A brief view into the housing situation in London

Introduction

The 2021 Census estimated that London’s population stood at 8.8 million in March 2021, the highest population yet recorded through a Census in the country. However, between the 2011 and 2021, London's population was estimated to have grown by 7.7 per cent and its number of households only by 4.8 per cent.

Many Londoners experience problems with their homes, with significant differences between groups. 12 per cent of all Londoners in private renting or social renting households rated their homes as poor, but those on low incomes, living in council homes or of Black, Bangladeshi or Pakistani ethnicity, were more likely to do so, according to the Housing and Land Department of the Greater London Authority.

The housing challenges facing Londoners at the moment must be put in the context of a worsening cost of living crisis. Over the course of 2022 more and more Londoners, particularly private and social tenants, have said they are struggling to make ends meet or to afford basic needs.

The research aims to look at the overview about housing in London in the last decade and compare the housing marking between different boroughs in the capital, with the data provided by the government.

Research topic

London, as one of the most diverse and dynamic cities in the world, has drawn a large number of people for work and study. The population is growing quickly, which has huge implications in the economic as well as social spheres of the city.

Meanwhile, housing hasn't kept up with the rhythm of the population's growth. Many studies have highlighted that the UK government hasn't built enough houses due to the green belt policy for big cities and the case-by-case planning system that has slowed down development, restricted the supply of housing, and also made it riskier for developers. Besides, experts and researchers suggested that the collapse in social housing in the country also contributed to the limited number of additional houses entering the market in the last decade.

The quality of housing can have a huge impact on wellbeing. Inadequate housing increases the risk of severe ill health and disability; it can also lead to poor mental health, lower educational attainment, unemployment, and poverty, as pointed out in the UK Equality and Human Rights Commission Guidance. The importance of housing is recognised in the United Nations Covenant on Economic, Social, and Cultural Rights, which includes "the right of everyone to an adequate standard of living for himself and his family, including adequate housing."

Given that housing is recognised as an important social topic, this research focuses on finding trends in the housing distribution in comparison with the growth of the population, as well as exploring patterns in those aspects between different parts of London, in order to raise awareness about the housing situation in the capital city and give recommendations to developers and authorities to improve the matter.

Data collection

In order to analyse the housing situation in London, I used two different datasets from the London Datastore (https://data.london.gov.uk/ (https://data.london.gov.uk/)), one about the numbers of dwellings and populations in the UK and the other about the house prices in the country from 2000-2021. London Datastore is a free and open data-sharing portal where anyone can access data relating to the capital, with over a thousand datasets from official sources.

Hence, it is quantitative research, the report focused on finding patterns and averages, as well as describing and exploring correlations between variables in the datasets.

Data overview and pre-processing

Both datasets used for the research are the most updated about the topic from official sources, giving the news and reality value and validity to the analysis. They provided the exact numbers of the subjects in question, the number of houses, and the populations, so they are considered useful tools for the descriptive statistics method for the research. This also aids in the description and summarization of data in a meaningful manner, allowing patterns to emerge from the data.

The two datasets contain large amounts of information about the whole country over a long period of time, but the research only focused on London from 2010 to 2020, so all the data about other parts of the country and another timeline was filtered out using code in Python.

Furthermore, despite the fact that the data is quite organised as it is retrieved from the government, it still needs to be reshaped into tidy data in order to fit the analysis required in the research.

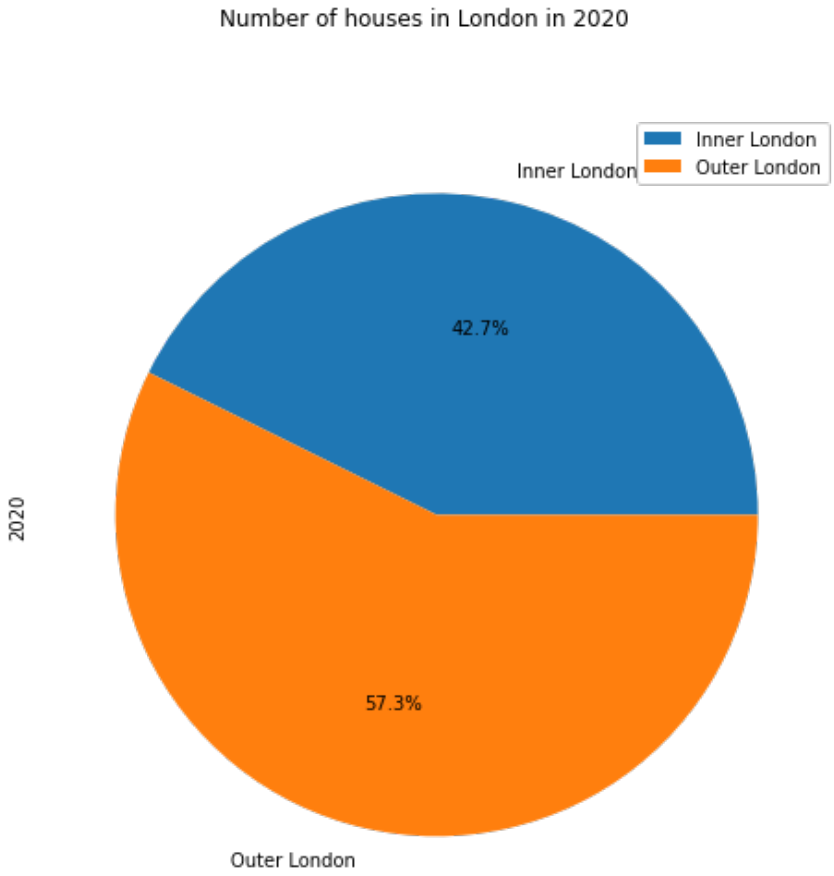
The research was made with data and charts created in Jupyter Notebook, which is a very useful tool for data visualisation and reporting.

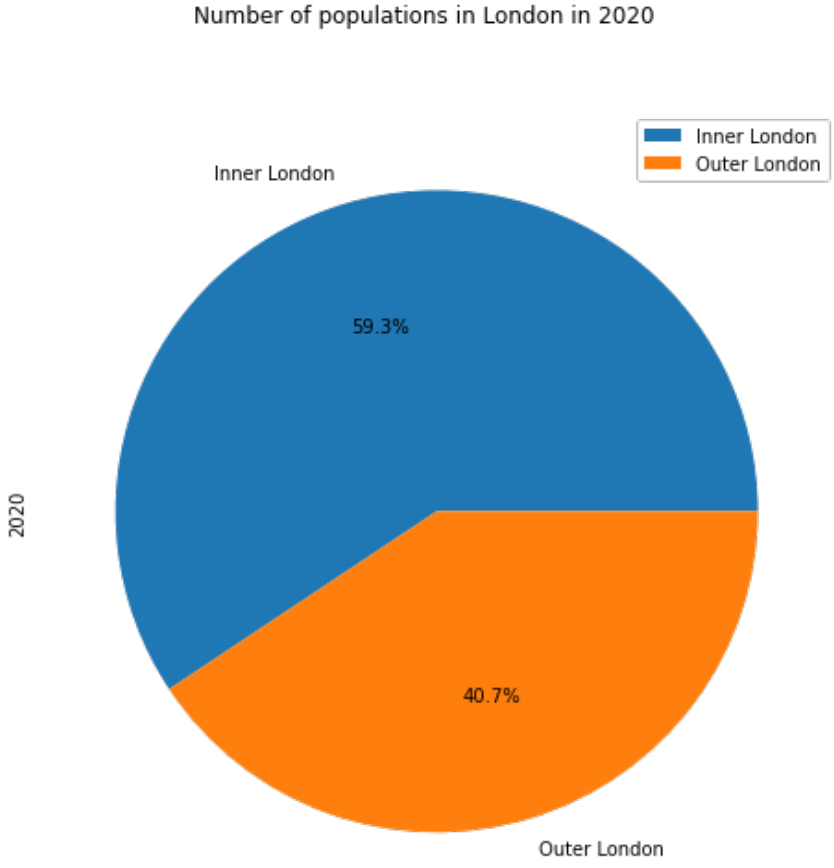
Analysis and results

Number of houses versus populations in inner and outer London in 2020

The first chart shows a greater percentage of dwellings in outer London, accounting for 57.3 per cent of the total houses in the city in 2020. In contrast, the proportion of the population in the same timeline is denser in the inner part of the English capital, as suggested by the chart below. In detail, 59.3 per cent of the population lived in the inner boroughs of London, and 40.7 percent lived in the outer boroughs in 2020.

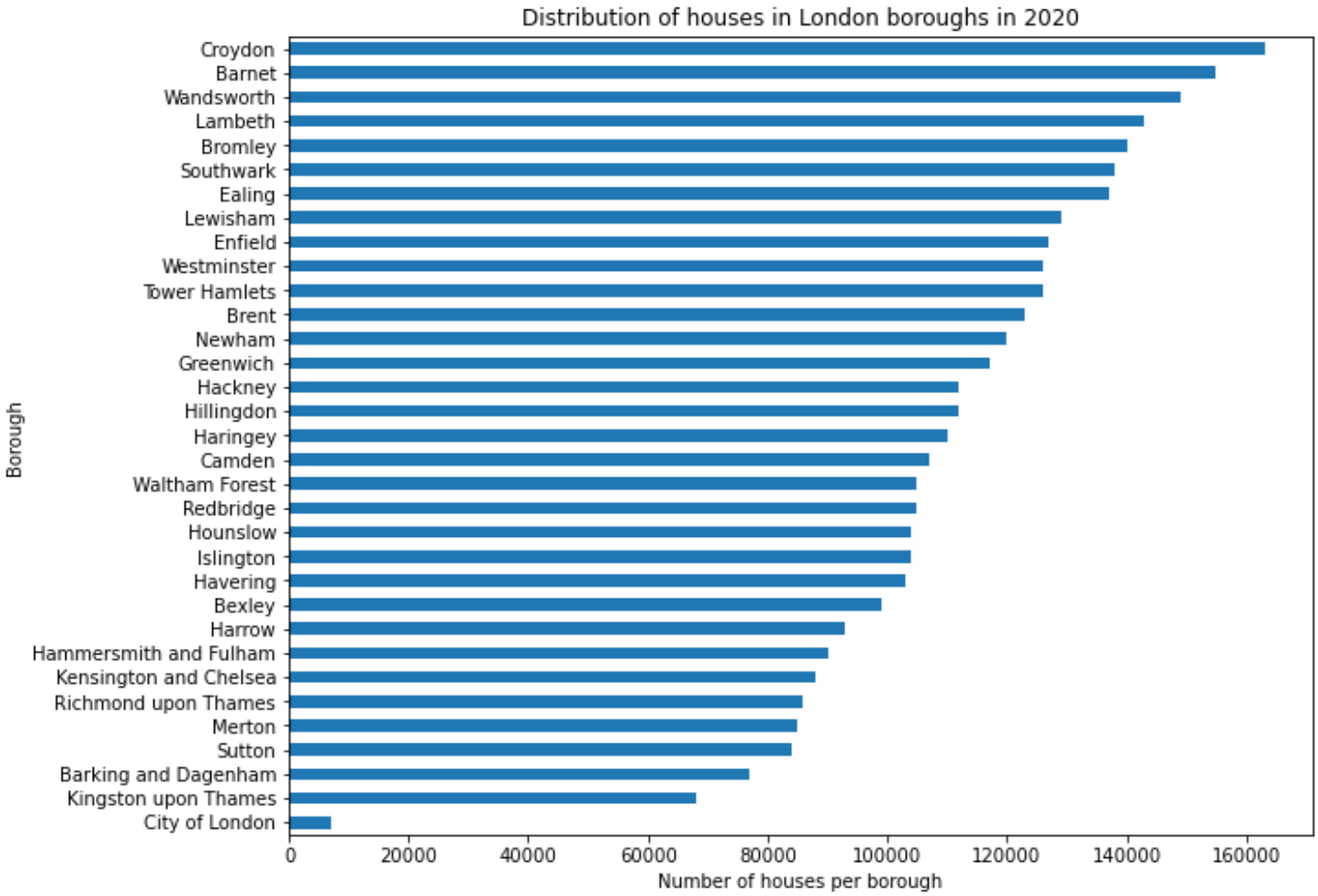
Based on this observance, it is suggested that there is a disproportion between populations and the number of houses in inner London. This result also fits into the narrative of increasing numbers of foreigners moving to the UK, particularly London, as well as their preference for living in the heart of the country's busiest city. Meanwhile, the house numbers had fallen to keep up with the rising populations in London, as there are fewer homes but more people living in the inner boroughs of the city.

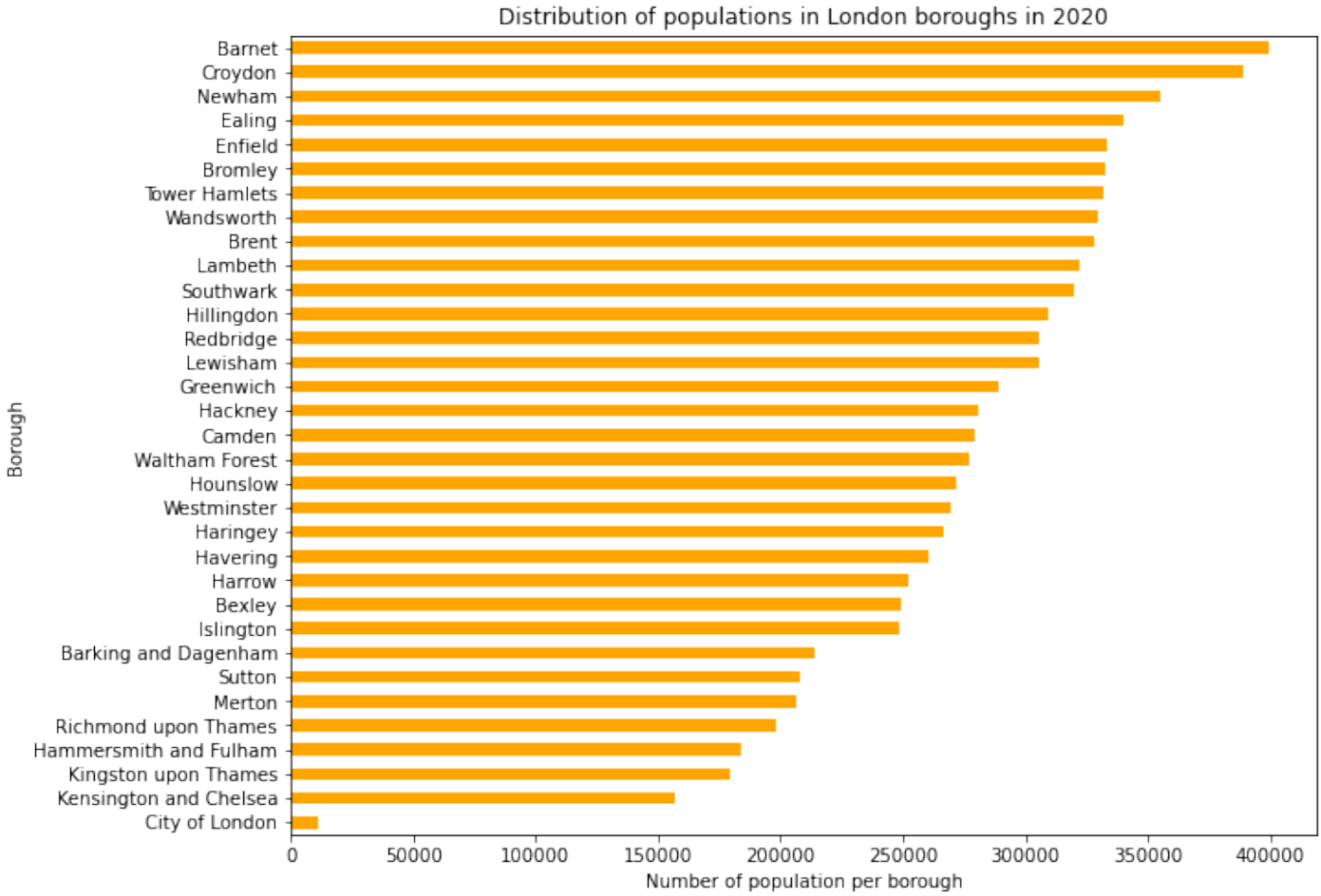

Number of houses in London in 2020
Inner London
Outer London
Inner London
42.7%
2020
57.3%
Outer London


Number of populations in London in 2020
Inner London
Outer London
Inner London
59.3%
2020
40.7%
Outer London

Distribution of houses and populations in London boroughs in 2020

Looking more closely at the two bar charts, it was discovered that Croydon borough has the most houses in London and ranks second in terms of population. Meanwhile, Barnet is the borough with the largest population in the capital and the second on the list for the number of dwellings. The City of London remains at the bottom of both rankings, with far fewer homes or a smaller population than the rest of London.

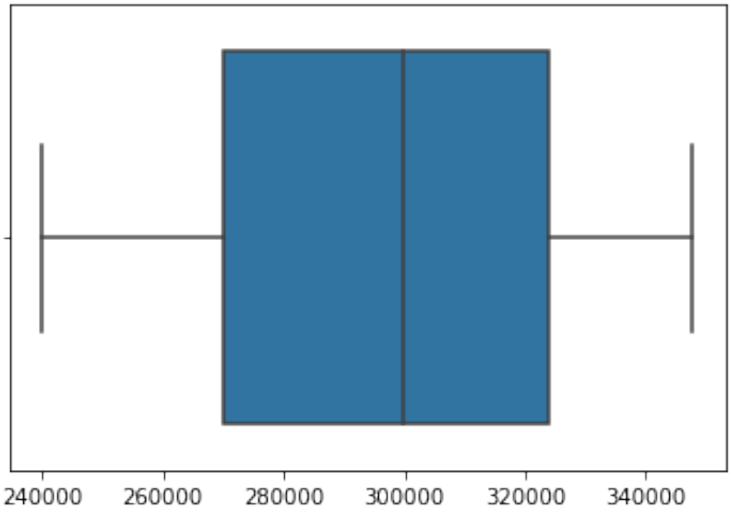




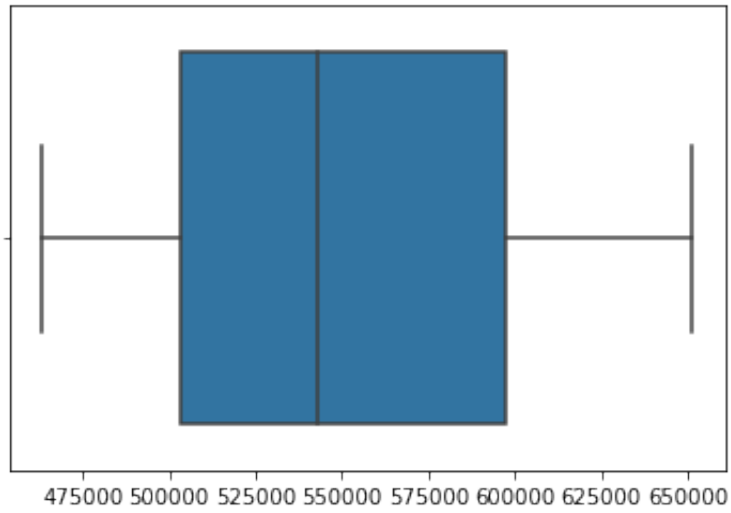
Average house price in London boroughs in 2010 and 2020

The box plot graphs below provide an overview of the range of the cost of dwellings in the capital city between 2010 and 2020, allowing us to investigate the distribution of average house prices in London. The 2010 box plot is skewed to the left, indicating that there was a wider range of house prices below the median London house price of £299,864 than previously. In 2020, the median house price had increased to £542,951. The 2020 box plot is right-skew, showing that there is a larger range of house prices above the median London house price compared to below.

Comparing these two boxplots, we can see that not only has the median London house price increased, but there has been a shift in the distribution of the price of houses in London. Whereas in 2010 there was a larger distribution in the price of houses below the median house price, in 2020 there was a larger distribution in the price of houses above the median, conveying that there has been an increase in the range of more expensive, luxury housing.



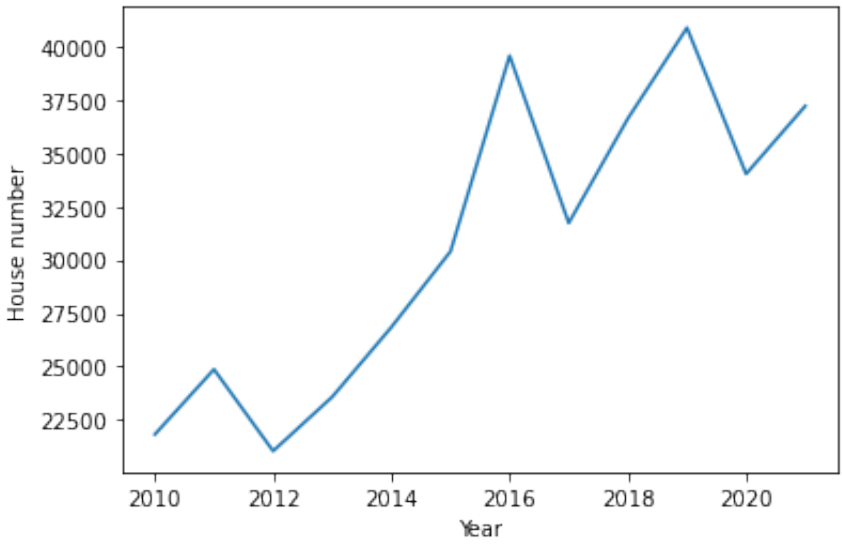
Average house price in London boroughs in 2010



Average house price in London boroughs in 2020

Number of additional houses in London from 2010 to 2021

Meanwhile, the line chart shows the increase in the number of additional houses in the first half of the studied period, but in the second half, it remained mostly unchanged. This suggested that the city had not built enough houses to keep up with the city's population growth, and therefore, more and more people have been forced to share houses, especially in inner London neighbourhoods, where a large proportion of residents gather.

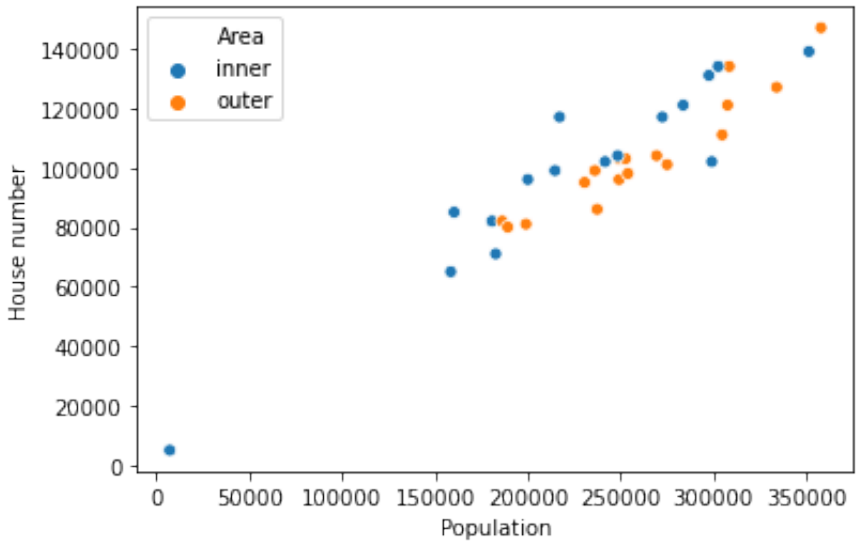


Distribution of population and number of houses of inner versus outer boroughs in London in 2010 and 2020

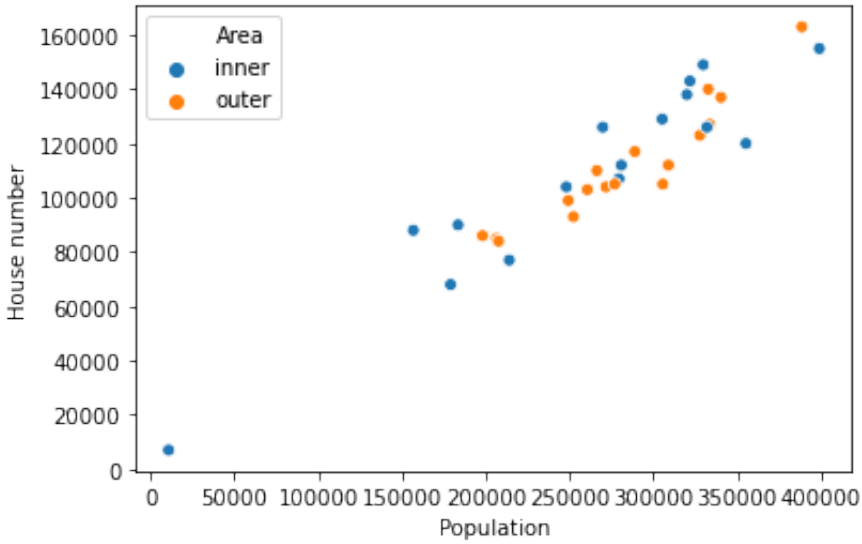
Ultimately, both of the scatter plot graphs show that most of London's inner and outer boroughs gather in the same cluster, except for one outlier point that represents the City of London. This borough has a much lower population and fewer houses in comparison with other areas of the city.

Furthermore, the graphs also reveal that there are more people and houses in inner London than in the outer part of the city in 2010 and 2020, as the blue plots representing inner boroughs in the city are located in a higher position than the orange plots accounting for outer boroughs. We can also see an upward trend in both the number of houses and the population, which means houses are being built in areas where there are larger populations.

Interestingly, the groups of plots in the 2020 chart look more separate than those in 2010, suggesting that the distribution of houses and populations has varied in the last decade. Also, in the graph for 2020, there are two more outliers that are higher than the rest of the main cluster. In 2010, these outliers are still in the main cluster. They are Croydon and Barnet boroughs, as shown in the bar charts above, with a larger number of houses as well as residents.



Distribution of population and number of houses of inner versus outer boroughs in London in 2010



Distribution of population and number of houses of inner versus outer boroughs in London in 2020

Chart design

As designing charts is a very essential part of the data analysis, considering they are a way to condense large amounts of data into an easy-to-understand format. Visualizations of data can bring out insights for someone looking at the data for the first time, as well as convey findings to others who won't see the raw data. Therefore, choosing the right type of charts is an important step in processing the research in order to make it more understandable and attractive to the public.

In the research, the pie charts were used to compare between two main variables; hence, they are a quick and easy way to compare data across categories, highlight differences, show trends, and identify outliers at a glance.

Meanwhile, the bar charts are the more effective ones when it comes to dealing with a large number of variables and showing them in order, especially since they are quantitative.

One of the most common charts in data visualization, the line graph allows you to connect several distinct data points, presenting them as one continuous evolution. Using line charts to view trends in data, usually over time, is one of the most simple and straightforward ways to visualise changes in the sample population.

On the other hand, a box plot enables one to study the distributional characteristics of a group of variables, in this case, the average price of houses in London's boroughs. It is a useful tool for visualising the range of home prices and the overall trends in this area.

Lastly, the scatter plot graph is a useful tool to show how one variable relates to another in descriptive statistics. Besides, it also helps to reveal the distribution patterns of the dataset when looking for outliers or understanding the distribution of the samples.

As pointed out by scientists and researchers, the use of colour is powerful for human perception in data visualization. Therefore, the research aims to use primary and uniform colours for all the charts in order to reduce the time to insight for viewers and help them understand the information in easier and more effective way.

The last thing left to mention is that because a histogram chart is not a suitable tool for illustrating the type of data and analysis in this report, other kinds of charts were chosen to visually represent the data and convey the messages more effectively.

Conclusions

The research suggested that the rise in the number of houses has not kept up with demand as the population in London has grown quickly in the last decade. Also, the average price of a home has gone up over time because more and more expensive buildings are being built in the capital, and there is a high demand for housing because so many people are moving to the city.

Experts have warned that the mismatch between housing supply and need has had drastic consequences for affordability. HomeTrack data shows that rents in England went up by an average of 2 per cent per year over the last ten years. In London, where housing supply was lowest compared to population growth, rents went up by between 2.4 per cent and 3 per cent per year.

On the other hand, London has a total of 89,508 vacant houses, according to the latest data published on the government website, making it the top city in the UK for the prevalence of empty properties. With house prices averaging £542,000, as indicated by the report made by the Office for National Statistics, the cost of vacant homes in London is approximately £48.5 billion.

Looking closer at the data, over 30,600 homes lie empty long-term, which includes residential properties that are left unoccupied for six months or more.

Meanwhile, nearly 300,000 people in London are on a social housing waiting list, and 56,500 households, including 75,850 children, stay in temporary housing, accounting for 59 percent of those in England.

Campaigners across London have called for urgent actions as the city has reached a critical point where there are too many people without homes and too many homes without people.

London is in the grip of a housing crisis, and the solution must include more than just creating thousands of new affordable houses; putting vacant homes back into use must also be part of the approach. Also, home remodelling and retrofitting can make a big difference in efforts to stop climate change.

Local activists have been asking for the passage of the Levelling Up and Regeneration Bill, which will allow the local authorities to force empty home owners to pay a council tax premium after one year instead of two.

Moreover, experts suggested London needs to focus on meeting local housing needs rather than investors' priorities to fill homes; that means getting to grips with the long-term empty homes in the capital, regulating Airbnb usage, and supporting local communities that want low-cost homes rather than unaffordable ones. or never even get a chance to rent.

Access to secure, decent housing is a basic human right for everyone. In the capital city, the supply of housing has not kept up with demand as the population has grown quickly in the last decade. In this situation, London needs a better housing plan if it wants to keep being one of the most desirable places to live in the world.

References

1. Equality and Human Rights Commission (2011). Human rights at home. Available at: https://www.equalityhumanrights.com/sites/default/files/human_rights_at_home.pdf (https://www.equalityhumanrights.com/sites/default/files/human_rights_at_home.pdf) (Accessed: 10 January).
2. Greater London Authority (2022). Housing in London 2022.
3. K. Dale (2016). Data visualization with Python & Javascript: Scrape, clean, explore & transform your data. Sebastopol, CA, USA: O'Reilly Media.
4. Wickham, H. (2014). Tidy Data. Journal of Statistical Software.
5. W. Mckinney (2017). Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython. Sebastopol, CA, US: O'Reilly Media.

Word Count

The following code will count the number of words in Markdown cells. Code cells are not included.

- `Main word count` is the number of words in the main body of the text, *excluding* references or appendices.
- `References and appendices word count` is the number of words in any references or appendices.

Only `Main word count` relates to the assignment word limit. There is no limit to the number of words that can be included in references or appendices. Please note that appendices should only be used to provide context or supporting information. *No marks will be directly awarded for material submitted in appendices*.

Important:

- Please do not modify the word count code!
- To exclude references from your word count **you must** have a cell that starts with the text `## References`. Everything below this cell will not count towards the main word count.
- If you are submitting additional material as appendices **you must** have a cell that starts with the text `## Appendices`. Everything below this cell will not count towards the main word count. If you do not have any appendices you can delete the `## Appendices` cell.
- Code comments should only be used to explain details of the implementation, not for discussing your findings. All analysis commentary **must** be written in Markdown cells. *No marks will be awarded for analysis discussion submitted as comments in code cells*.

In [6]:
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%%js

// Run this cell to update your word count.

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    let extraCount = 0
    let mainBody = true

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    cells.forEach((cell) => {
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            // Stop counting as main body when get to References or
Appendices.
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                text.startsWith('## Appendices')) {
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g)
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                    } else {
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                }
            }
        }
    })
    return [wordCount, extraCount]
}

let wc = wordcount()
element.append(`Main word count: ${wc[0]} (References and appendice
s word count: ${wc[1]})`)
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