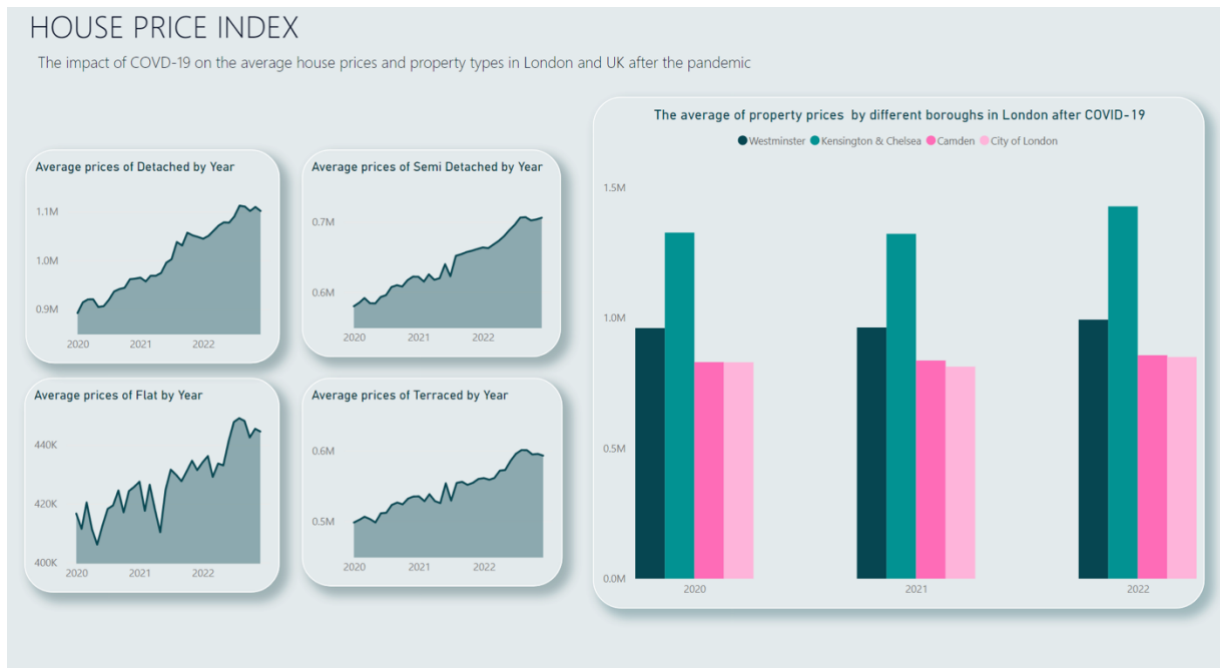

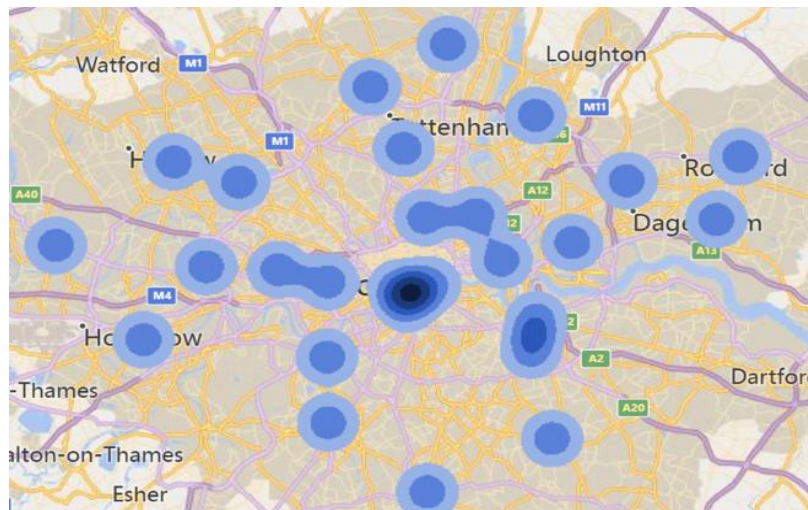Figure 11. A detailed version of average prices compared in Area Chart and Column Charts.

Figure 13: Map that shows London boroughs and average prices

In order to create a visualisation of the data based on the London boroughs, I utilized an additional dataset containing the latitude and longitude coordinates for each borough in London. By establishing a relationship between the two tables, I was able to create a map that accurately reflected the data I was analysing. This allowed me to gain a better understanding of the distribution of the data across the various boroughs, and to identify any trends or patterns that

may have been present. The use of geographic information was a valuable tool in my data analysis process and helped to provide valuable insights into the data that may not have been apparent otherwise.
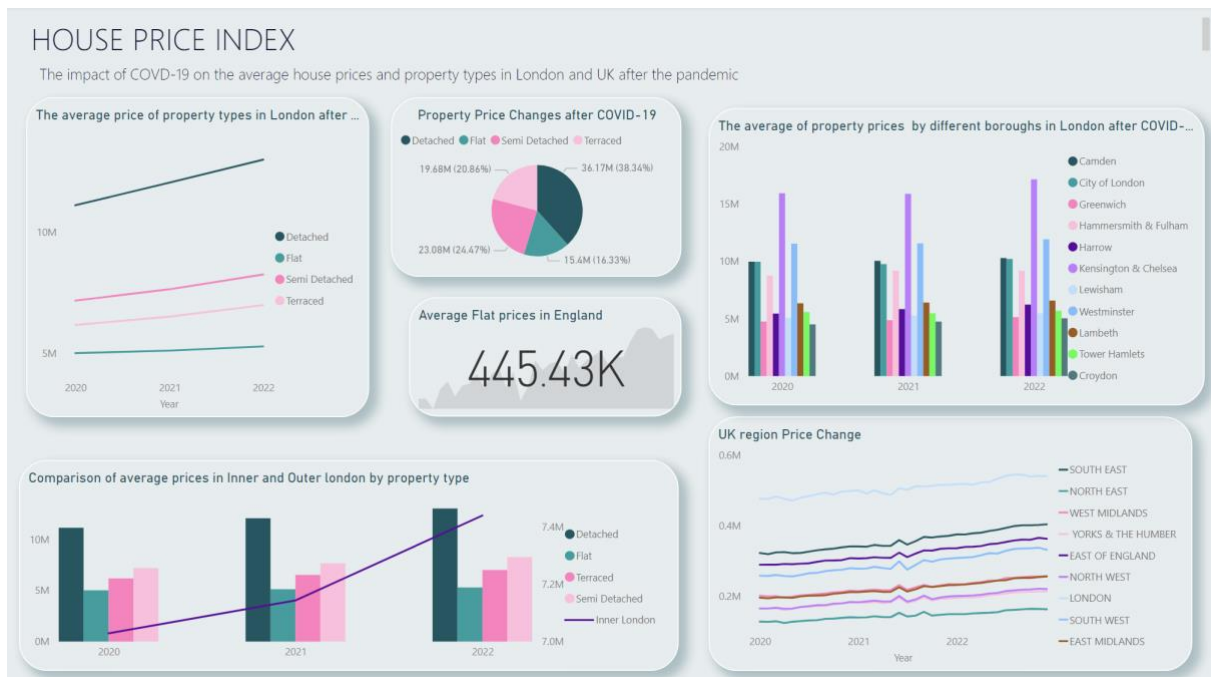

Figure 12: An analysis of the average prices for different property types in London and the UK

The main dashboard focuses on the average prices in the UK housing market during the pandemic. The line chart illustrates that Flat properties experienced the most significant price rise from 2020 to 2022, indicating a high demand for flats. The Inner London area had a consistent upward trend in average property prices, with a 5.85% increase over the two years. Westminster had the most interesting trend in terms of property price trends, with a 3.36% increase. The dashboard also includes visualizations for the most significant boroughs with the highest increase in prices, using area charts, bar charts, column charts, and pie charts to provide a clear understanding of the price trends in Westminster and other selected boroughs. Overall, the dashboard provides valuable insights into the price trends and patterns in the UK housing market during the pandemic.

CONCLUSION

In conclusion, this report examined the impact of COVID-19 on London boroughs' average house prices and property types compared to the UK as a whole. The data acquisition involved collecting data from government sources and websites. Data preparation included cleaning and transforming the data to fit the analysis requirements. Data analysis was performed using various data visualization techniques to identify trends and patterns. The results showed that flat properties experienced the highest price increase from 2020 to 2022 in the UK, with Inner London and Westminster experiencing significant price increases. Overall, the housing market in London remained robust despite the pandemic. The study highlights the importance of understanding the impact of external factors such as pandemics on the housing market and how different regions are affected differently.

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