

# The Battle of the Neighborhoods for London Area

IBM Data Science Coursera Capstone Project

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# Background

- The average American moves about eleven times in their lifetime
- Proper research when planning our next move in life
- Safety is a top concern when moving to a new area
- The crime statistics of London

# Objective

- Aims to select the safest borough in London based on the total crimes
- Explore the neighborhoods of that borough to find the 10 most common venues in each neighborhood
- Cluster the neighborhoods
- Expats who are considering relocating to London

# Data Source

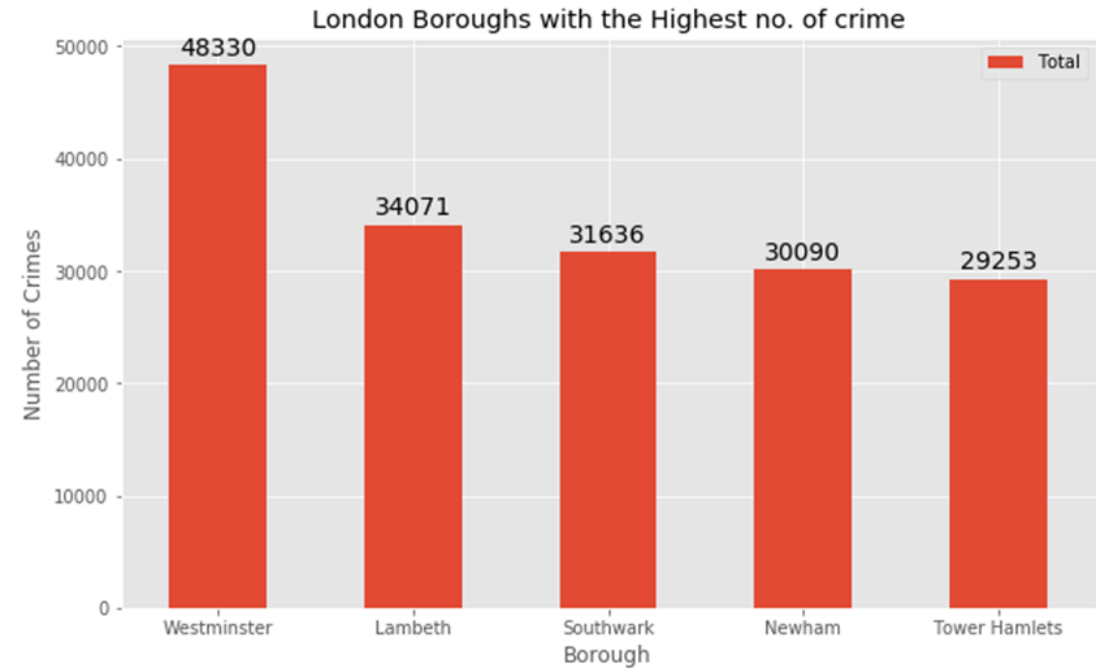
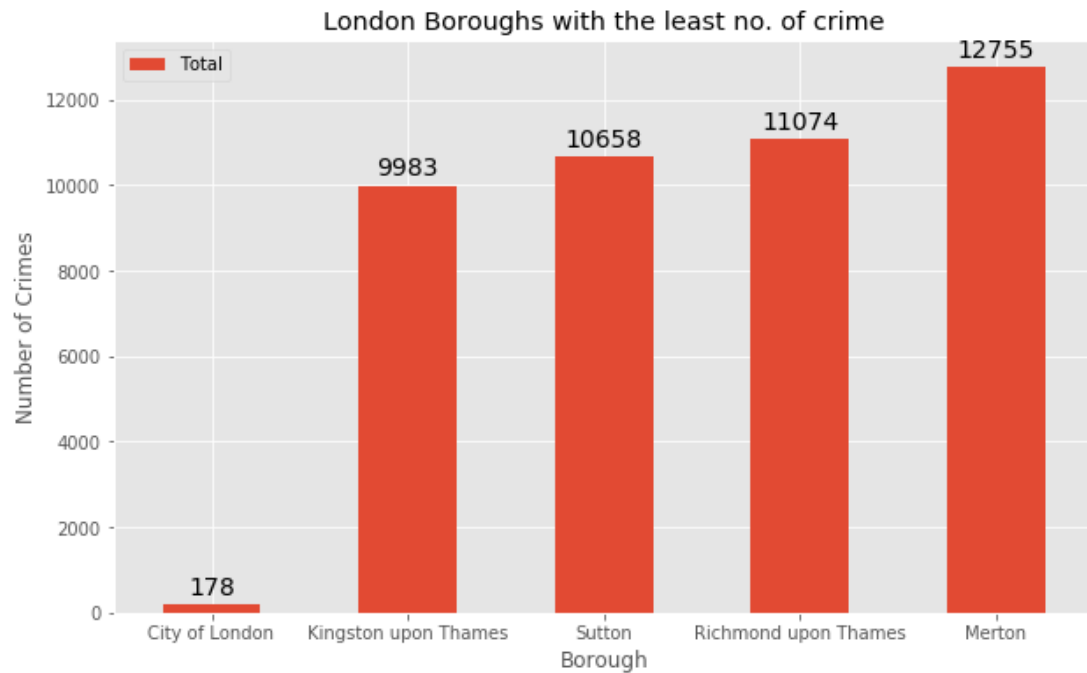
- Crime per borough in London  
<https://www.kaggle.com/jboysen/london-crime>
- Additional information about the boroughs  
[https://en.wikipedia.org/wiki/List of London boroughs](https://en.wikipedia.org/wiki/List_of_London_boroughs)
- List of neighborhoods available on the site  
[https://en.wikipedia.org/wiki/List of districts in the Royal Borough of Kingston upon Thames](https://en.wikipedia.org/wiki/List_of_districts_in_the_Royal_Borough_of_Kingston_upon_Thames)

# Methodology

- Exploratory Data Analysis: Visualize the crime rates in the London boroughs to identify the safest borough and extract the neighborhoods in that borough to find the 10 most common venues in each neighborhood.
- Modelling: To help people find similar neighborhoods in the safest borough we will be clustering similar neighborhoods using K - means clustering which is a form of unsupervised machine learning algorithm that clusters data based on predefined cluster size.

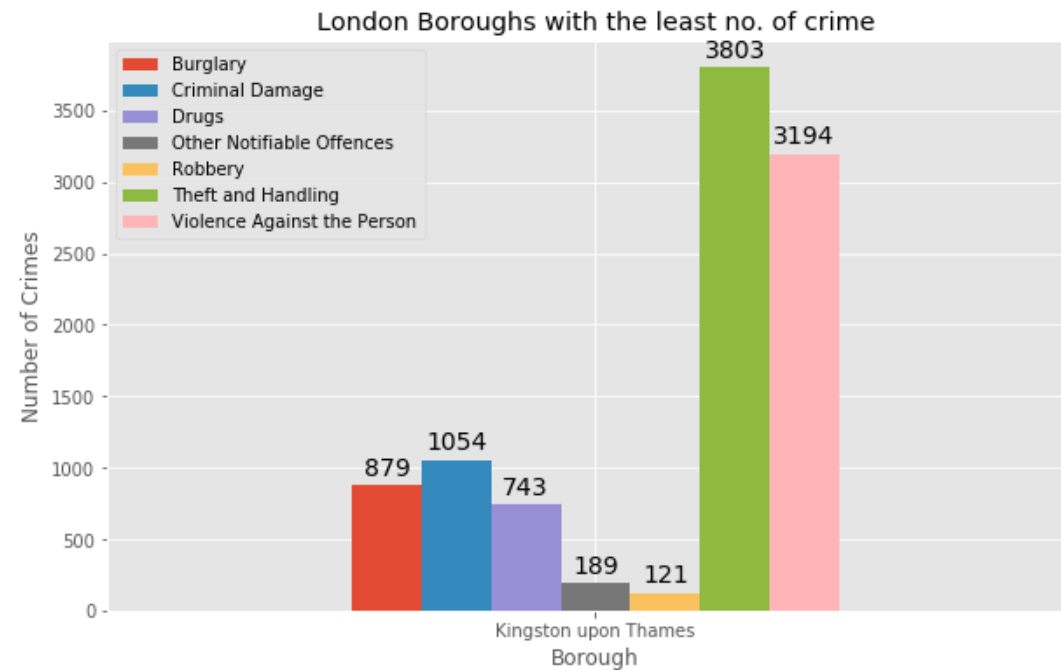
# Exploratory Data Analysis

Top five boroughs with the highest (left) and lowest (right) number of crimes



# Exploratory Data Analysis (cont'd)

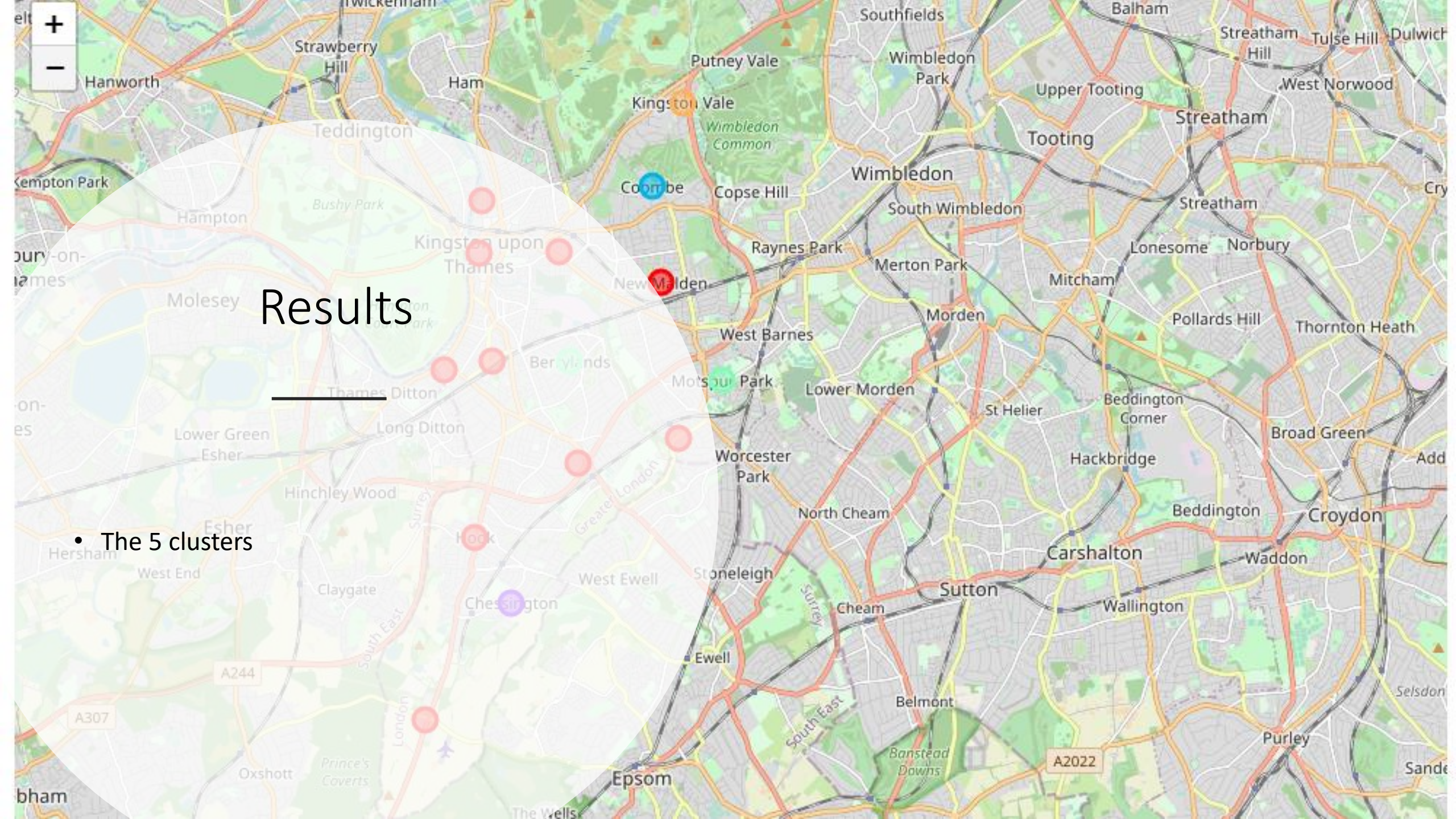
- Different types of crimes in the borough 'Kingston upon Thames'





# Results

- The 5 clusters





	Neighborhood	Borough	Latitude	Longitude	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	
1	Canbury	Kingston upon Thames	51.417499	-0.305553	0	Pub	Park	Fish & Chips Shop	Supermarket	Spa	Gym / Fitness Center	Shop & Service	
4	Hook	Kingston upon Thames	51.367898	-0.307145	0	Bakery	Supermarket	Fish & Chips Shop	Indian Restaurant	Turkish Restaurant	Food	Discount Store	
5	Kingston upon Thames	Kingston upon Thames	51.409627	-0.306262	0	Café	Pub	Burger Joint	Sushi Restaurant	Coffee Shop	Turkish Restaurant	Electronics Store	
7	Malden Rushett	Kingston upon Thames	51.341052	-0.319076	0	Grocery Store	Garden Center	Pub	Restaurant	Fast Food Restaurant	Department Store	Discount Store	
9	New Malden	Kingston upon Thames	51.405335	-0.263407	0	Gastropub	Indian Restaurant	Gym	Sushi Restaurant	Supermarket	Bar	Chinese Restaurant	R
10	Norbiton	Kingston upon Thames	51.409999	-0.287396	0	Pub	Indian Restaurant	Italian Restaurant	Food	Platform	Breakfast Spot	Japanese Restaurant	I
11	Old Malden	Kingston upon Thames	51.382484	-0.259090	0	Train Station	Pub	Construction & Landscaping	Food	Gastropub	Garden Center	Furniture / Home Store	
12	Seething Wells	Kingston upon Thames	51.392642	-0.314366	0	Indian Restaurant	Pub	Café	Coffee Shop	Hotel	Fish & Chips Shop	Restaurant	R
13	Surbiton	Kingston upon Thames	51.393756	-0.303310	0	Coffee Shop	Pub	Grocery Store	Italian Restaurant	Pharmacy	Gastropub	Thai Restaurant	
14	Tolworth	Kingston upon Thames	51.378876	-0.282860	0	Grocery Store	Pharmacy	Restaurant	Sandwich Place	Train Station	Hotel	Indian Restaurant	

Cluster 1

# Cluster 2

	Neighborhood	Borough	Latitude	Longitude	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue
2	Chessington	Kingston upon Thames	51.358336	-0.298622	1	Construction & Landscaping	Turkish Restaurant	Deli / Bodega	Discount Store	Dry Cleaner	Electronics Store	Farmers Market	Fast Food Restaurant	Fish & Chips Shop

# Cluster 3

	Neighborhood	Borough	Latitude	Longitude	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
3	Coombe	Kingston upon Thames	51.41945	-0.265398	2	Health & Beauty Service	Turkish Restaurant	Food	Discount Store	Dry Cleaner	Electronics Store	Farmers Market	Fast Food Restaurant	Fish & Chips Shop	Rest

# Cluster 4

	Neighborhood	Borough	Latitude	Longitude	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue
0	Berrylands	Kingston upon Thames	51.393781	-0.284802	3	Gym / Fitness Center	Park	Bus Stop	Turkish Restaurant	Fish & Chips Shop	Dry Cleaner	Electronics Store	Farmers Market	Fast Food Restaurant
8	Motspur Park	Kingston upon Thames	51.390985	-0.248898	3	Park	Gym	Soccer Field	Bus Stop	Restaurant	Turkish Restaurant	Fast Food Restaurant	Discount Store	Dry Cleaner

# Cluster 5

	Neighborhood	Borough	Latitude	Longitude	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
6	Kingston Vale	Kingston upon Thames	51.43185	-0.258138	4	Grocery Store	Sandwich Place	Bar	Soccer Field	Discount Store	Dry Cleaner	Electronics Store	Farmers Market	Fast Food Restaurant	Fish and Chips

# Discussion

- Clusters 3 and 4 is good for a person who is looking for a neighborhood with good connectivity and public transportation
- Cluster 4 are more suitable for a family
- The choices of neighborhoods may vary from person to person



# Conclusion

- This project helps a person get a better understanding of the neighborhoods with respect to the most common venues in that neighborhood
- It is always helpful to make use of technology to stay one step ahead i.e. finding out more about places before moving into a neighborhood