

Selecting the best London borough for immigrant family

Capstone Project Report and Presentation
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Powered by PowerBI, Python, Jupyter Notebook

Introduction/Business Problem

London is the largest city and business capital of the UK and considered to be one of the world's most important global cities that is most investment friendly and most popular for work. This results in a great inflow of different labor force including domestic immigration to the city. According to Oxford University's Migration Observatory report, in 2017 3,354,000 people or 36% of the city's population were foreign born.

As a person planning to permanently settle down in London the question is what is the best place to settle down, especially if he is coming with a family and children. One of the most crucial question is what is the best adequate place considering a number of variables as cost of living, crime rate, ecology and situation with education and how London boroughs looks like in terms of attractiveness to a family with kids.

Data retrieval

A number of publicly available data sets for London boroughs will be used. This include <https://data.london.gov.uk/> datasets of:

- Crime rate (number of offences)
- Average rent prices
- Environmental footprint (measured by carbon emissions, is an estimate for air pollution as well)
- Number of 2-bedroom apartments (considered optimal for a small family)
- Number of parks
- Number of schools
- Traffic intensity

Methodology

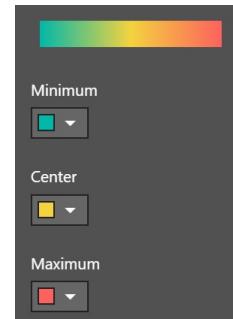
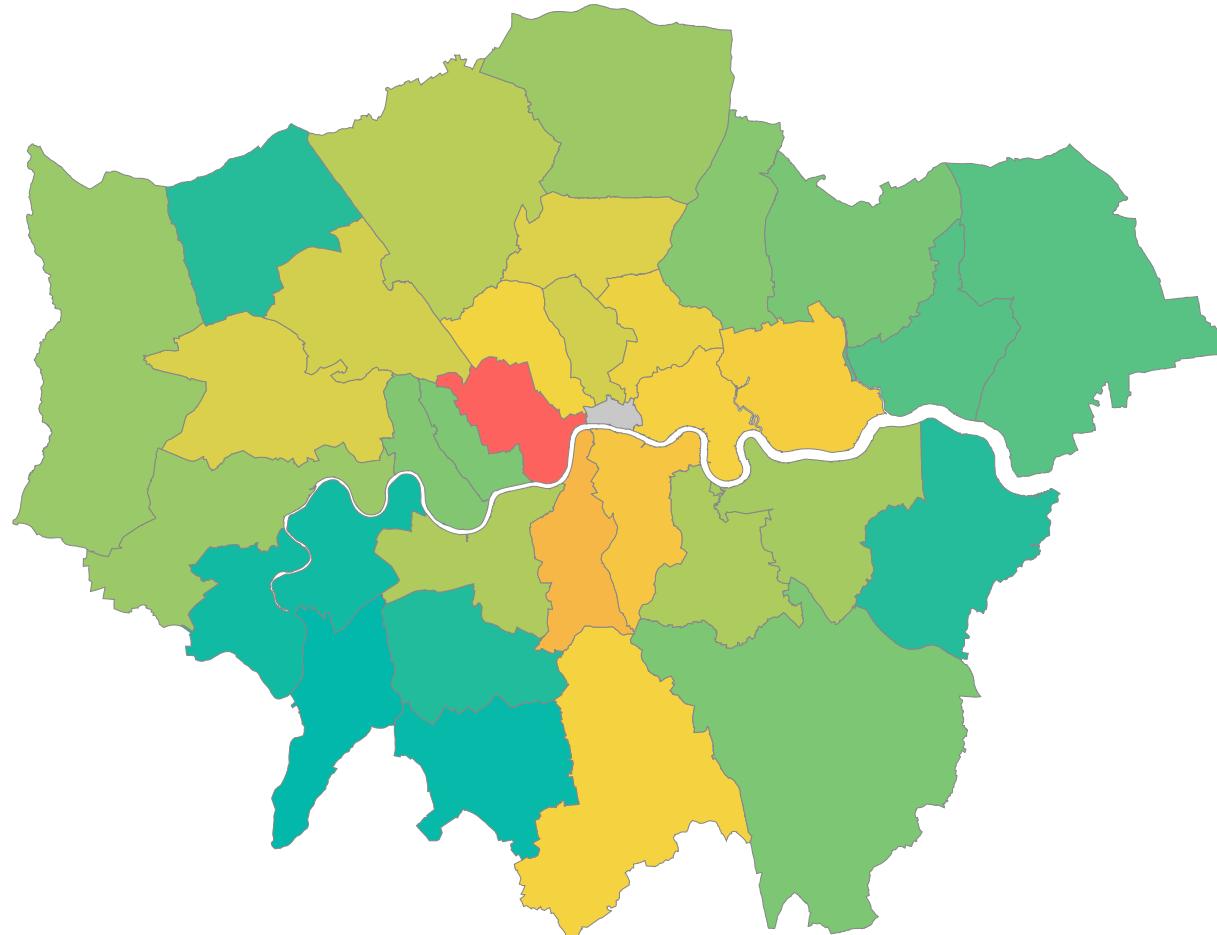
The London boroughs are the 32 local authority districts that make up the Greater London county. Wikipedia article will be parsed in Python and converted to dataframe with borough names and coordinates. Each borough will be assigned with a set of normalized parameters as per factors above. CSV file will be converted to dataframe and added to the existing table. With the help of Foursquare I will extract additional data as number of parks that will add additional parameters to assess attractiveness for a family. Boroughs will be visualized on the map. A formula will calculate the score of family friendliness basing on the normalized parameters above. No weights will be applied. Basing on the results most family friendly boroughs will be selected and advised. The analysis will not cover all factors and nuances and is for demonstration purpose of how geographical data can be used in data science.

London boroughs



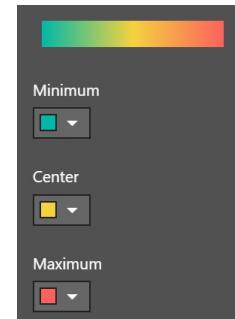
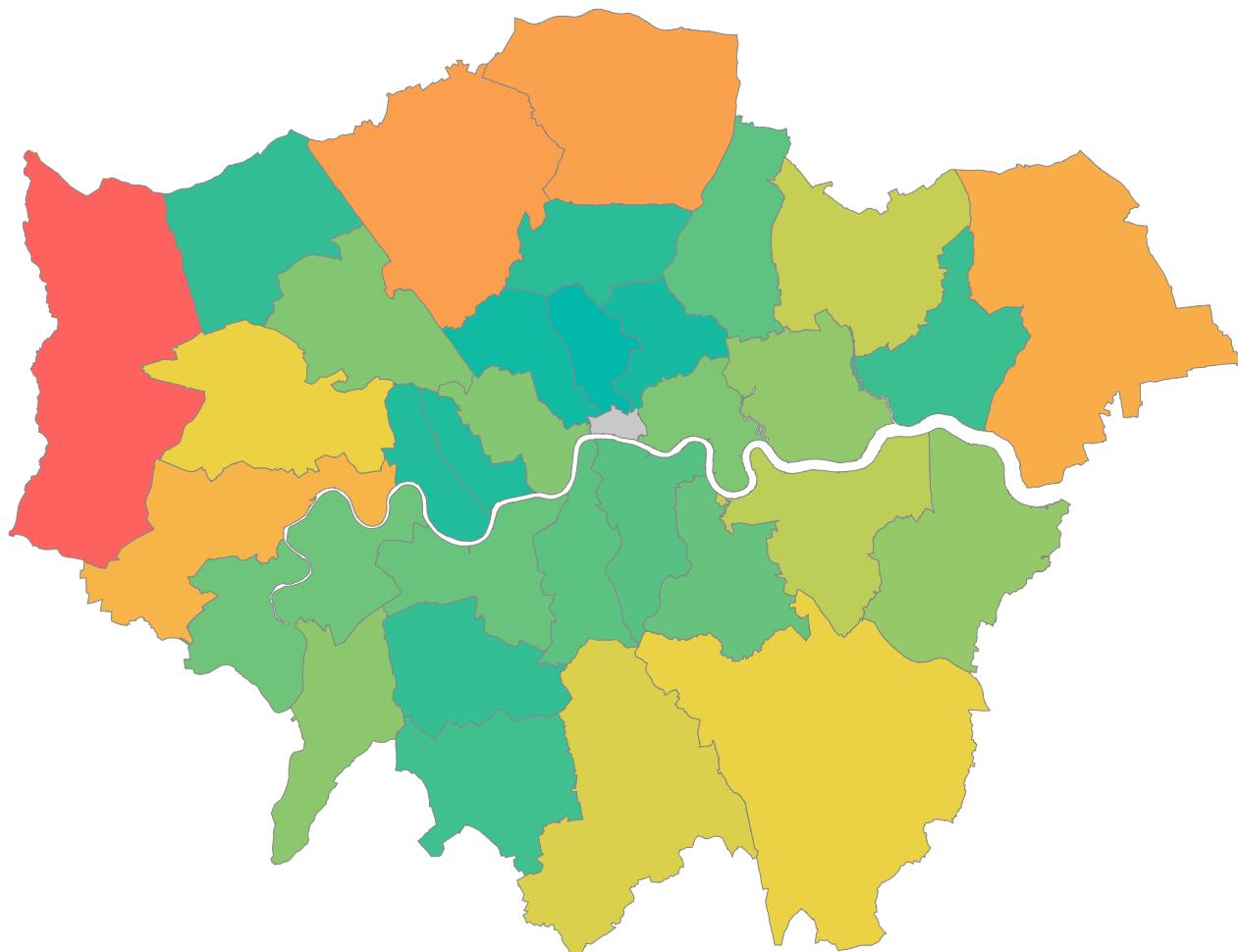
The London boroughs are the 32 local authority districts that make up the Greater London county. Which one is better? How different they are? We will assess the offences, emissions, rent price, traffic level as negative factors and number of schools, 2 bedroom apartments and parks as positive factors. A final score of those factors normalized will show the best choice for family.

Offences by Borough



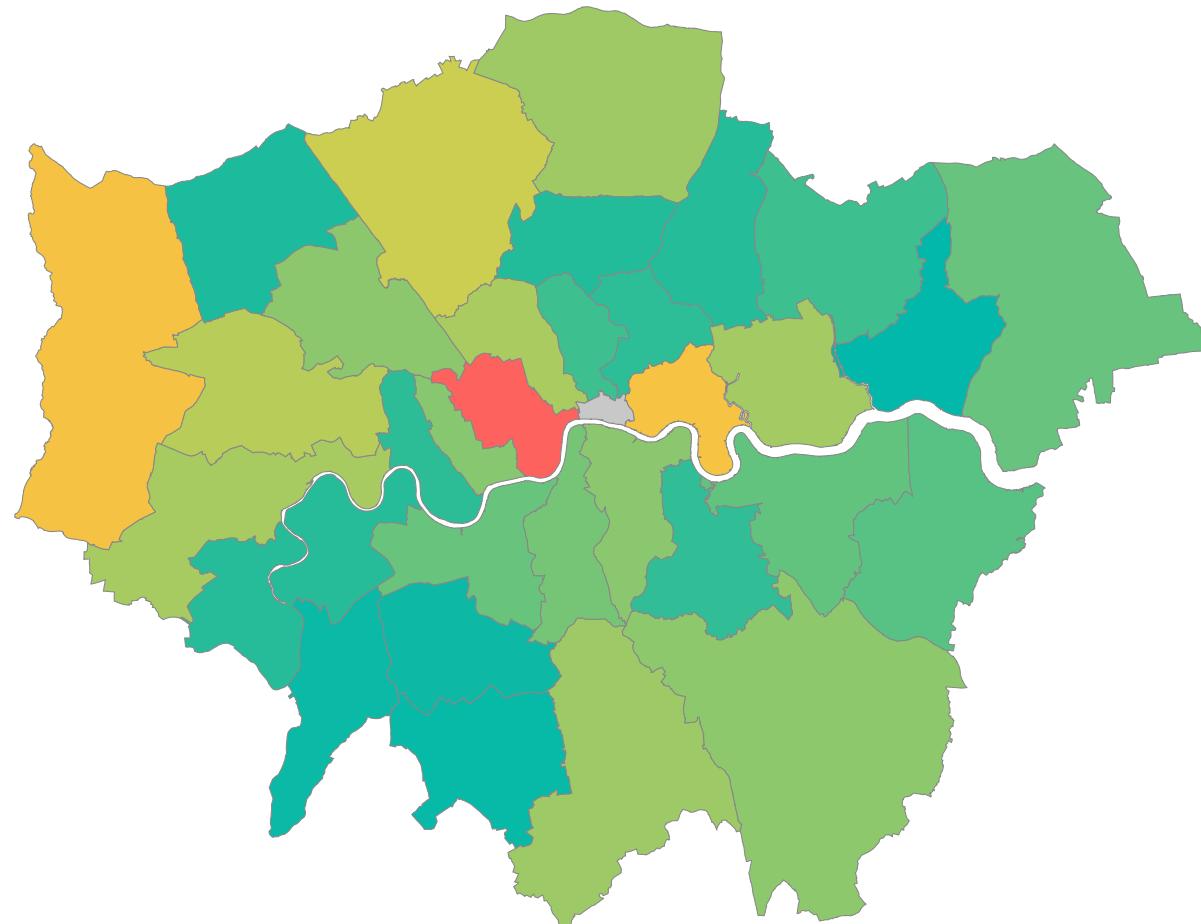
The center of London is more dangerous, we can see the crime rate gets higher once we approach the center. Westminster is the most ugly borough. South is also not the best. However South West seems like much safer place for a incoming family.

Traffic by Borough



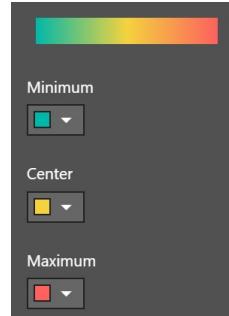
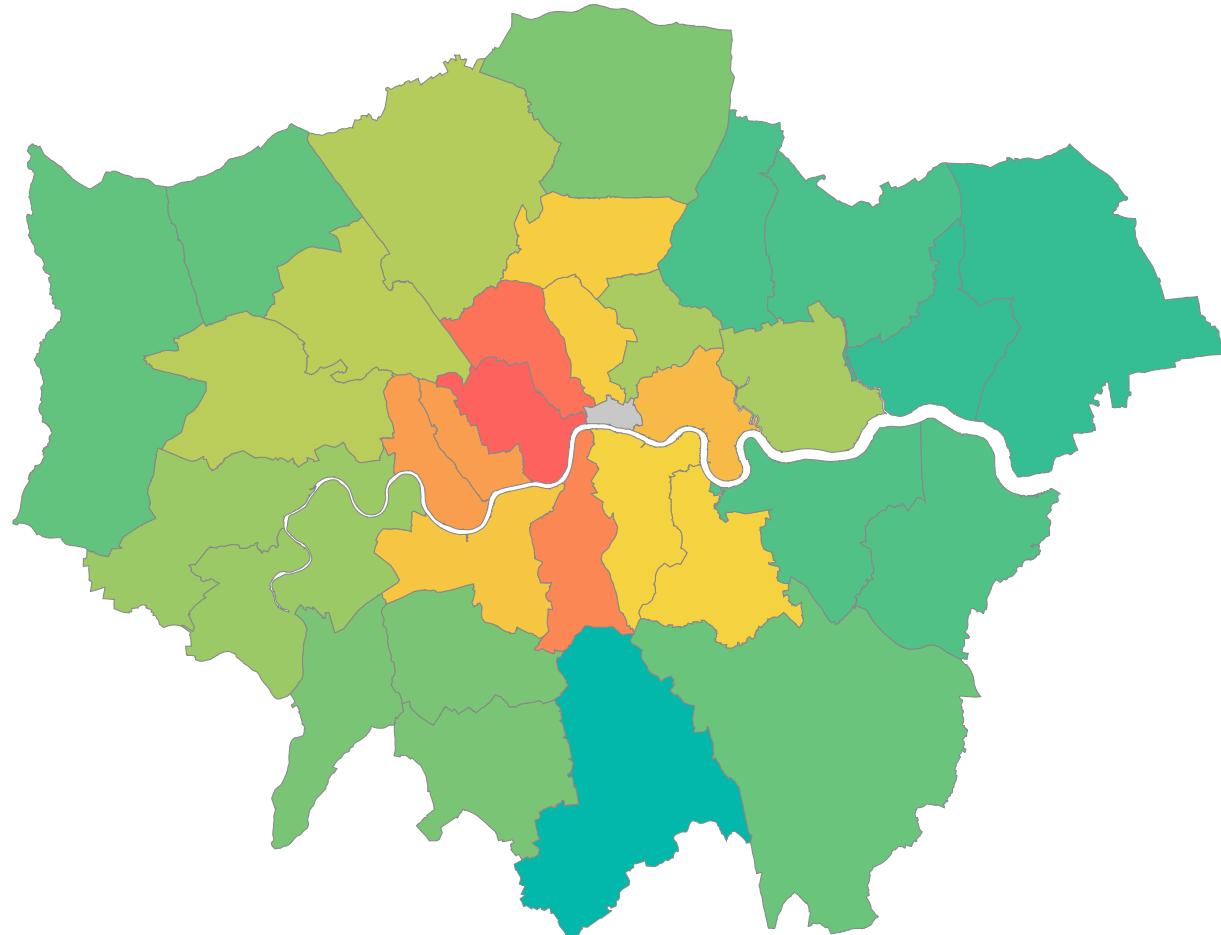
London is a traffic hub located at South East of the UK, so it is intuitive that Western and Northern parts are so intensive with traffic routes. Not a good idea for family to settle down there if you wish a calm not polluted place.

Emissions by Borough



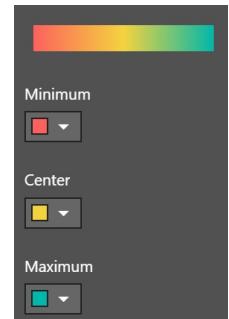
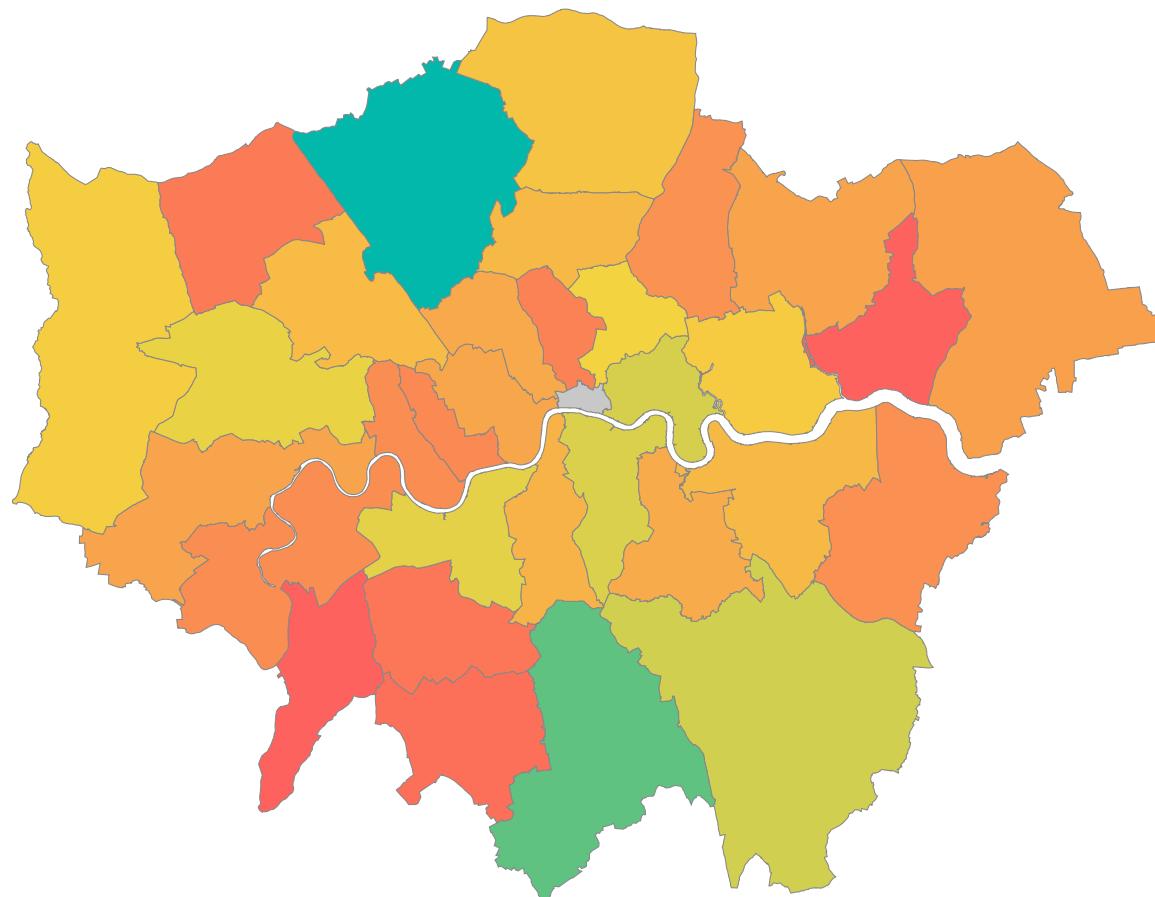
We can see interconnection with traffic intensity and carbon emissions at the West and North of London. However we can see that the very city center is also quite intensive with carbon emissions. This could be to concentrated car movements and dense population. Not the best idea to settle down there as carbon emissions can be a sign of air pollution.

Rent by Borough



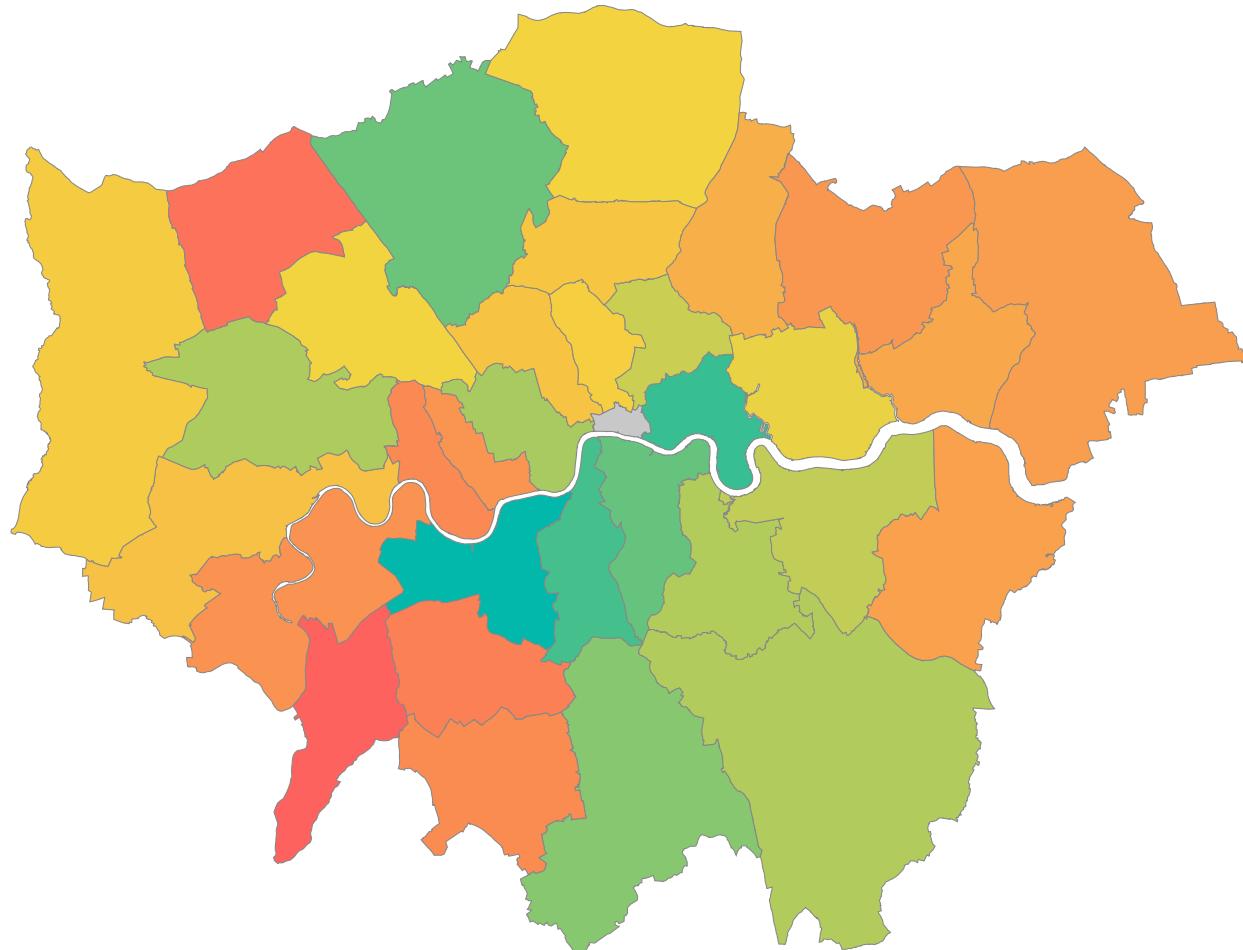
Situation with rent prices is also obvious, the closer you are to the city center, the higher you pay for rent. The cheapest is Croydon at the South and North Eastern areas as Havering. South Western and Western turned out to be not so cheap though they are located quite far from city center. Westminster is obviously the most expensive one.

Number of All Schools by Borough



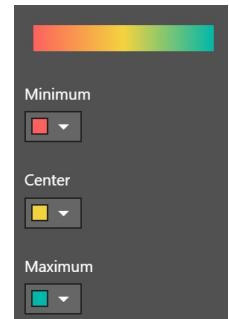
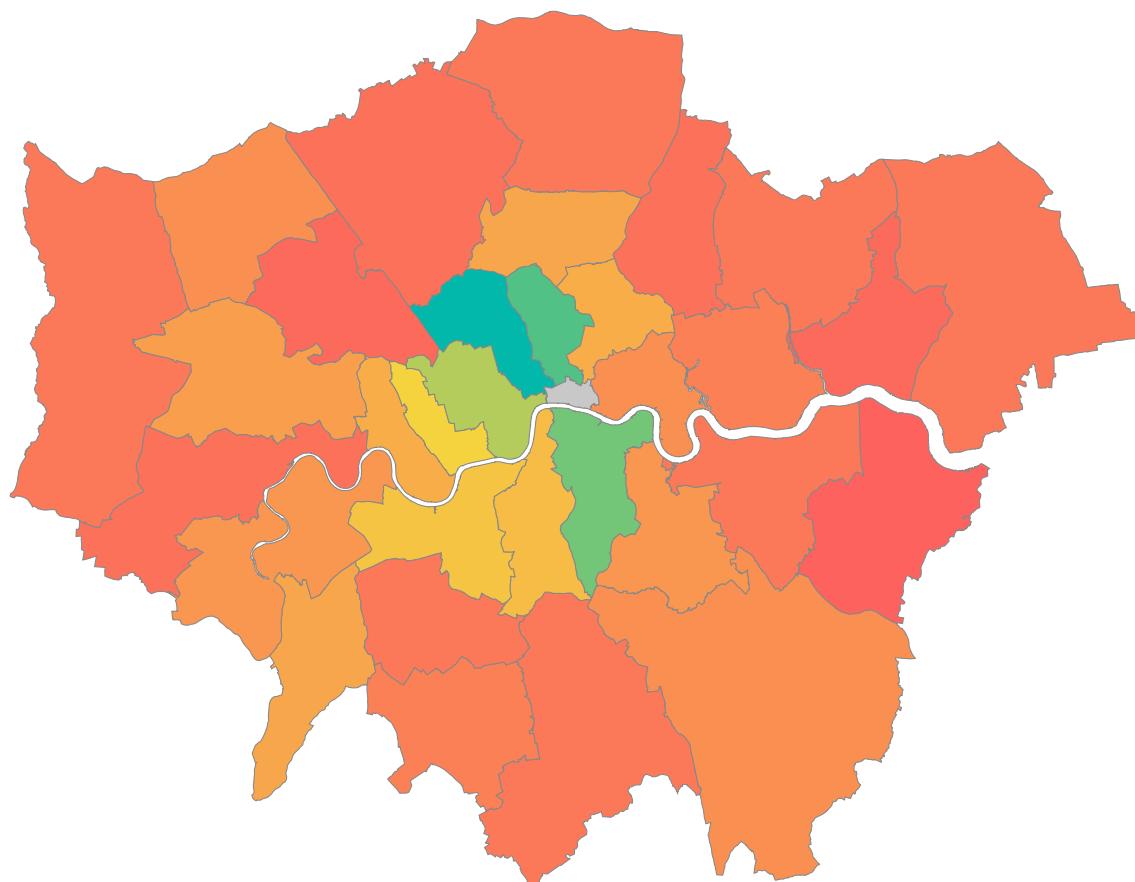
Number of all schools can be a sign of good choices for a child. Of course larger boroughs have larger number of schools so are more attractive for a family with children. Large boroughs as Barnet at the North and Croydon at the South are champions. We omit the quality and types of schools here and average number of school per square meter of the borough for simplification. it is recognized there can be deeper look here if needed.

Number of 2 bed Apartments by Borough



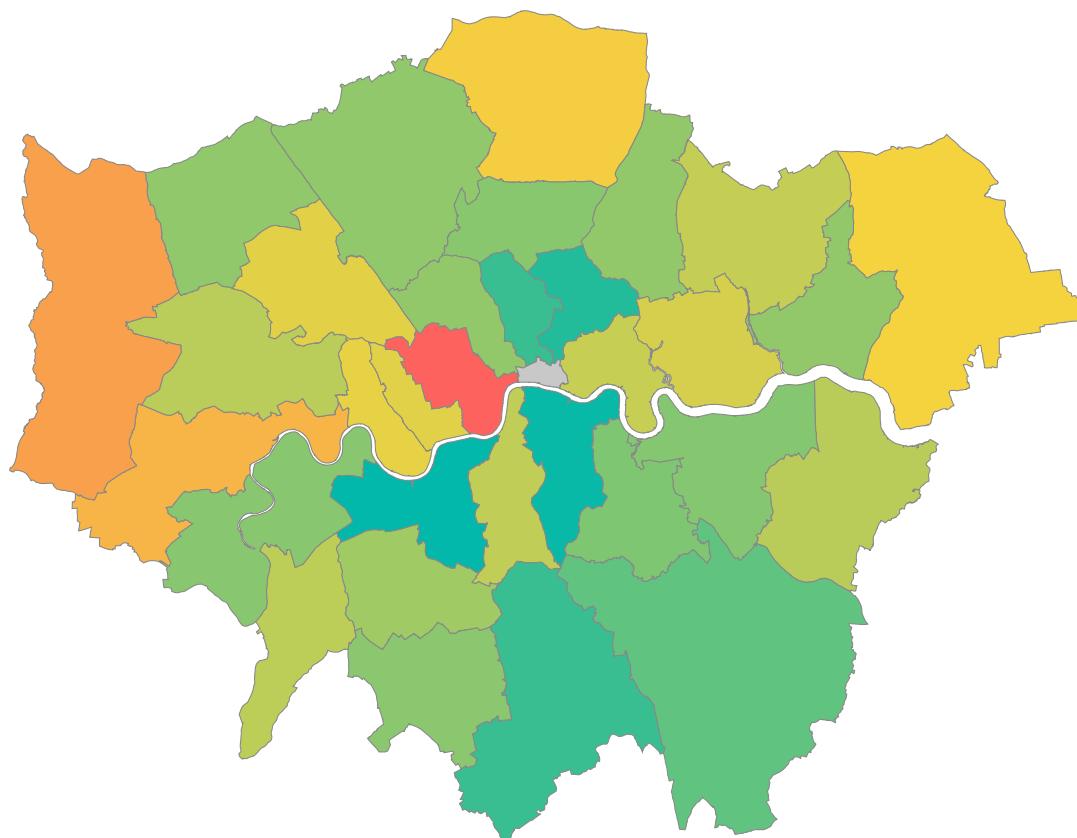
The same situation with number of 2 bed apartments. Hypothesis is that a more number of those makes a presence of choice and family can easier make selection. There is greater variation here among boroughs and seems like outer boroughs have less choice of those, center and South East are more attractive in terms of choice.

Parks number by borough



Number of formal park objects were retrieved from Foursquare API. Idea is that presence of many parks is good for small children to have a walk there. It is an example of how such tools can be used to extract information. Gap here is that objects as garden, lakes, forests, national parks, thematic parks etc. are separate types of objects and were not extracted here. It turns out that in center there are more formal park objects that make them attractive.

Score by boroughs



All parameters were normalized and then simple score was calculated. Negative factors as emissions and offences were taken with minus, positive ones as number of parks were taken with plus. No weight were applied. Obviously, for different families there are different weights, for somebody number of schools is more crucial than traffic intensity is disliked. It will affect the score. In this case all factors are equally important. The very City center as Westminster obviously loses due to high rent price, traffic, emissions and record number of offences. Never settle there with family! West is also not the best due to traffic and emissions. The very good compromise are South and South-Center and South-West due to safety, availability of schools and less traffic.and emissions.