# PUB QUIZ CHAMPION

# Introduction

- We are a digital start up in the process of launching  a new revolutionary app.
- Our product = **“Pub Quiz Champions”**
- An App that will help you to organize any Pub Quiz like a  professional.
- Thanks to the apps you can play with your friend in face to face at home or in a pub or you can play virtually from any distance which is quite convenient during this difficult time of COVID lockdown.

# Our Communication plan

We are now in the last phases of the project and are preparing our communication plan for the launch of the product.

The customer audience we want to target is :

- Fan of quiz , pub aficionados , pub owners
- Our test market is  London UK

Our communication plan will be composed of :

- Organization of live events in different Pub where we will demonstrate the added values of our products
- Digital advertising campaigns ( social media + display ads ) that will be geo targeted on the areas  where we find the most frequented pub.

# The Problem

To make our communication plan a success:

- We need to identify and create a selection of London areas where we will start our communication plan.
- We want to identify which areas of London are distinguished by the frequency of pub visits.

# DATA

We will use the following data :

- List of London Borough & their GPS coordinates : Longitude - Latitude
- Venue data that will be extracted from Foursquare API and will be used for the clustering of the neighbourhood

| | A | B | C | D |
|---|---|---|---|---|
| 1 | Borough | Populatior | latitude | longitude |
| 2 | Barking | 194352 | 51.5365630 | 0.07576600 |
| 3 | Barnet | 369088 | 51.6569230 | -0.19492500 |
| 4 | Bexley | 236687 | 51.4399330 | 0.15432700 |
| 5 | Brent | 317264 | 51.5672810 | -0.27105700 |
| 6 | Bromley | 317899 | 51.4060250 | 0.01315600 |
| 7 | Camden | 229719 | 51.5517060 | -0.15882600 |
| 8 | Croydon | 372752 | 51.3761650 | -0.09823400 |
| 9 | Ealing | 342494 | 51.5250260 | -0.34150000 |
| 10 | Enfield | 320524 | 51.6522990 | -0.08071200 |

- https://github.com/Philreb/coursera_capstone_project/blob/main/london_coordinates2.xlsx

# METHODOLOGY

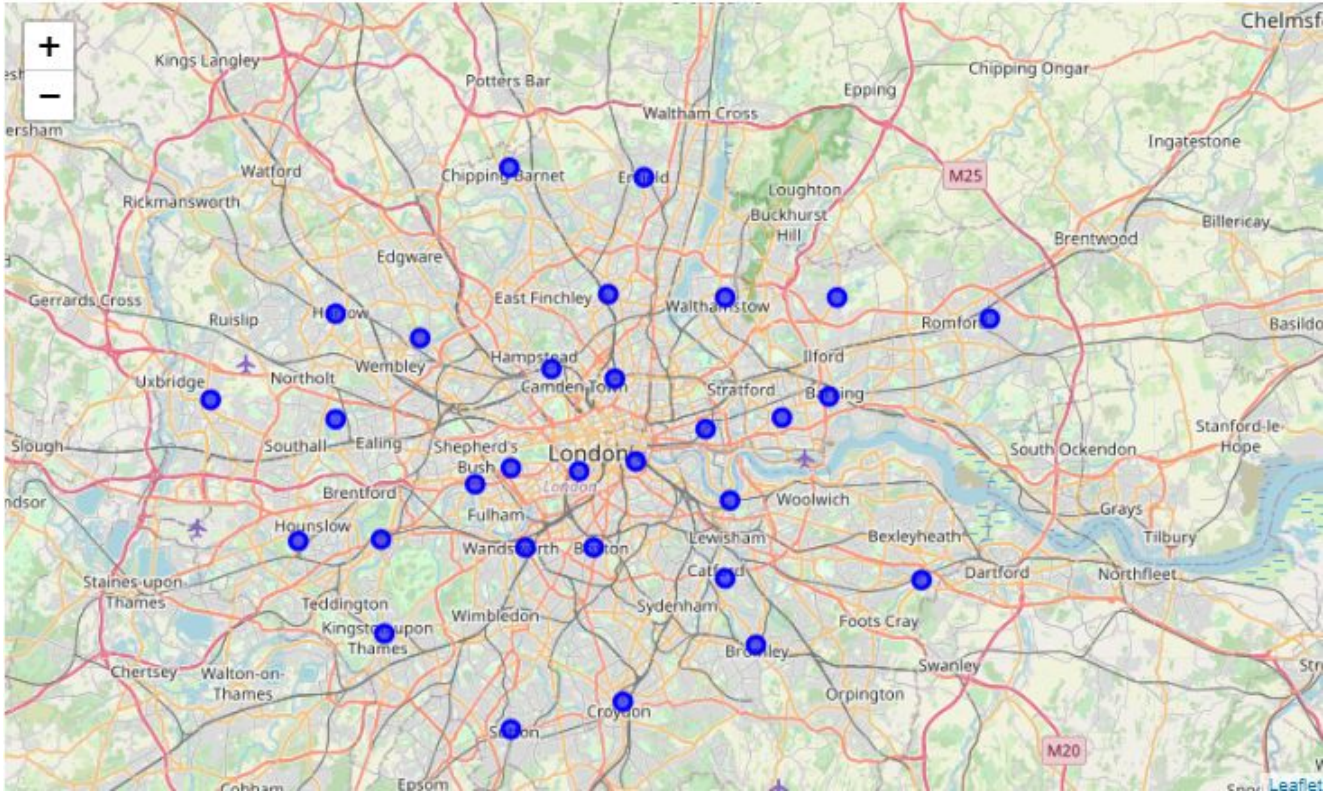
We will follows the differents steps :

- Visualize the Borough of London
- Explore neighborhood
- Analyse neighborhood
- Cluster the neighborhood

The main tools we will use are :

- Pandas for all dataframe
- FOURSQUARE API
- Folium for the mapping
- Kmean for the clustering

# Mapping of all Borough



# Most common venues per Borough

Thanks to foursquare API :

we are able to extract the top 50 most common venues per Borough in a 5000 radian and add them to the map.

# K Mean clustering

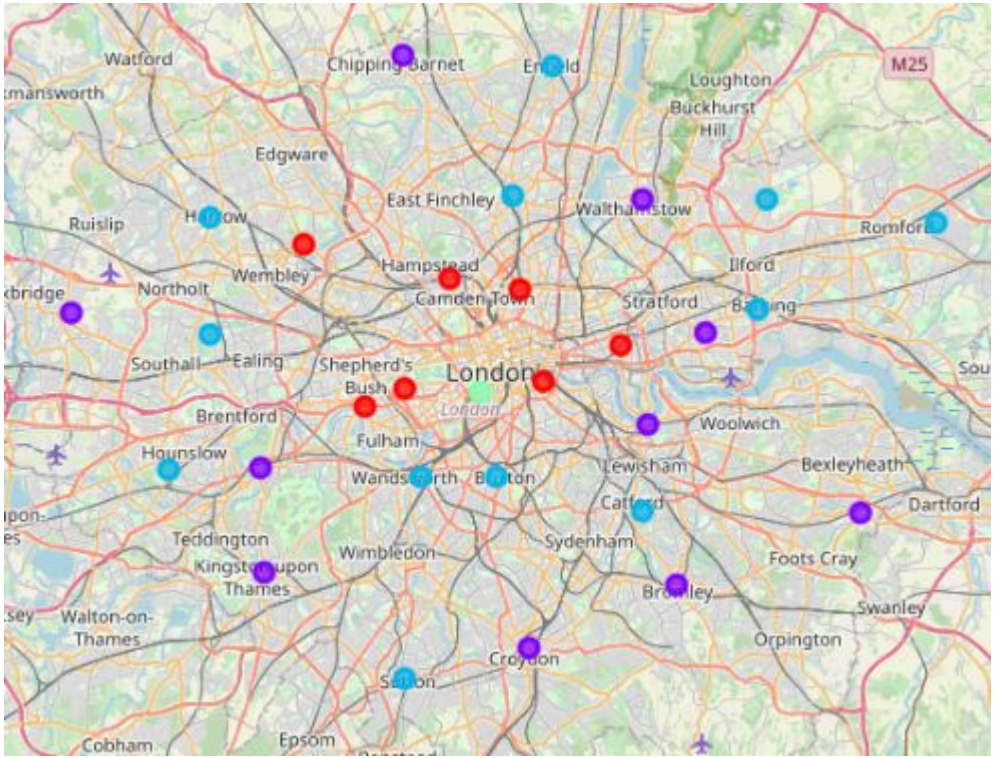
## *k*-means clustering

From Wikipedia, the free encyclopedia

*Not to be confused with K-nearest neighbors algorithm.*

***k*-means clustering** is a method of vector quantization, originally from signal processing, that aims to partition *n* observations into *k* clusters in which each observation belongs to the cluster with the nearest mean (cluster centers or cluster centroid), serving as a prototype of the cluster. This results in a partitioning of the data space into Voronoi cells. It is popular for cluster analysis in data mining. *k*-means clustering minimizes within-cluster variances (squared Euclidean distances), but not regular Euclidean distances, which would be the more difficult Weber problem: the mean optimizes squared errors, whereas only the geometric median minimizes Euclidean distances. For instance, better Euclidean solutions can be found using k-medians and k-medoids.

# Cluster Mapping



# Results

The CLUSTER 1 is the cluster who show a clear predominant of “PUB” in the 1st most Common Venues .

```
# cluster 1
neighborhoods_venues_sorted.loc[neighborhoods_venues_sorted['Cluster Labels'] == 1, neighborhoods_venues_sorted.co
```

| | Neighborhood | 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 Mc Comm Ven |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Barnet | Pub | Café | Turkish Restaurant | Coffee Shop | Fish & Chips Shop | Supermarket | Park | Breakfast Spot | Sushi Restaurant | Restaura |
| 2 | Bexley | Pub | Park | Grocery Store | Italian Restaurant | Coffee Shop | Pharmacy | Furniture / Home Store | Clothing Store | Café | Gard |
| 4 | Bromley | Pub | Coffee Shop | Gym / Fitness Center | Pizza Place | Park | Grocery Store | Indie Movie Theater | Gastropub | Sandwich Place | Portugue Restaura |
| 6 | Croydon | Pub | Park | Café | Coffee Shop | Golf Course | Bookstore | Caribbean Restaurant | Clothing Store | Movie Theater | Food Co |
| 9 | Greenwich | Pub | Coffee Shop | Turkish Restaurant | Garden | Park | Café | Street Food Gathering | Brewery | Historic Site | Playgrou |
| 10 | Hackney | Pub | Bar | Hotel | Fast Food Restaurant | Indian Restaurant | Thrift / Vintage Store | Department Store | Resort | Coffee Shop | Fish Chips Sh |
| 15 | Hillingdon | Coffee Shop | Pub | Indian Restaurant | Multiplex | Gym / Fitness Center | Restaurant | Park | Supermarket | Middle Eastern Restaurant | Gard Cent |
| 19 | Kingston upon Thames | Pub | Coffee Shop | Burger Joint | Café | Japanese Restaurant | Garden | Supermarket | Sushi Restaurant | Gastropub | Pa |
| 23 | Newham | Pub | Park | Café | Hotel | Bar | Gym / Fitness Center | Indian Restaurant | Stadium | Fish & Chips Shop | Burg Jo |
| 25 | Richmond upon Thames | Pub | Garden | Coffee Shop | Botanical Garden | Café | Hotel | Italian Restaurant | Park | Bakery | Gastrop |
| 29 | Waltham Forest | Pub | Coffee Shop | Restaurant | Brewery | Café | Pizza Place | Art Gallery | Park | Farm | Bake |

# Conclusion

**Our problem was :**

To make our communication plan a success:

We need to identify and create a selection of London areas where we will start our communication plan.

We want to identify which areas of London are distinguished by the frequency of pub visits.

**SOLUTION**

The Borough identified in **cluster 1** will be the ones where we will start our communication plans.

| | Neighborhood | 1st Most Common Venue | 2nd Most Common Venue |
|---|---|---|---|
| 1 | Barnet | Pub | Café |
| 2 | Bexley | Pub | Park |
| 4 | Bromley | Pub | Coffee Shop |
| 6 | Croydon | Pub | Park |
| 9 | Greenwich | Pub | Coffee Shop |
| 10 | Hackney | Pub | Bar |
| 15 | Hillingdon | Coffee Shop | Pub |
| 19 | Kingston upon Thames | Pub | Coffee Shop |
| 23 | Newham | Pub | Park |
| 25 | Richmond upon Thames | Pub | Garden |
| 29 | Waltham Forest | Pub | Coffee Shop |