



# LONDON V MANCHESTER FOR AUTO- GARAGES

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# *Choosing the best location is essential for your business to succeed*

- Target market is people with cars
- Our competition is other auto garages in the area
- Land prices for each area would affect the prices you would need to charge

1. NEARNESS TO MARKETS      2. COMPETITION      3. LAND PRICE

# DATA REQUIRED:

Population density of the UK per region	Scraped from Wikipedia
Geographical areas of each regions	CSV file from ONS website
Locations of each region	Geopy.Nominatum
Garage locations in each area	Foursquare
Number of cars in each region	UK Government Asset Publishing Website as .ods

# DATA CLEANING:

Data was stripped, datatypes changed, new values added, and the data combined into dataframes for London and Manchester

# LONDON AND MANCHESTER DATAFRAMES (headers)

## INITIAL CORRELATION CHECK

LONDON

	District	Density(per km <sup>2</sup> )	Area(Hectares)	Latitude	Longitude	Cars	Cars/Hectare	Carnorm
0	Kensington and Chelsea	12884	1212.38	51.498480	-0.199043	41558	34.3	2.359006
1	Hammersmith and Fulham	11308	1639.76	51.492038	-0.223640	46691	28.5	1.472468
2	Islington	16097	1485.65	51.538429	-0.099905	38340	25.8	1.059769
3	Lambeth	12157	2681.01	51.501301	-0.117287	68273	25.5	1.013914
4	Wandsworth	9528	3426.34	51.457027	-0.193261	85314	24.9	0.922203

MANCHESTER

	District	Density(per km <sup>2</sup> )	Area(Hectares)	Latitude	Longitude	Cars	Cars/Hectare	Carnorm
0	Stockport	2315	12604.02	53.407901	-2.160243	429836	34.1	2.328435
1	Manchester	4735	11564.86	53.479489	-2.245115	177886	15.4	-0.529885
2	Bury	1911	9946.01	53.592754	-2.297283	114801	11.5	-1.126005
3	Trafford	2229	10604.47	53.418936	-2.359297	121112	11.4	-1.141290
4	Salford	2617	9719.74	53.487746	-2.289192	105636	10.9	-1.217716

LONDON

Cars/Hectare	
Density(per km <sup>2</sup> )	0.784428
Cars	-0.720960
Area(Hectares)	-0.844666

MANCHESTER

Cars/Hectare	
Density(per km <sup>2</sup> )	0.285304
Cars	0.959771
Area(Hectares)	-0.196975

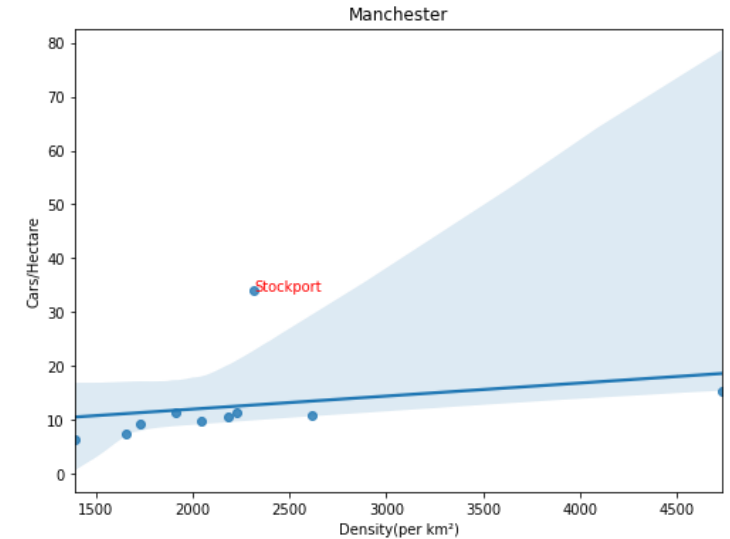
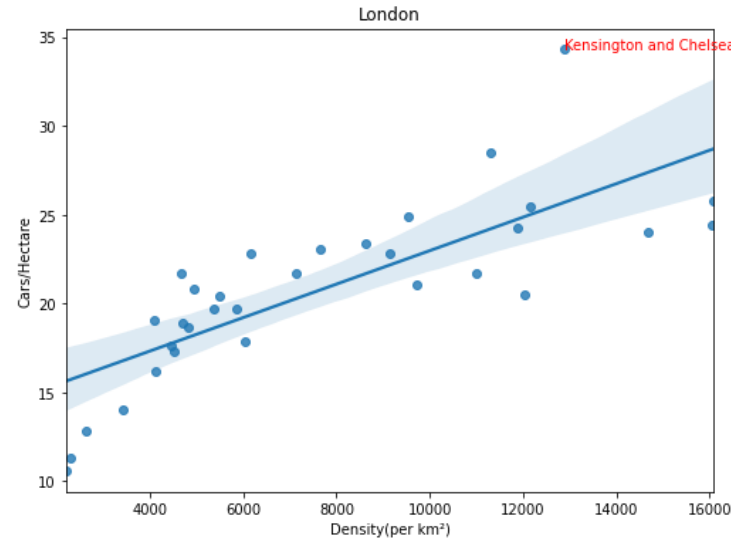
## Relationship between Pop Density and Car Density

- London's car density increases with population density, curving off at the end
- Population density in Manchester has no effect on car density.

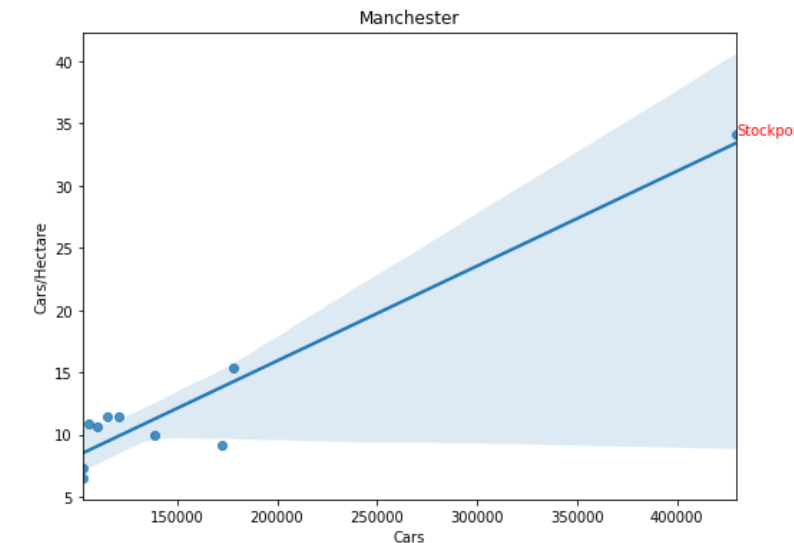
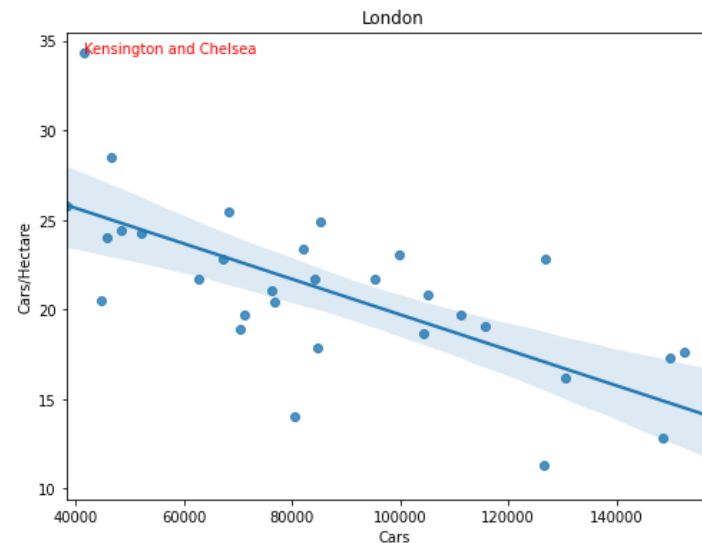
## Relationship between Cars and Car Density

- London's car density decreases as the total number of cars in an area increases, in a roughly linear fashion
- No visible relationship in Manchester

Relationship Between Population Density and Car Density

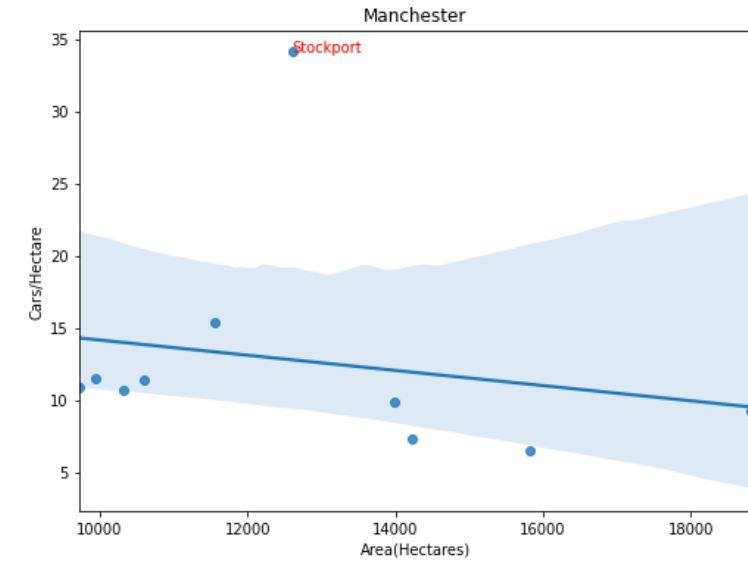
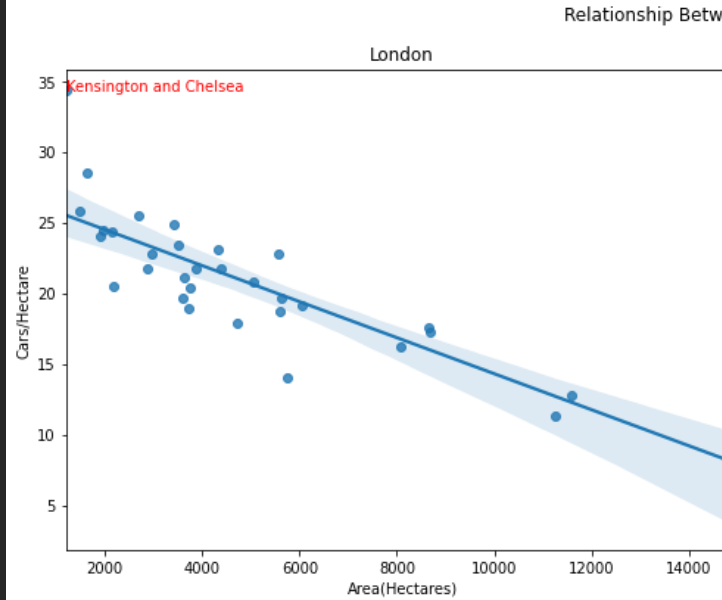


Relationship Between Cars and Car Density



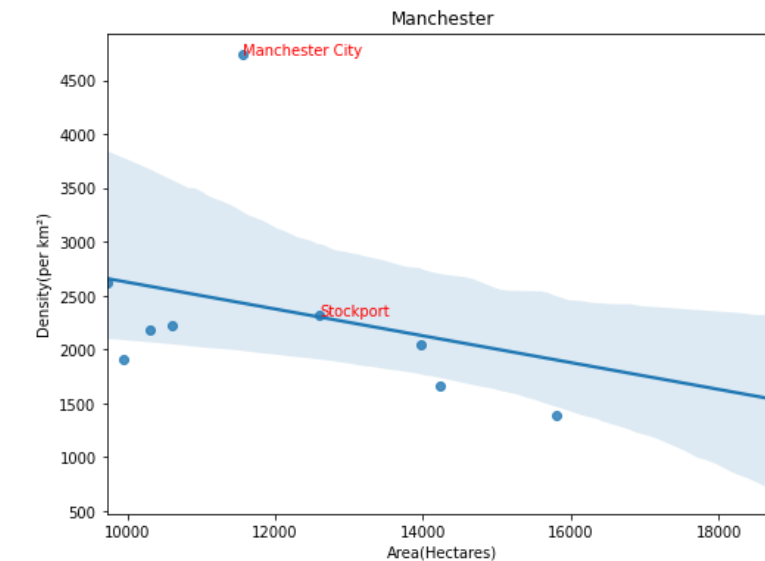
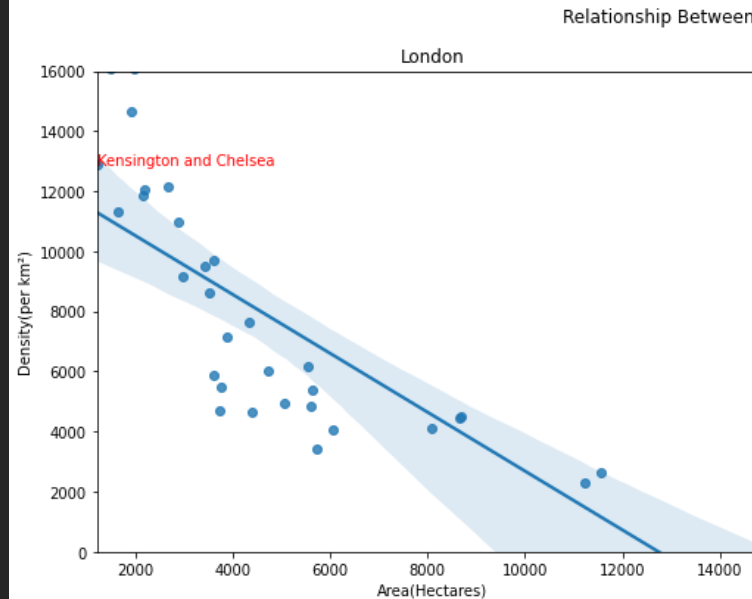
## Relationship Between Land Area and Car Density

- In London, the density of cars increases as the observed area size gets smaller
- Manchester either shows no relationship, or a weak negative relationship, with Stockport as an outlier



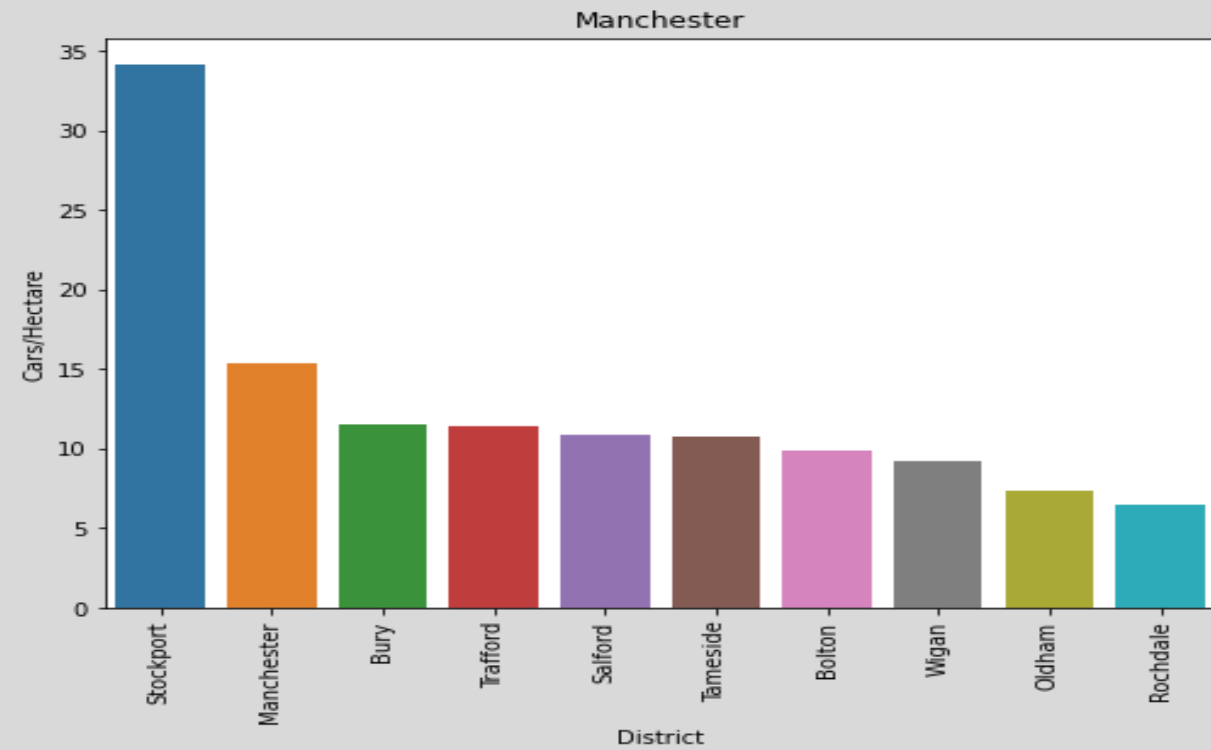
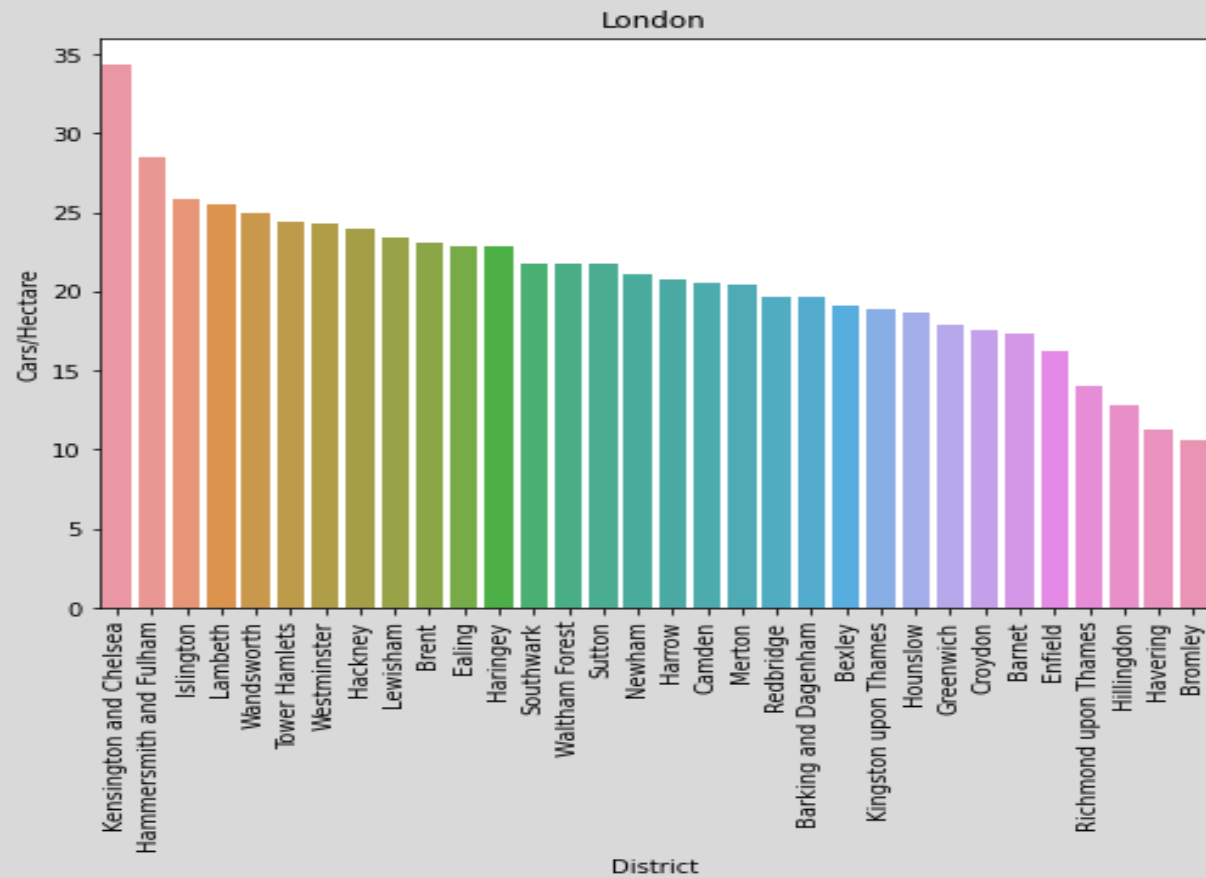
## Relationship Between Land Area and Pop Density

- Smaller areas in London have higher population densities than larger areas
- A weaker relationship in Manchester, Manchester City is very dense for its size





## Car Density Per Region



# CAR DENSITY PER REGION

(for London and Manchester)

# RESULTS OF EXPLORATORY DATA ANALYSIS

LONDON	MANCHESTER
Some people are deterred from owning a car in dense areas, but the density of cars still increases with population density. So we still expect car numbers to increase.	Population dense areas see no more car use than other less dense areas, which may indicate that cars in Manchester will not increase as population increases
Kensington and Chelsea has the highest car density, followed by Hammersmith and Fulham	Stockwell is the only place in Manchester with a high car density

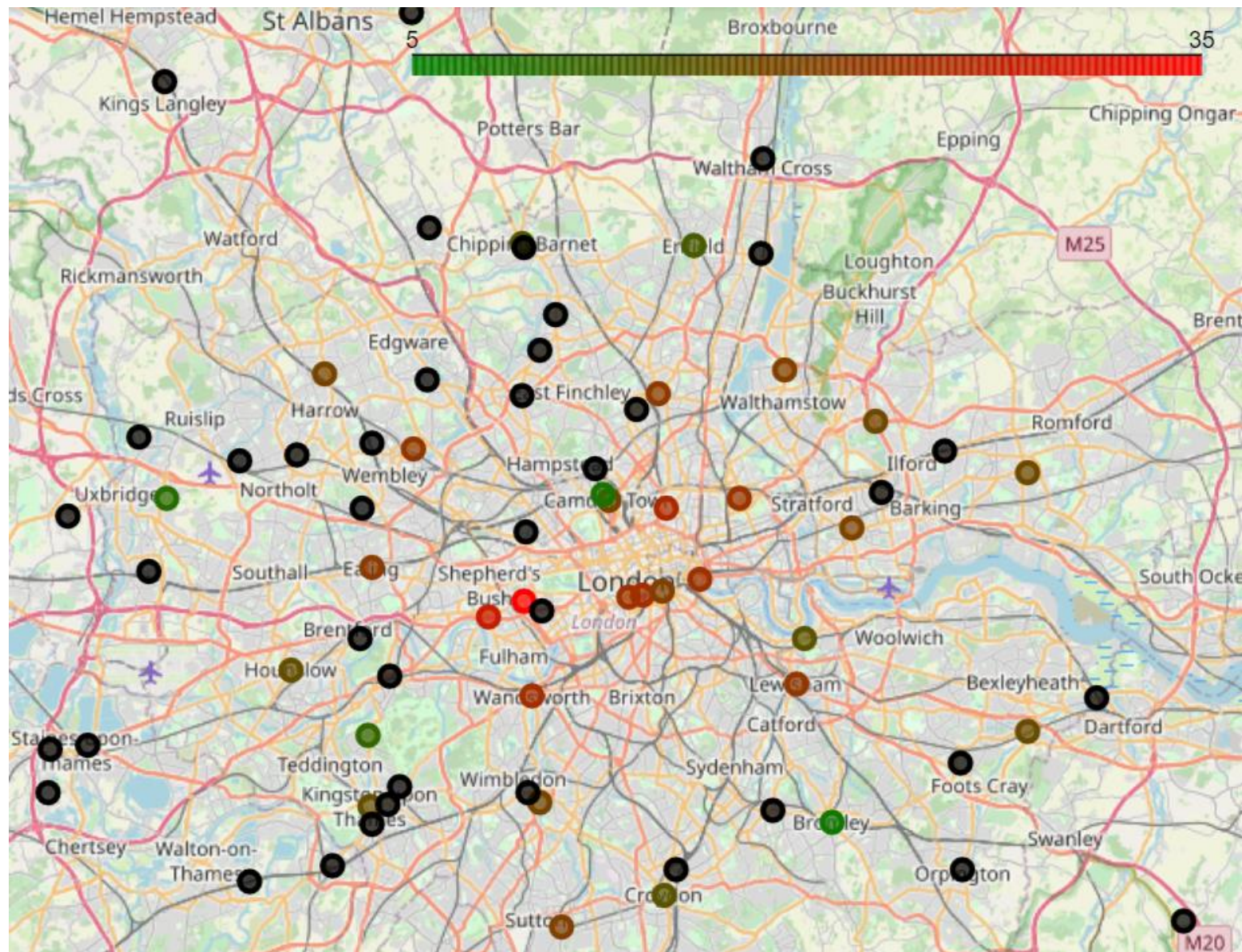


# LONDON

## Garages and Regions

Black = Garages.

There are many car dense areas in London.



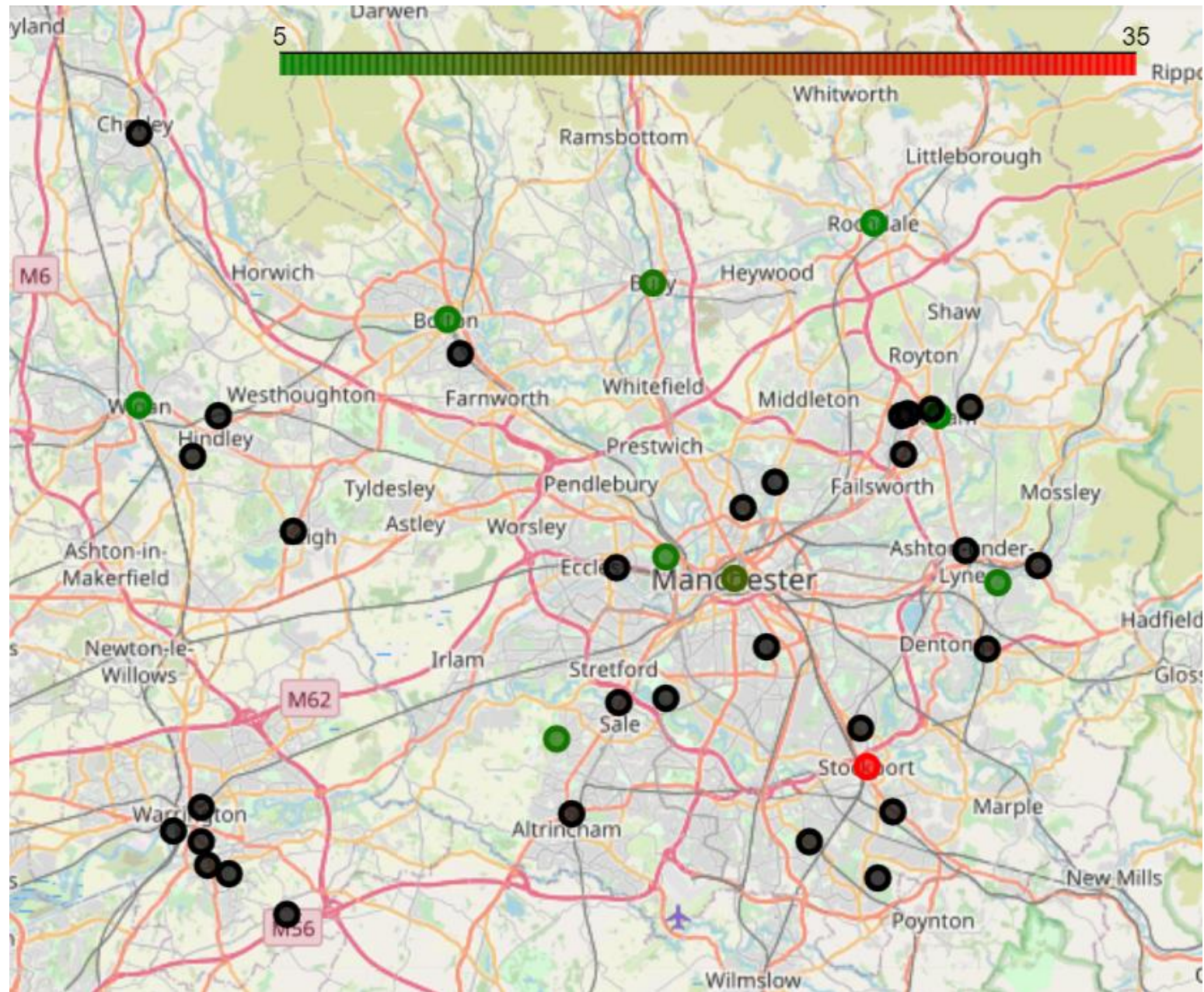


# MANCHESTER

## Garages and Regions

Black = Garages

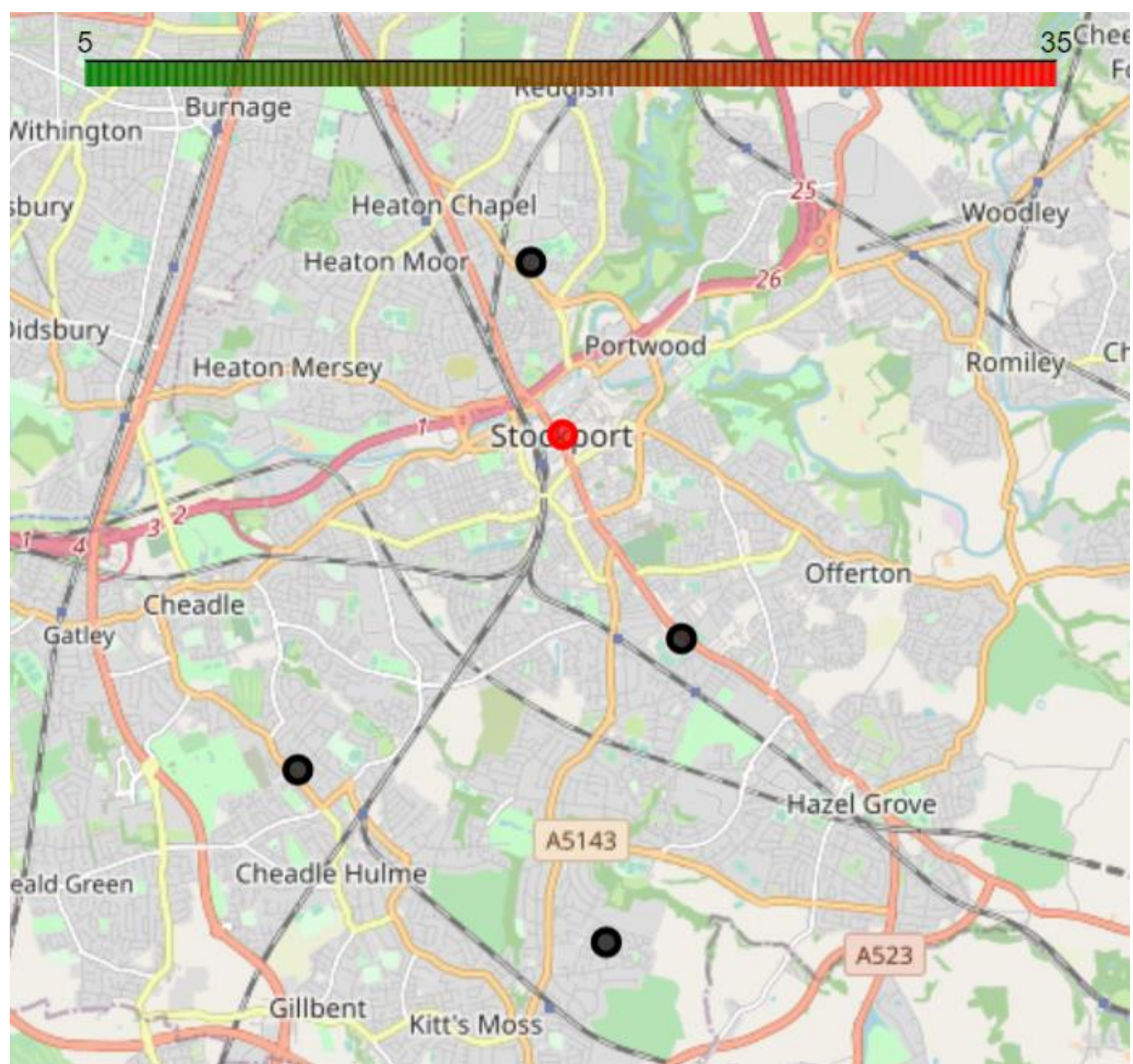
In contrast to London, Manchester has far less car density, with a notable exception being Stockport. It's as if everyone around Manchester keeps their car there!





# GARAGES AROUND STOCKPORT

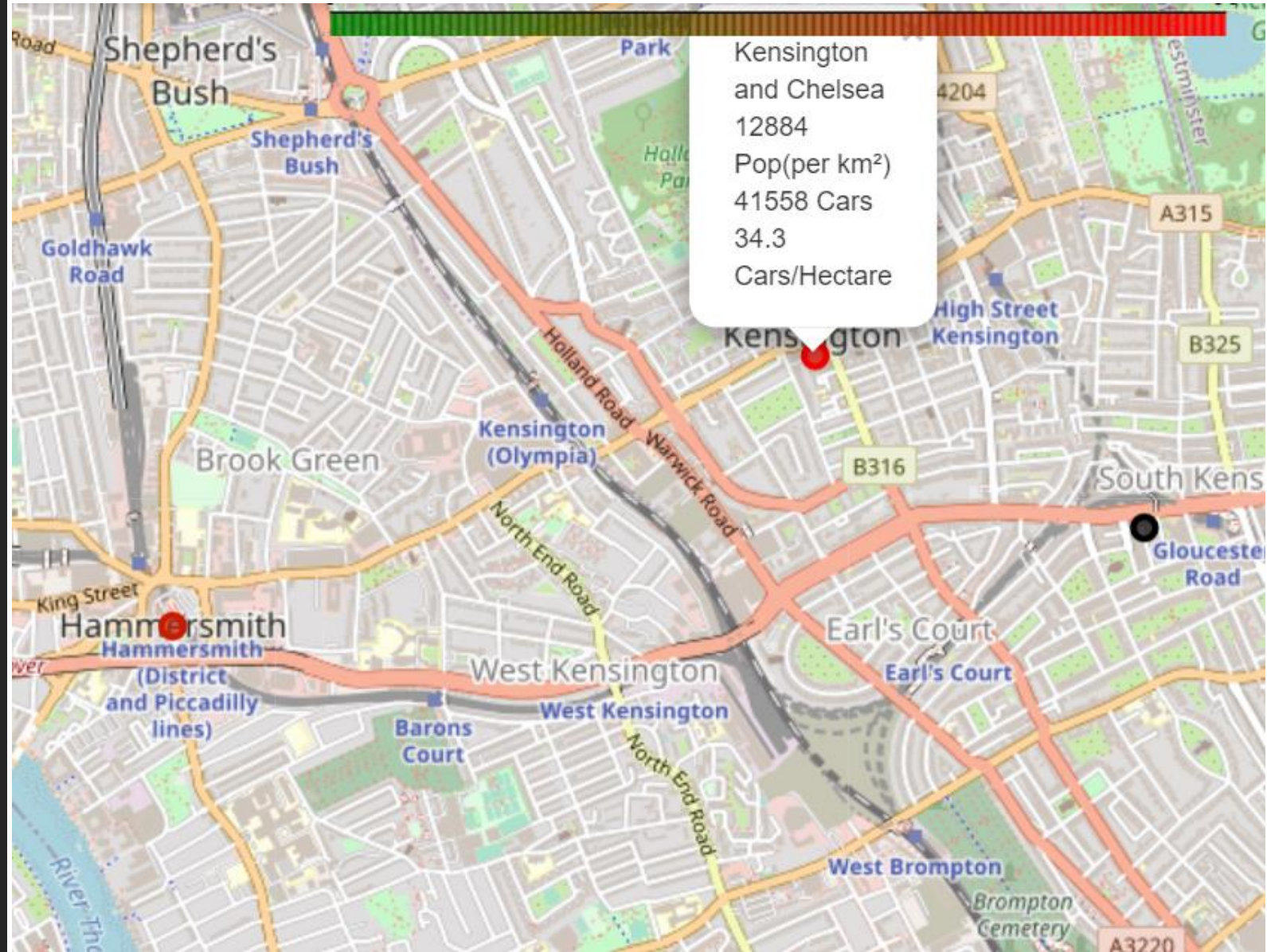
4 Garages near Stockport, spread  
over a wide area.





# KENSINGTON AND CHELSEA/ HAMMERSMITH AND FULHAM

Kensington and Chelsea has 1 garage near the outskirts, while Hammersmith and Fulham have no other garages nearby. The 2 regions are also next to each other.



# CONCLUSIONS

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1st	HAMMERSMITH AND FULWELL	<ul style="list-style-type: none"><li>• High car density</li><li>• Less cost of land compared to Kensington and Chelsea</li><li>• Little competition</li></ul>
2nd	KENSINGTON AND CHELSEA	<ul style="list-style-type: none"><li>• Highest car density</li><li>• Little competition</li><li>• Very high land cost</li></ul>
3rd	STOCKWELL	<ul style="list-style-type: none"><li>• Highest car density</li><li>• Lots of competition</li><li>• Lowest land cost</li></ul>



The End.

FURTHER WORK:

Check venue data with Google