



HOW CRIME IN THE METROPOLITAN POLICE DISTRICT HAS CHANGED IN 17 YEARS?

Comparing crime around Goldsmiths University or the Borough of Lewisham, and other boroughs.

CONTEXT

Research Question and Background

This report intends to address the question of “[how crime in the metropolitan police district \(mpd\) has changed in 17 years?](#)“ This report will also be exploring crime rates specific to the borough of Lewisham, where Goldsmiths University is situated, and its surrounding boroughs.

In 2013 an article by Channel 4 highlighted that “[Lewisham was named the most unsafe place in the country](#)”. Many factors went into this decision such as “[murder rate, the violent crime rate, the weapons crime rate, the public disorder offences rate, and the number of police officers per 100,000 people](#)” ([appendix A](#)). Although it would be interesting to dive into all these areas, it would be out of the report’s scope. Hence deciding to go with the crime rates and recorded offences of the London boroughs. The ‘[recorded crime](#)’ is the exact frequency of offences in London. The ‘[crime rate](#)’ on the other hand is per thousand population, which means it takes the size and population of the borough into consideration and can be fair compared in the future. It would not be inappropriate to measure and compare the frequency of crimes where the populations are drastically dissimilar, i.e. a population 1,000 compared to 13,000.

Also in the article, it states that London boroughs “[Lambeth, Hackney, Newham and Tower Hamlets](#)” followed behind Lewisham as some of the “[least peaceful](#)” places in England. I will also be looking into comparing all 5 of these boroughs.

Data Source, Format and Cleaning

The dataset used for this report was in the form of an Excel (.xlsx) workbook and was retrieved from <https://data.london.gov.uk> ([appendix B](#)); it was provided by [Metropolitan Police Service](#). It was clear what type of data was needed so it was fairly easy to search a few platforms for it before eventually finding it at [London Datastore](#).

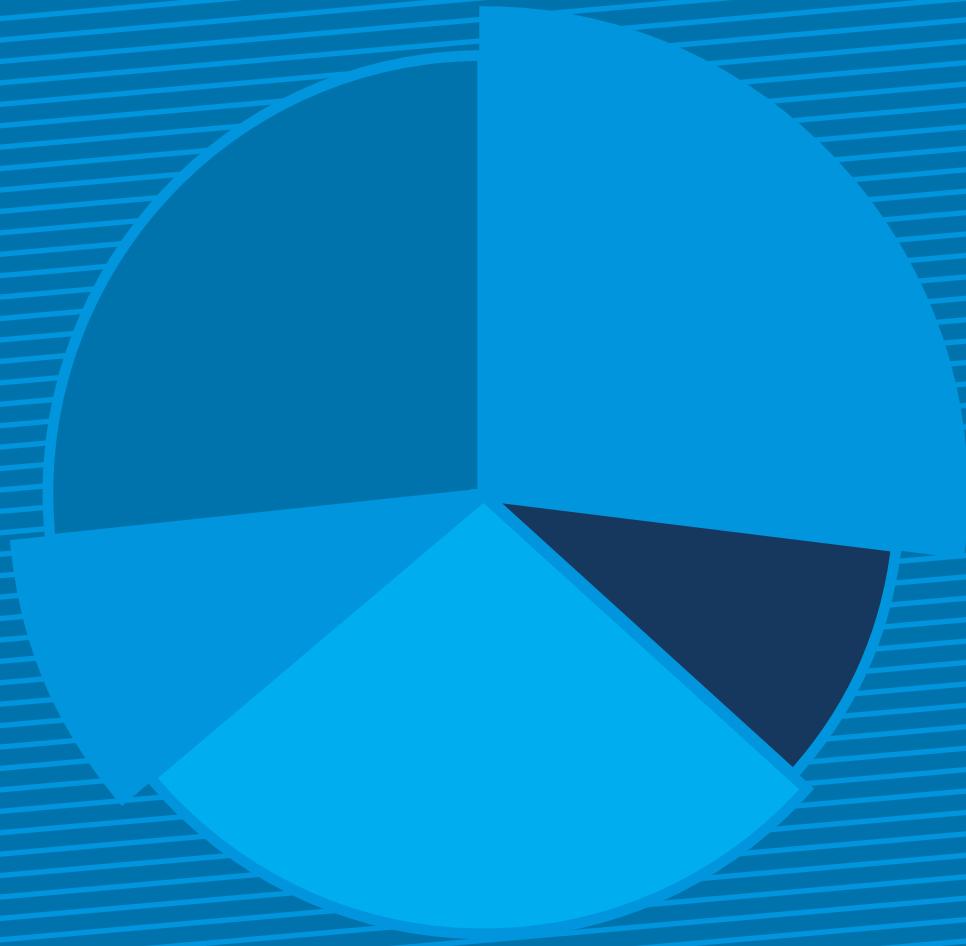
The data was conveniently stored in an accessible manor, with two main sheets for crime rates and recorded offences that have the exact same structure. The columns were 1 year periods repeated a few times as there were multiple categories, however the formatting of the year was difficult to work with in pandas so I changed it from [1999-00](#) to simply [1999](#). I later defined these columns as yearly periods so it was accurate in its description. There were a lot of rows that were empty for the sake of readability, but rather than alter them in the Excel, they were skipped when reading the file with Pandas.

The data itself is very good quality and informative, but it would have been preferable if I could obtain more recent data on crime rates as this dataset is from 1999 to only 2016. It would indeed be interesting to see the more recent trends.

I also plotted a geographic heatmap of which the shapefile for the boundary map was retrieved from <https://data.london.gov.uk> ([appendix C](#))

DATA

DATA VISUALISATION



Variables of Interest

One significant variable is 'year' as it is used as an index and most often a point of comparison to observe the pattern of crime over a period of time. Similarly, another significant variable is 'borough' which is a categorical variable. It is also used as a unique ID and pivotal for comparing too. The rest of the data is numerical data, but some of the more important variables I use are:

crime_freq - overall number of criminal offences

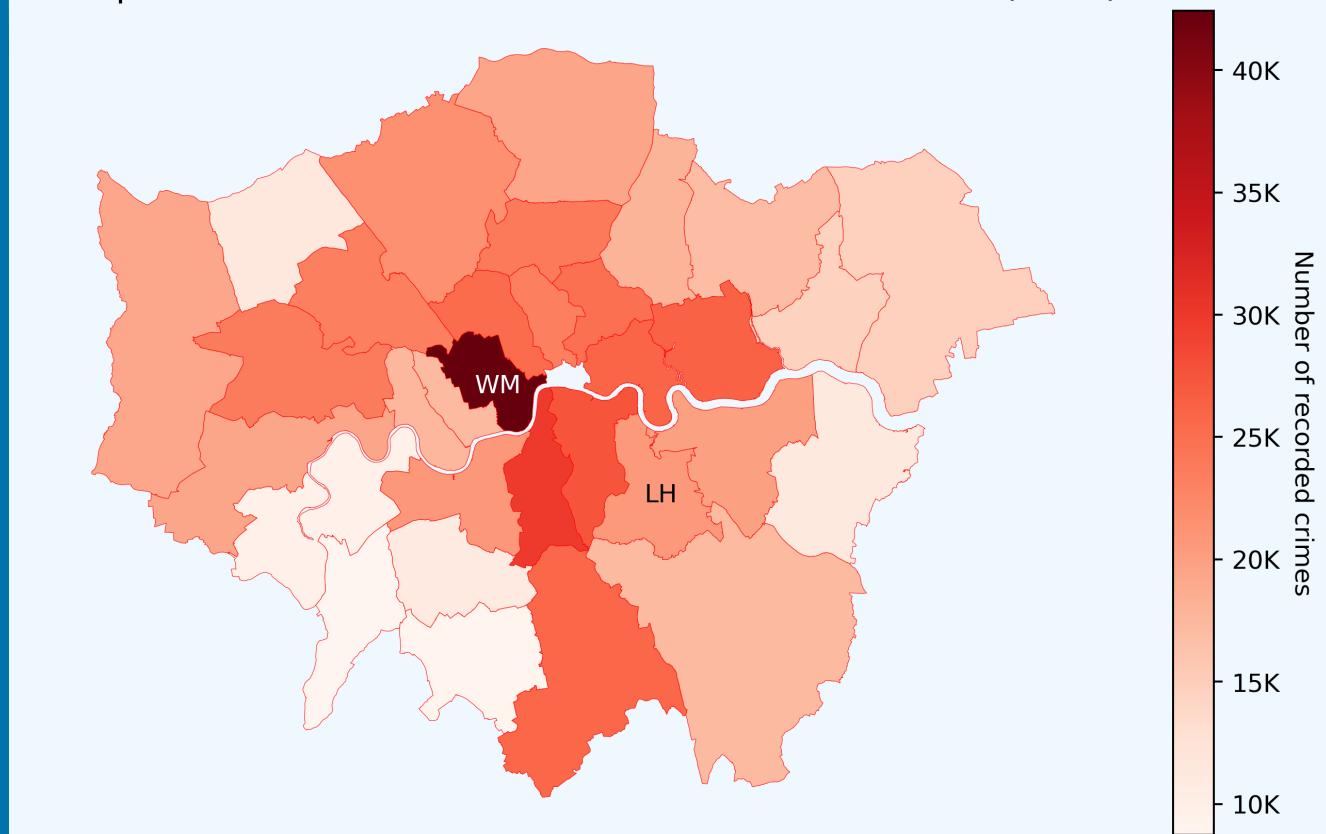
crime_rate - crime rate per thousand population

This report starts off analysing the general trends and patterns of crime across all the London boroughs.

ALL CRIME IN LONDON METROPOLITAN POLICE DISTRICT

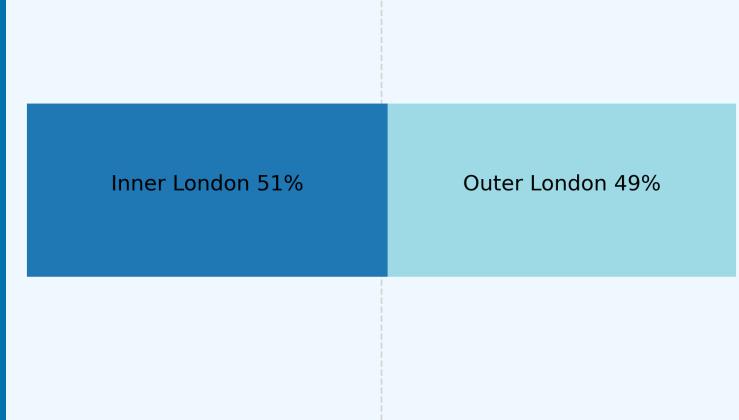
Geospatial heatmap of crime in London

Geospatial Visualisation of Criminal Incidents in London(2016)



2016 Crime Rate Comparing Inner/Outer London

Looking at this heatmap, the dark red/maroon is easily noticeable as the darkest and has the highest frequency in crime, this borough being Westminster(WM), with Lewisham(LH) sitting roughly in the middle. The stacked bar highlights that crime is greater in Inner London, this is supported by the heatmap.

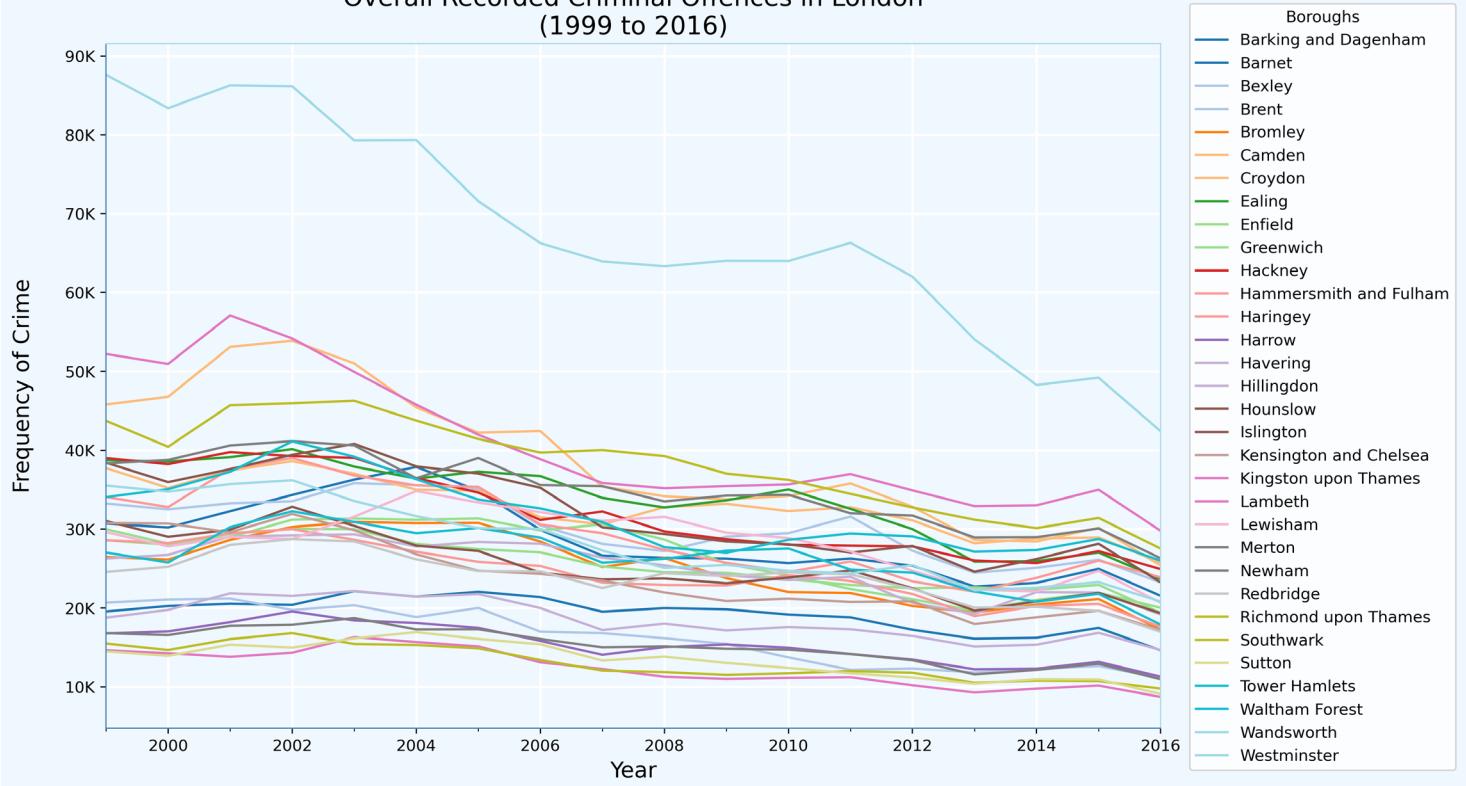


ALL CRIME IN LONDON METROPOLITAN POLICE DISTRICT

Time series plot of all crime in London boroughs

1999 to 2016

Overall Recorded Criminal Offences in London
(1999 to 2016)

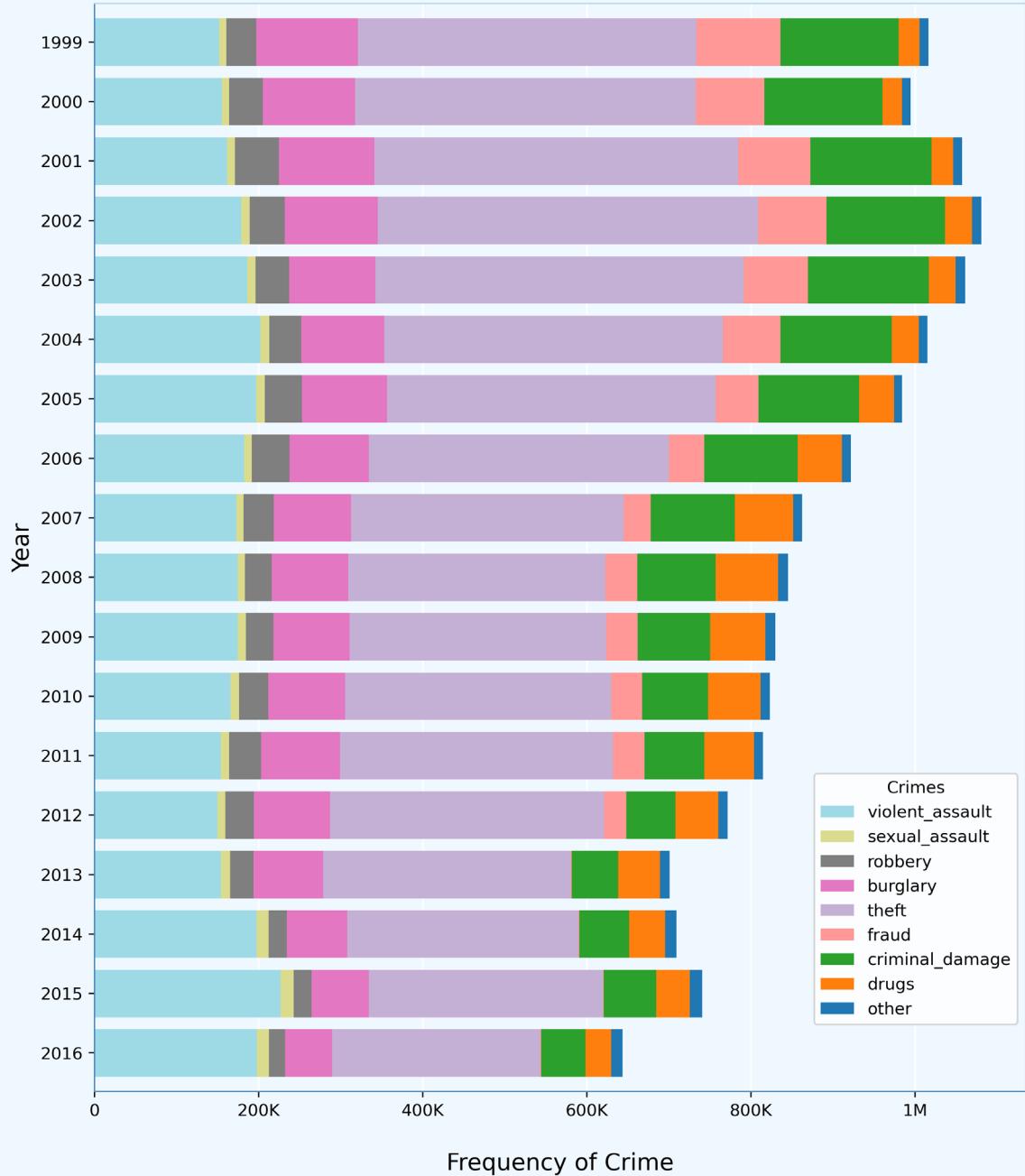


This time series graph shows the general rise and fall of the frequency of crime, the accelerated rise from 1999 to 2002 followed by the gradual decrease for most boroughs. There are definitely boroughs that are increasing in crime frequency but the overall flow of the line paints over that.

ALL CRIME IN LONDON METROPOLITAN POLICE DISTRICT

Stacked chart of categorised crime in London

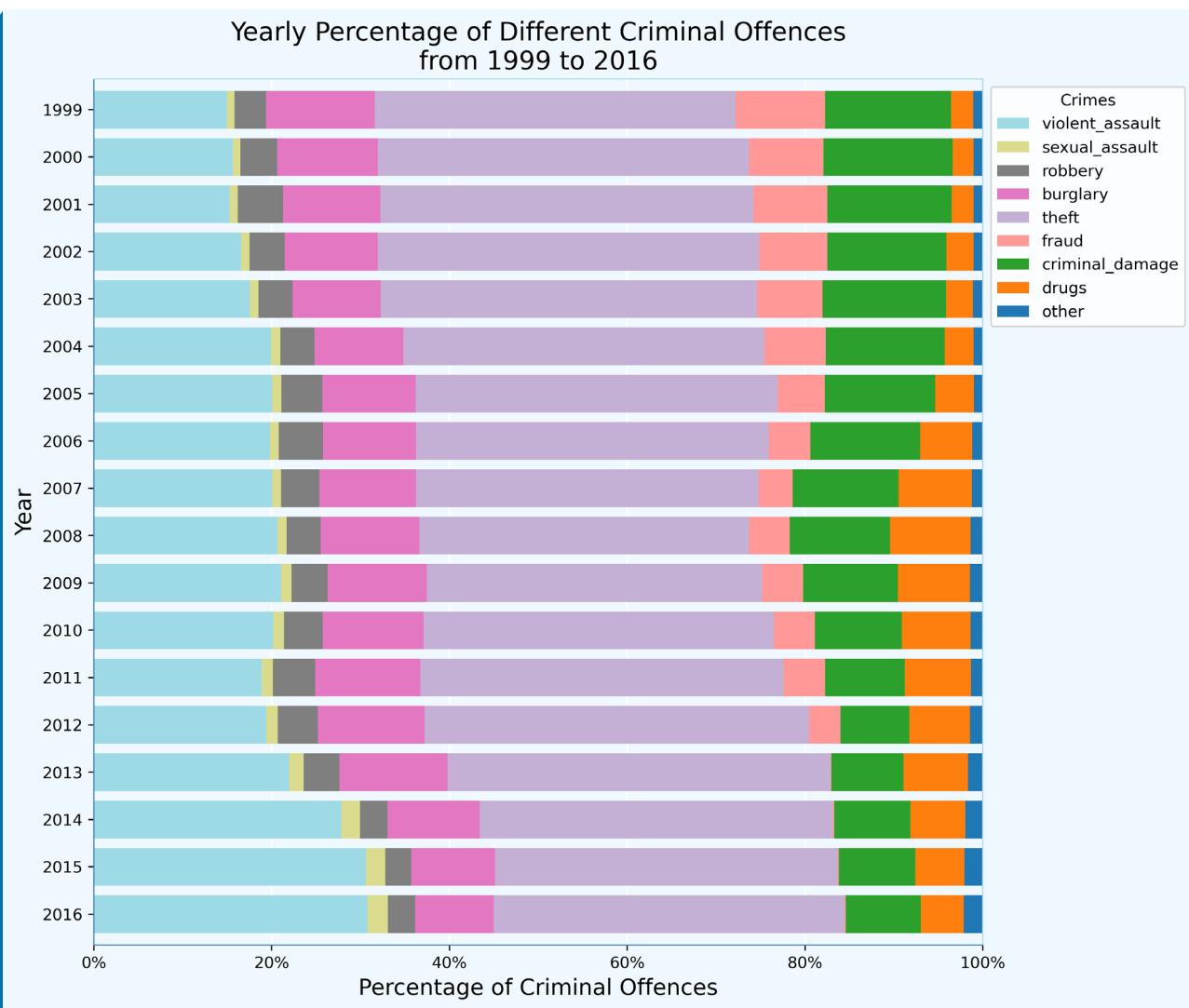
All Criminal Offences from 1999 to 2016
with Specific Offence Type



From 2012 onwards, the number of violent offences steadily started rising, and the number of thefts started declining. 2002 has the highest crime numbers of any other year.

ALL CRIME IN LONDON METROPOLITAN POLICE DISTRICT

Yearly Percentages of categorised crime in London



Lilac is most prominent colour so you can see that the largest number of offences in any given year is theft.

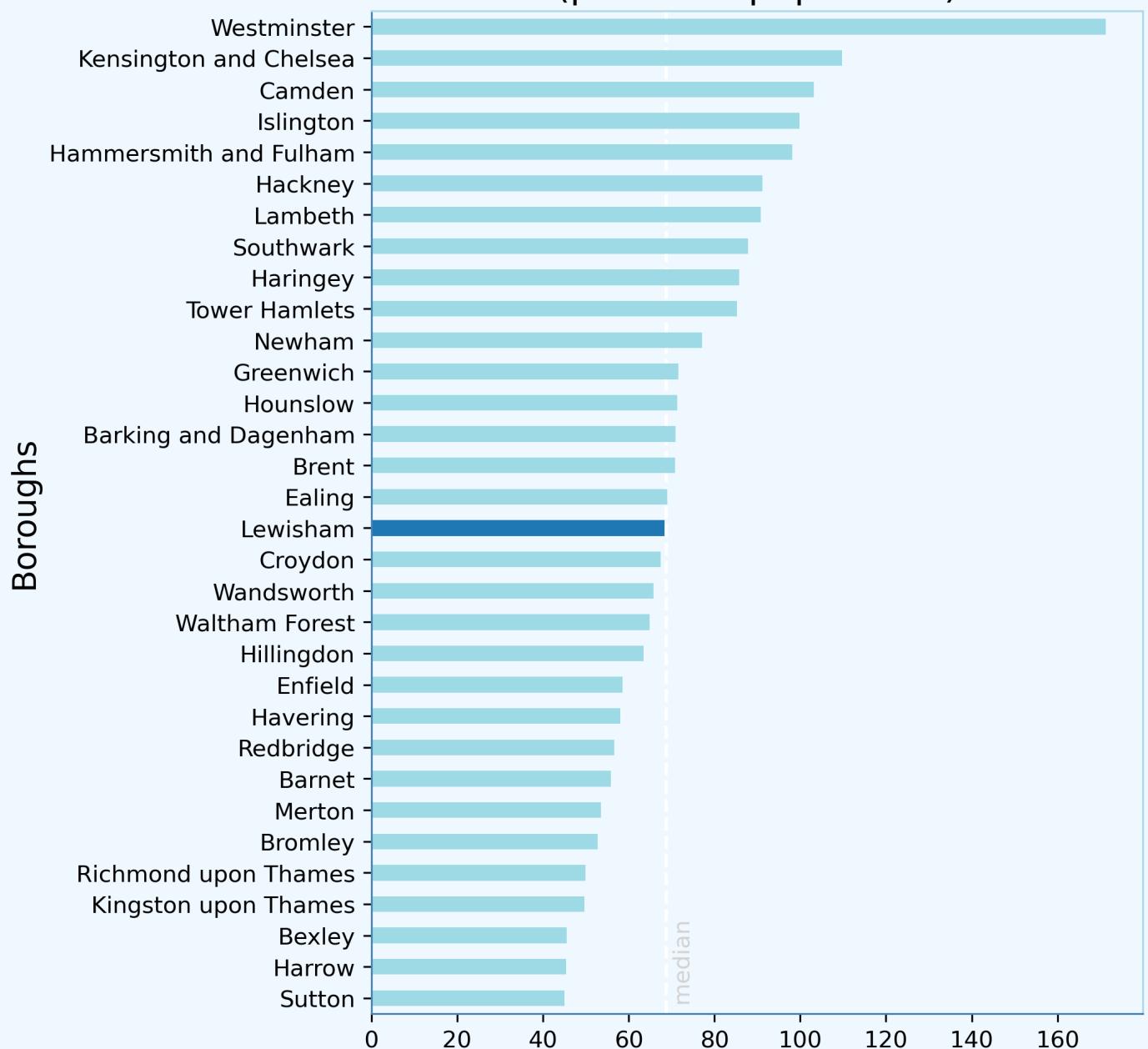
Number of violent offences increase by 10% from 1999 to 2000



ALL CRIME IN LONDON METROPOLITAN POLICE DISTRICT

Horizontal bar chart of crime rates in London by Borough

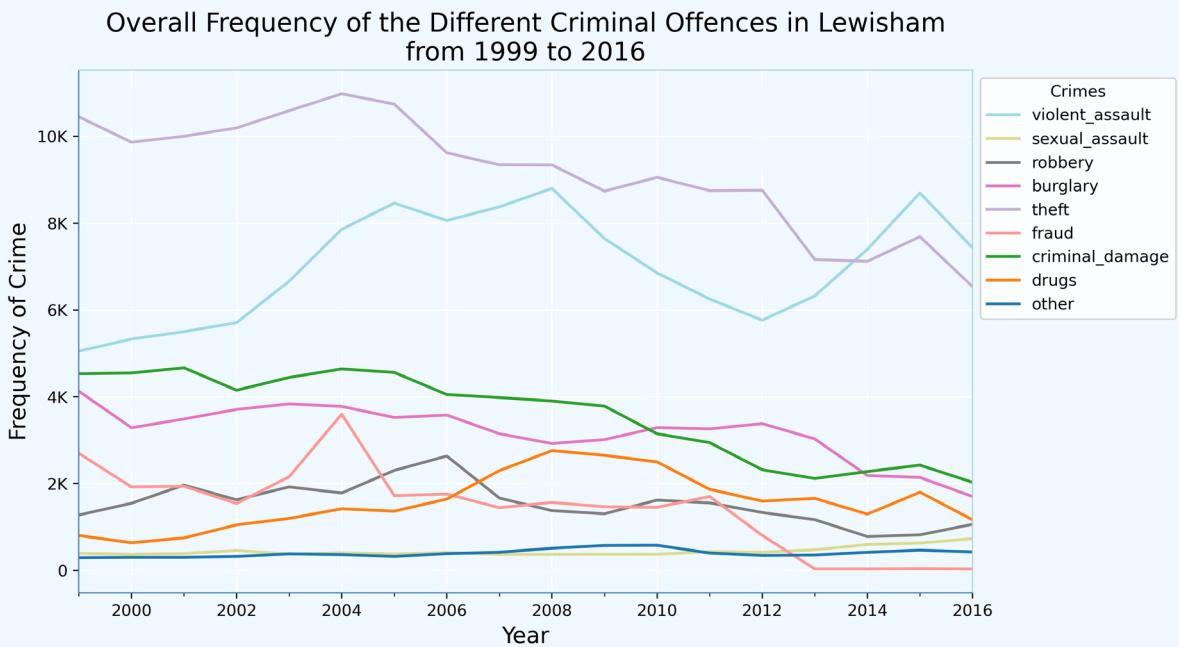
Crime rates of London Boroughs in 2016
(per 1000 population)



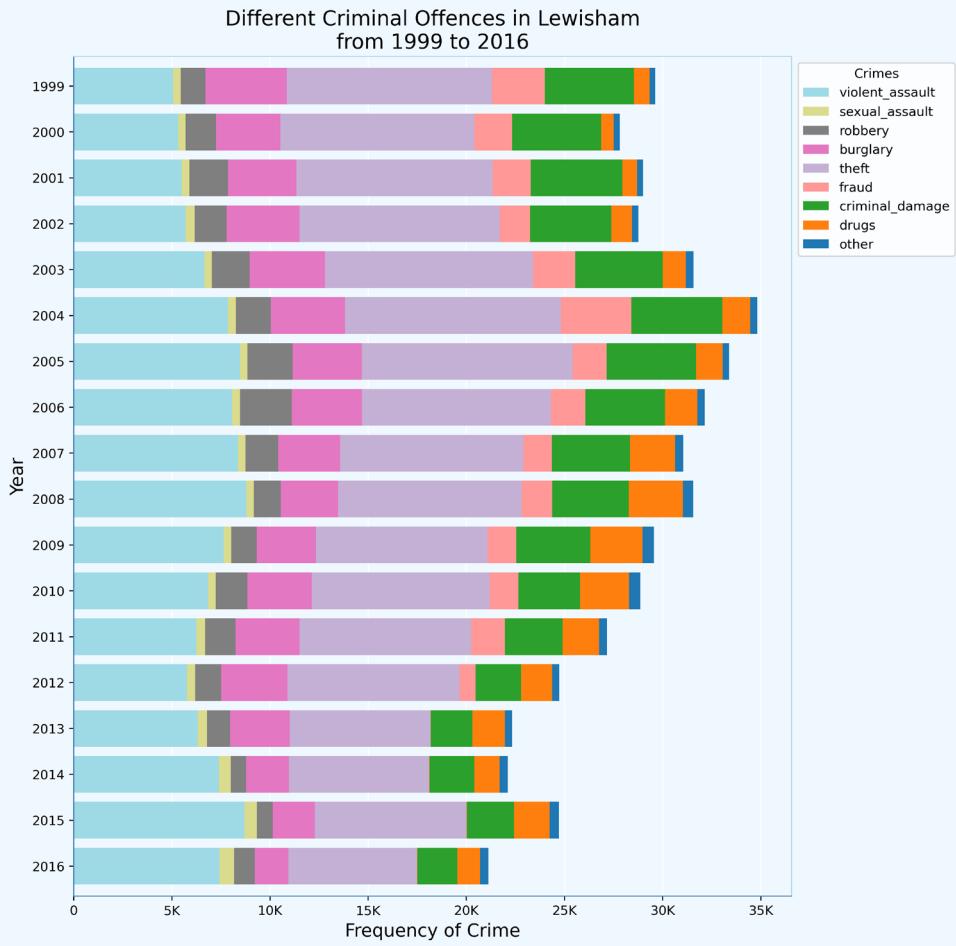
Lewisham is shown to be below or just touching the median for crime rate (per 100 population), whereas Westminster is more than double the median going above 160.

LOOKING AT CRIME IN LEWISHAM

Time-series and stacked bar chart of categorised crime rates in London



As of 2014, violent offences over took theft with a harsh increase of violent offences from 2012.

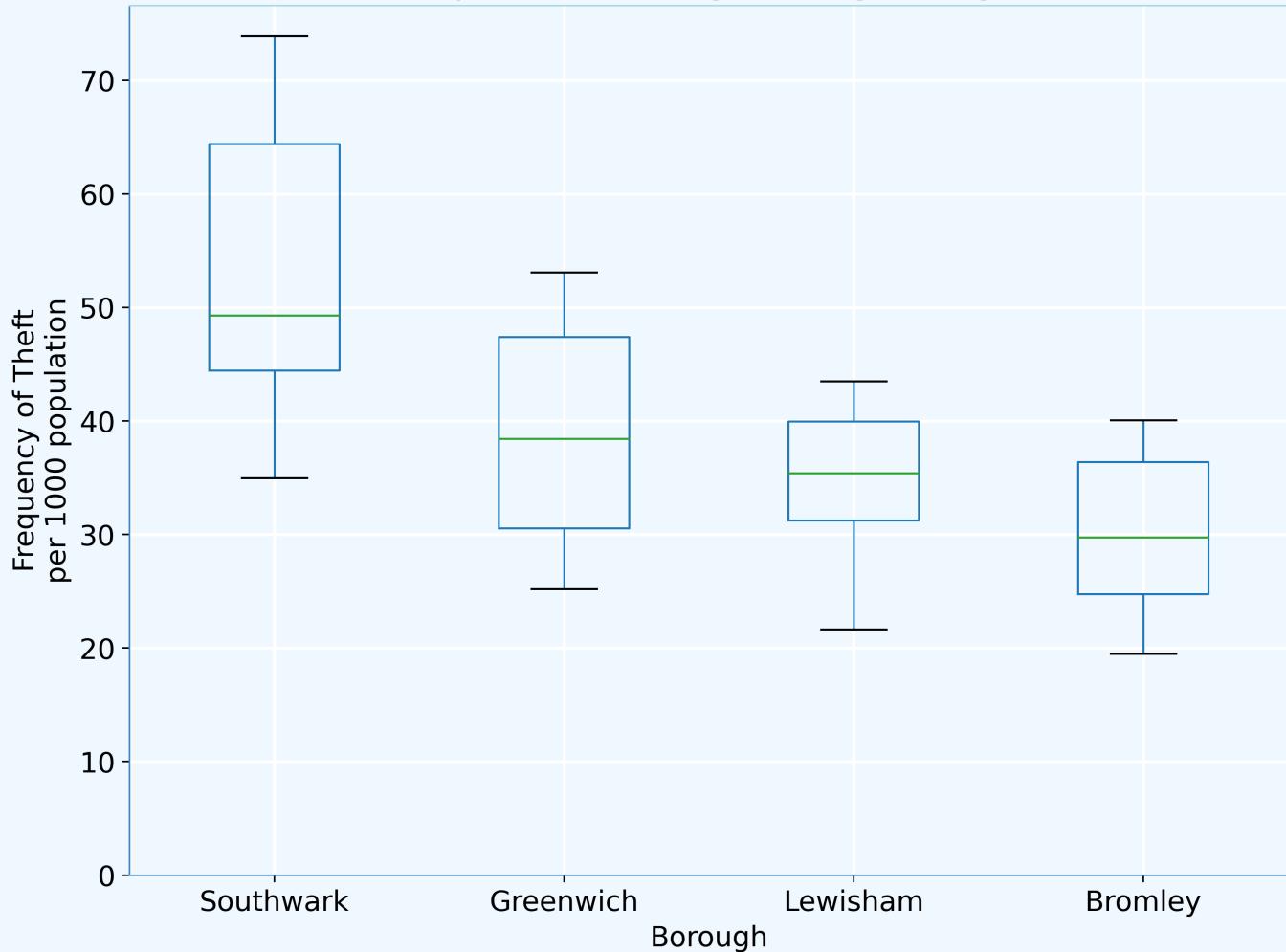


Overall crime in Lewisham reached an all time low in 2016. 2006 onwards robbery offences are gradually declining.

LOOKING AT CRIME IN LEWISHAM COMPARED TO ITS NEIGHBOURING BOROUGHS

Boxplot for theft over 17 year in Lewisham and 3 boroughs

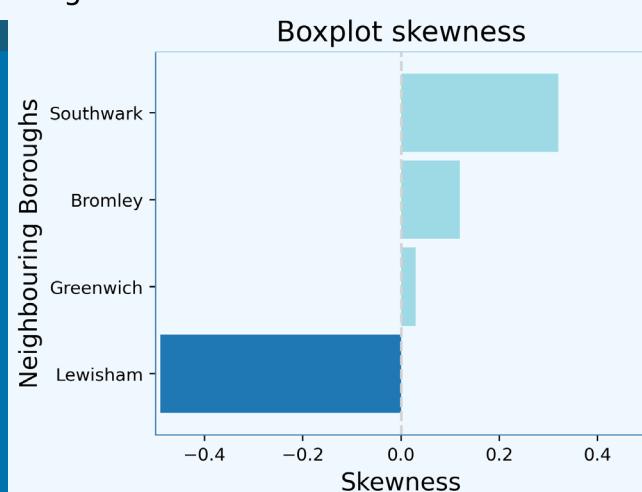
Frequency of Theft in Lewisham from 1999 to 2016 compared to it's neighbouring boroughs



Southwark has the largest distribution of data and largest interquartile range (IQR).

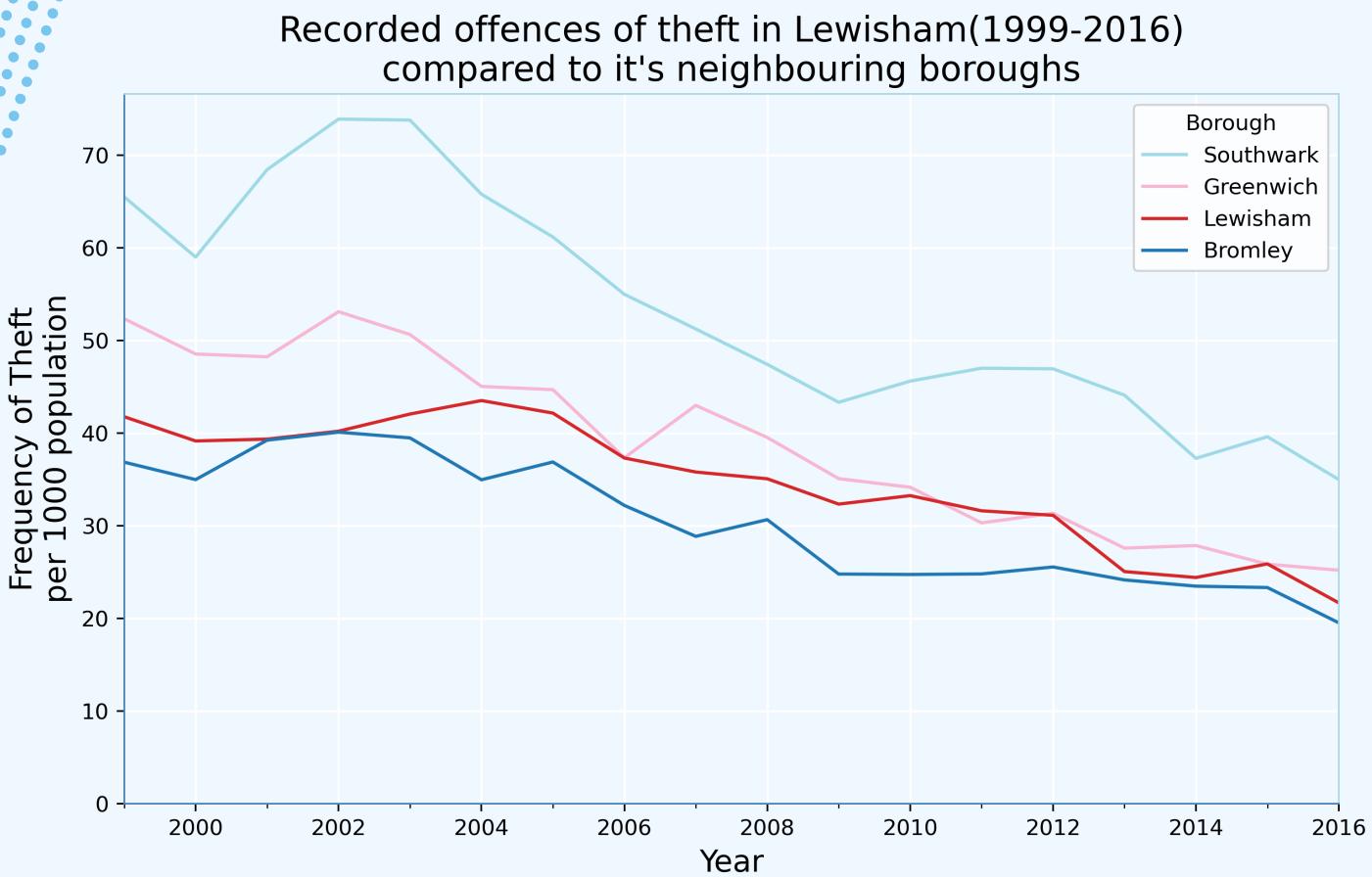
Lewisham has the smallest distribution of data when it comes to theft, but Bromley has the lowest median.

Lewisham's IQR is smallest than all other boroughs



LOOKING AT CRIME IN LEWISHAM COMPARED TO ITS NEIGHBOURING BOROUGHS

Time-series for theft over 17 year in Lewisham and 3 boroughs



Much of this graph supports and emphasises the findings of the previous boxplot.

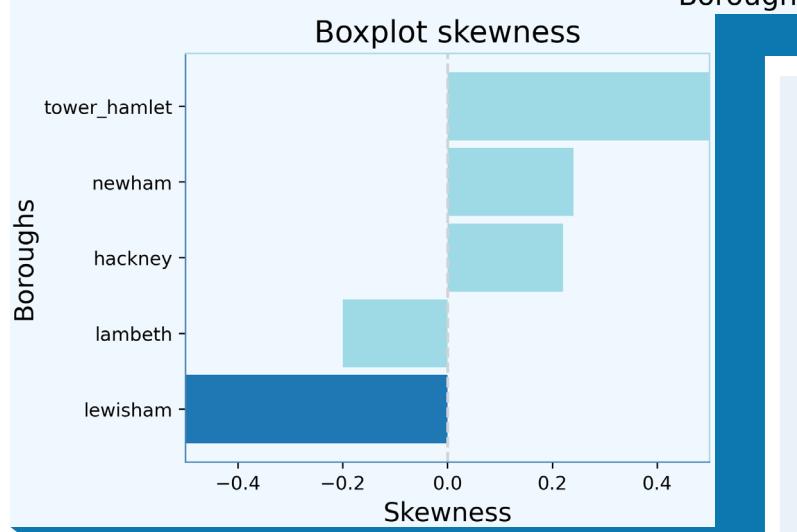
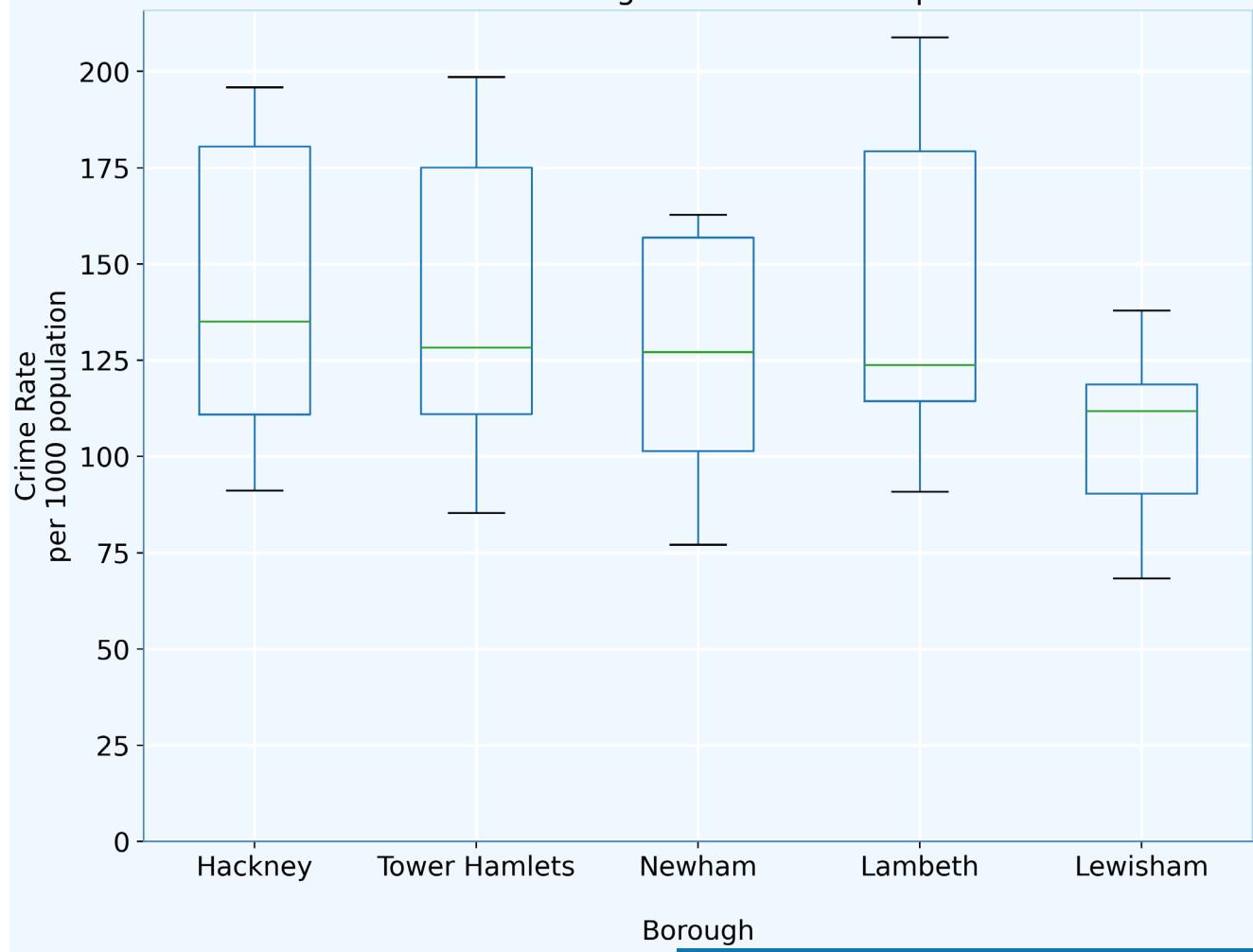
There is a steep dip for Southwark from 2003 to 2009, which is the large crime rate distribution.

Bromley has the smallest crime rate at any given point in the graph except 2001 to 2002 where it is roughly level with Lewisham.

LOOKING AT CRIME IN LEWISHAM COMPARED TO BOROUGHHS DEEMED "LEAST PEACEFUL"

Box plot of crime rates in the five Boroughs

Comparing the Crime Rate of Lewisham from 1999 to 2016 to the other boroughs deemed "least peaceful"



Lewisham has the lowest media of the 5 boroughs, as well as the smallest IQR.
Lambeth has a high max and large IQR but the median is a lot closer to the lower quartile.
Hackney has the highest median crime rate of the 5 boroughs over the 17 years.

LOOKING AT CRIME IN LEWISHAM COMPARED TO BOROUGHHS DEEMED “LEAST PEACEFUL”

Time-series of crime rates in Lewisham, Hackney,
Newham, Lambeth and Tower Hamlets

Time-series Comparing the Crime Rate of Lewisham, Lambeth, Hackney, Newham and Tower Hamlets from 1999 to 2016

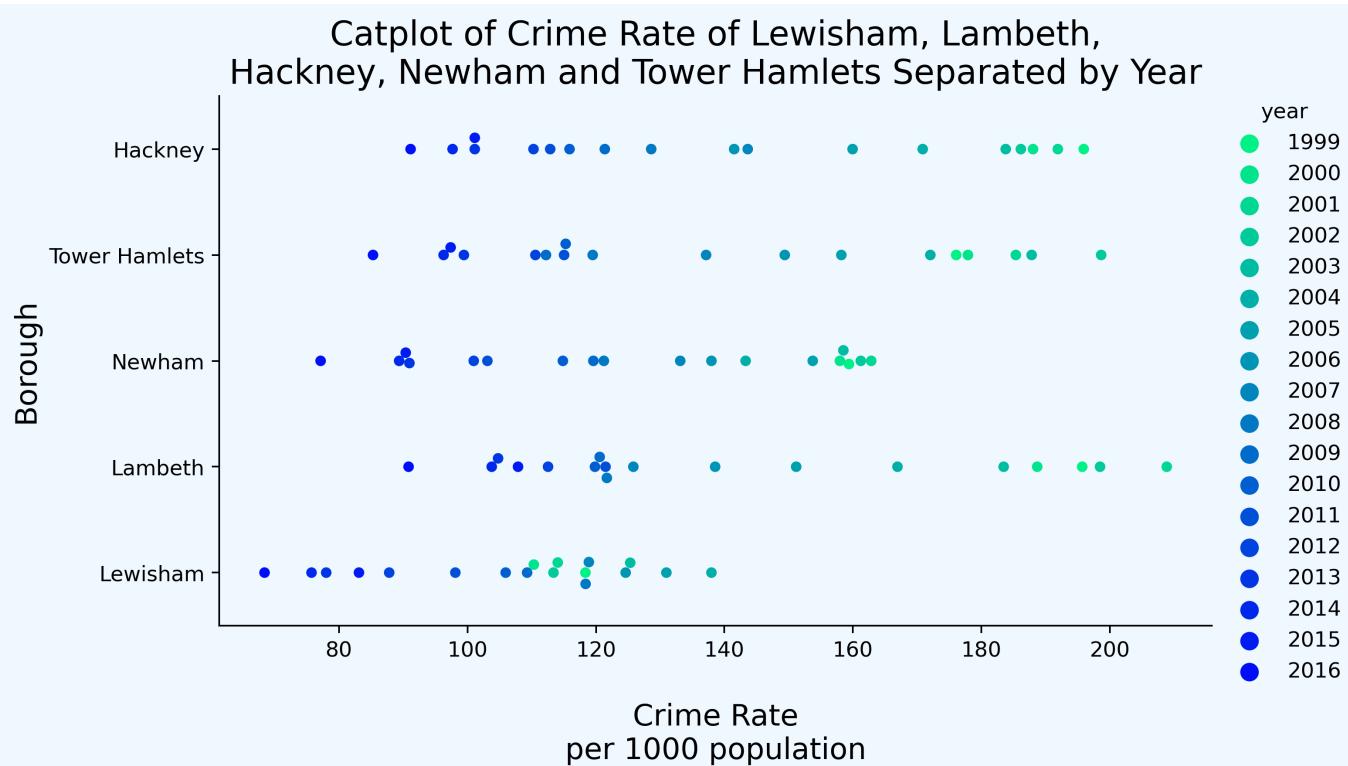


The highest crime rate of all boroughs is Lambeth in 2001, this supports the prior boxplot of Lambeth having the highest max. After 2001 is a fast decline.

All crime rates seem to be going down.

LOOKING AT CRIME IN LEWISHAM COMPARED TO BOROUGHS DEEMED “LEAST PEACEFUL”

Catplot of crime rates in the five boroughs



As seen in the prior box plot, most of Lewisham yearly crimerates are clustered within 100 and 140, explaining the small IQR.

Lambeth also has a big cluster around 120 and a few higher rates.

The crime rates of Hackney and Tower Hamlets both are quite spread out, hence the large IQR.

CONCLUSION

The crime rates in London overall are slowly falling, though there are some boroughs that are high in numbers.

Lewisham has high numbers of theft and violent offences, but surrounding borough also have similar or more.

Of the 5 “least peaceful” boroughs, Lewisham has the lowest crime rate over the years.

Theft was the biggest and most prominent offence but in more recent year violence offences are taking over .

I learnt a lot about the topic at hand and found out trends i didnt even think about.

In the code, I create a lot of function to avoid having to retype and it saved me time effort and space too.

As an improvment I would try an find data that cover 2017 to 2020 as it would be really interesting to see how things have changed since 2016.

Also to improve maybe I could look at datasets on other factors to see if I can find links to rise and fall in crime rate.

APPENDIX

- A) "Lewisham named 'least peaceful' place in the UK", Channel 4, 2013,
<https://www.channel4.com/news/crime-violent-murder-lewisham-broad-land-stephen-lawrence>, last accessed: 09 Dec 2020
- B) Metropolitan Police Service , "Recorded Crime: Borough Rates",
London Datastore, 2017,
https://data.london.gov.uk/dataset/recorded_crime_rates,
last accessed: 08 Dec 2020
- C) Greater London Authority (GLA), "Statistical GIS Boundary Files for London",
London Datastore, 2014,
<https://data.london.gov.uk/dataset/statistical-gis-boundary-files-london>,
last accessed: 5 Dec 2020