



NEW INDIAN RESTAURANT LOCATOR



Objective and Challenges

- To find an optimal location for a new Indian restaurant in the suburb of London.
- The location must be very accessible and acceptable to broad range of customers.
- Restaurants in heavily populated suburban areas or major cities face heavy competition, especially small, independent restaurants.
- Residential and Commercial Population of the proposed location



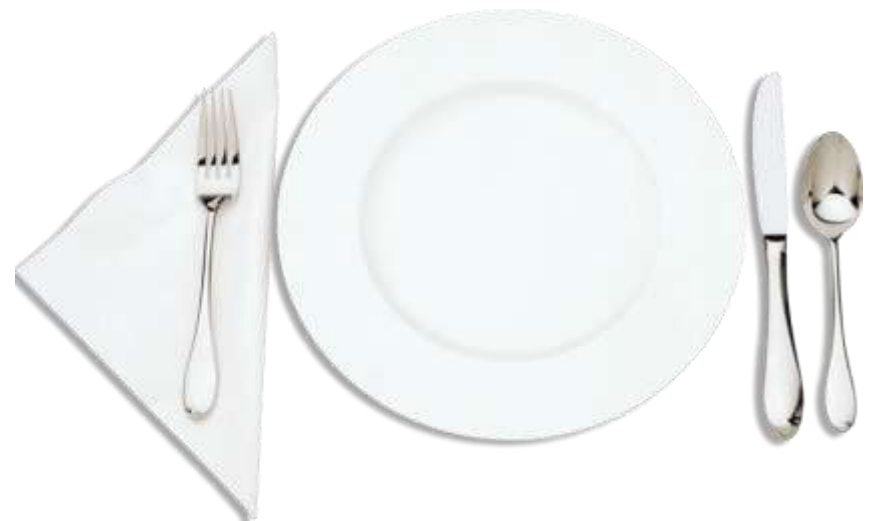
Why London?

- London is the capital and largest city of both England and the United Kingdom.
- London is considered to be one of the world's most important global cities and has been termed the world's most investment friendly destination for new business.
- It has a strong Indian population which is growing every year.
- It is the most-visited city as measured by international arrivals with considerable amount of Indian tourists.
- It'll be an excellent investment opportunity with growing demand for good restaurants for the indian migrants as well as the tourists.



Proposed Solution

- Since there are lots of restaurants in London we will try to detect locations that are not already crowded with restaurants.
- We are also particularly interested in areas with no or less number of Indian restaurants in vicinity.
- We would also prefer locations as close to city center as possible.
- The location must be popular among tourists and have good travel connectivity.



Data

Based on definition of our problem, factors that will influence our decision are:

- number of existing restaurants in the neighbourhood (any type of restaurant)
- number of and distance to Indian restaurants in the neighbourhood, if any
- distance of neighbourhood from city center.



Data Acquisition

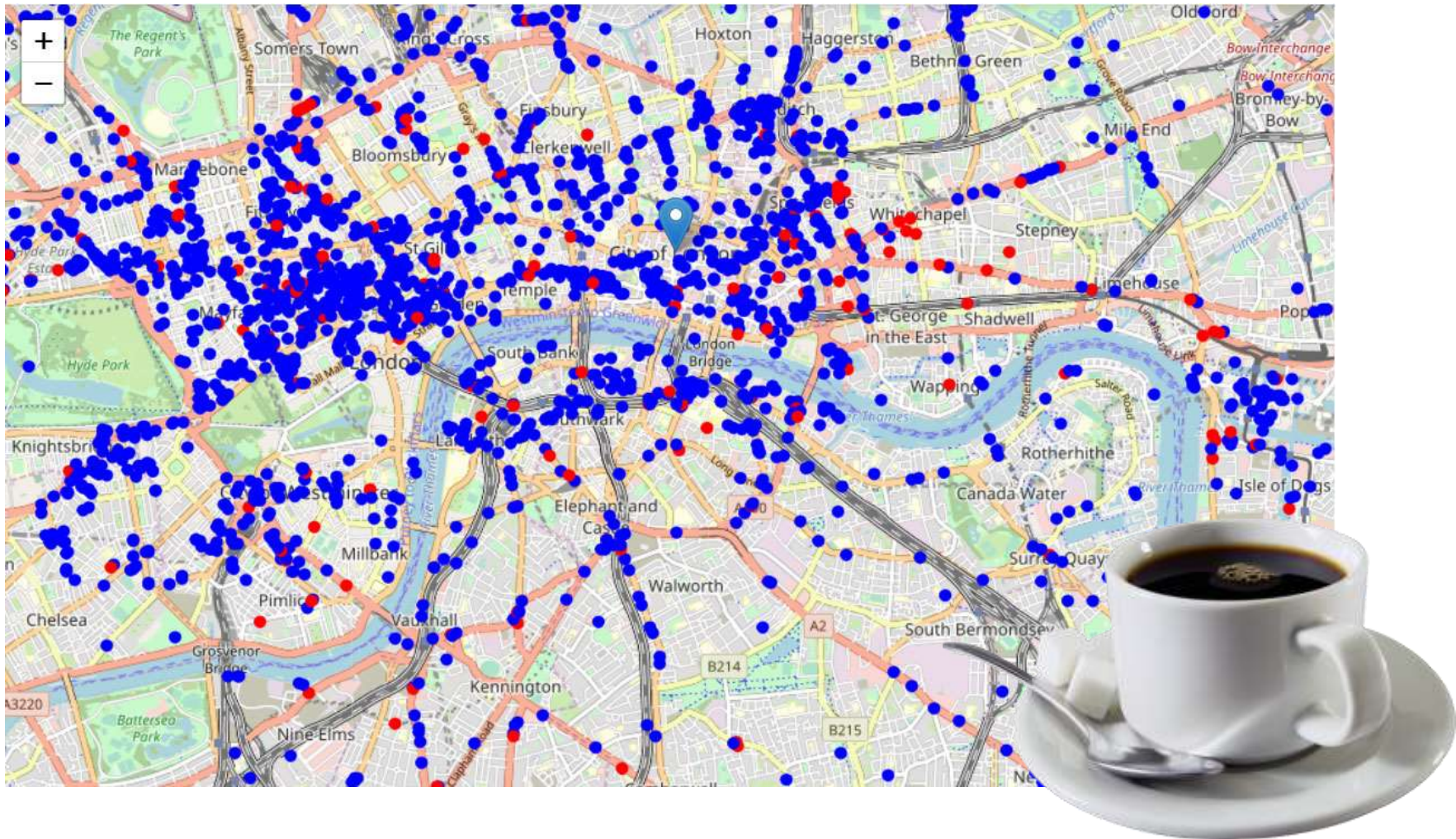
Following data sources will be needed to extract the required information:

- Recommended areas will be generated algorithmically and approximate addresses of centers of those areas will be obtained using Geopy Geocoders package
- coordinate of London center will be obtained using Geopygeocoders
- Number of overall restaurants and Indian restaurants in the vicinity will be extracted from the Foursquare API

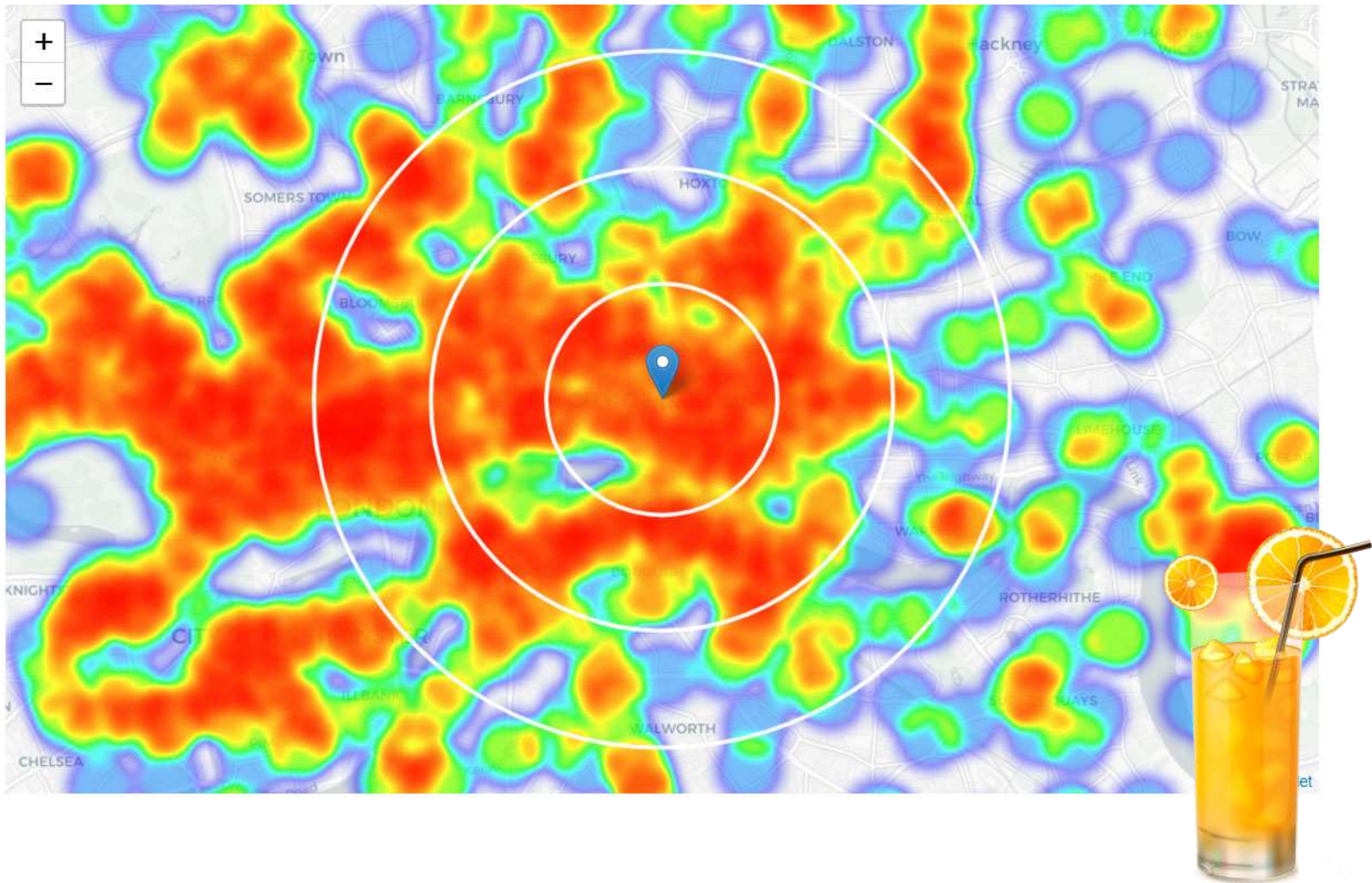


Methodology

- collect the required data: location and type (category) of every restaurant within 6km from London center from Four Square API



heat maps from Folium to visualize the density of the restaurants in the selected radius from the center of London.



The density of Indian restaurants from the center of london



Observation

- From the visualization in the map it's observed that most of the restaurants are scattered on the north side of the city center.
- In total there were 2616 restaurants retrieved and among them were 197 Indian restaurants.
- The City of London which has been marked as the center and its northern areas has been occupied majorly by administrative offices with less number of residential population.
- The western part has a major tourist attraction but is over crowded with restaurants already.
- Our focus is going to be the southern part of the center of London across the Thames river which has a good residential population along with tourist attractions which is Borough of Southwark.



London Borough of Southwark

- The London Borough of Southwark in South London, England forms part of Inner London and is connected by bridges across the River Thames to the City of London.
- It is home to London Bridge terminus station
- The attractions of The Shard, Tate Modern, Shakespeare's Globe Theatre, and Borough Market that are the largest of the venues in Southwark to draw domestic and international tourism.
- Popular with tourists, booming and trendy, relatively close to city center and well connected



Identifying areas in Southwark

further narrow the region of interest, which will include low restaurant-count, parts of Walworth and Bermondsey closest to the center of London.



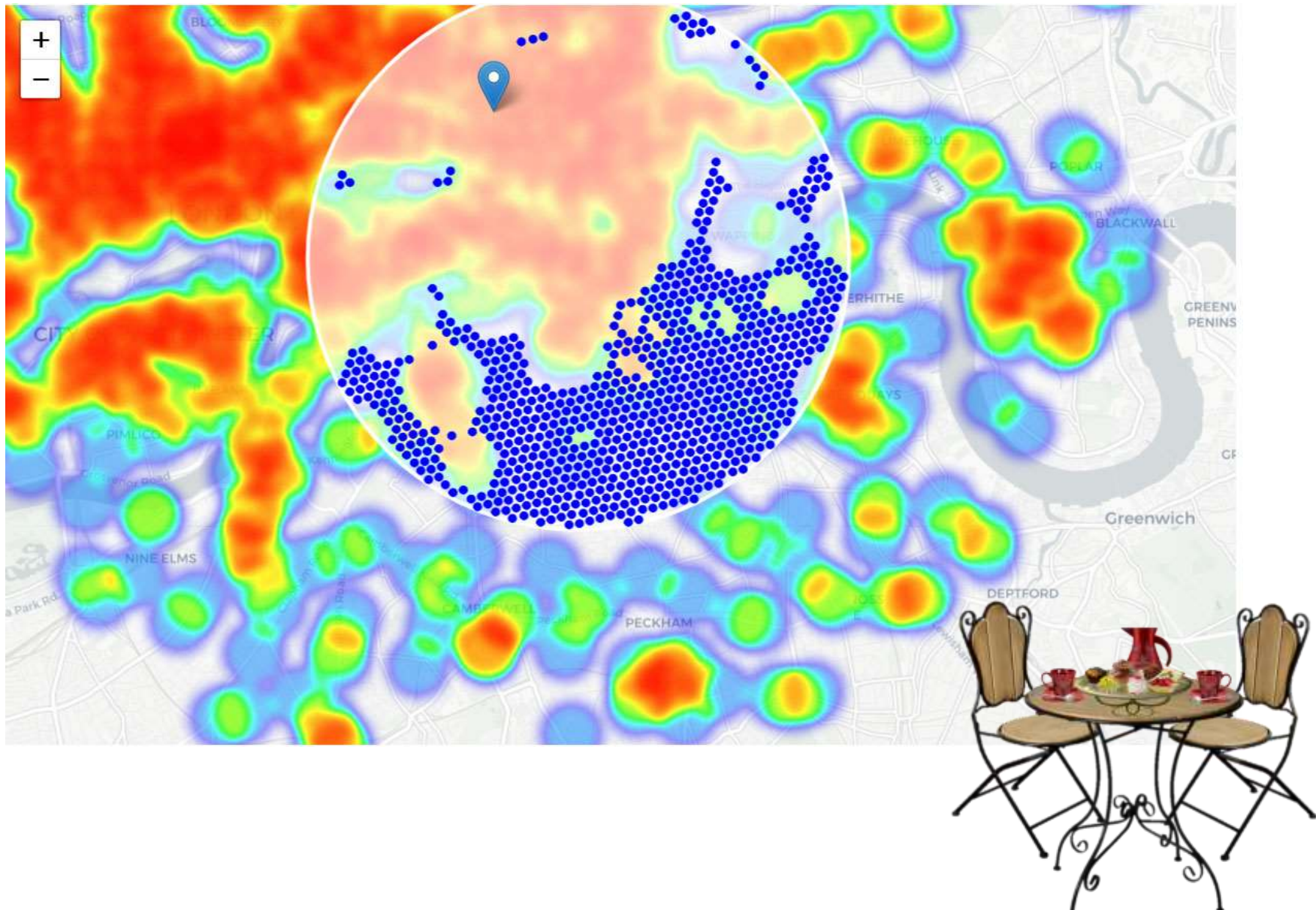
Analysing nearby restaurants

The number of restaurants in the vicinity and its distance to the Indian restaurants.

Latitude	Longitude	X	Y	Restaurants nearby	Distance to Indian restaurant
51.504493	-0.091868	-544616.134882	5.814725e+06	36	76.193617
51.517583	-0.075949	-543216.134882	5.815937e+06	36	128.705479
51.518243	-0.076898	-543266.134882	5.816024e+06	36	90.274296
51.524918	-0.079882	-543316.134882	5.816803e+06	35	75.261332
51.525579	-0.080832	-543366.134882	5.816890e+06	35	103.646409
51.505153	-0.092818	-544666.134882	5.814811e+06	35	18.997408
51.525396	-0.082224	-543466.134882	5.816890e+06	35	126.343227

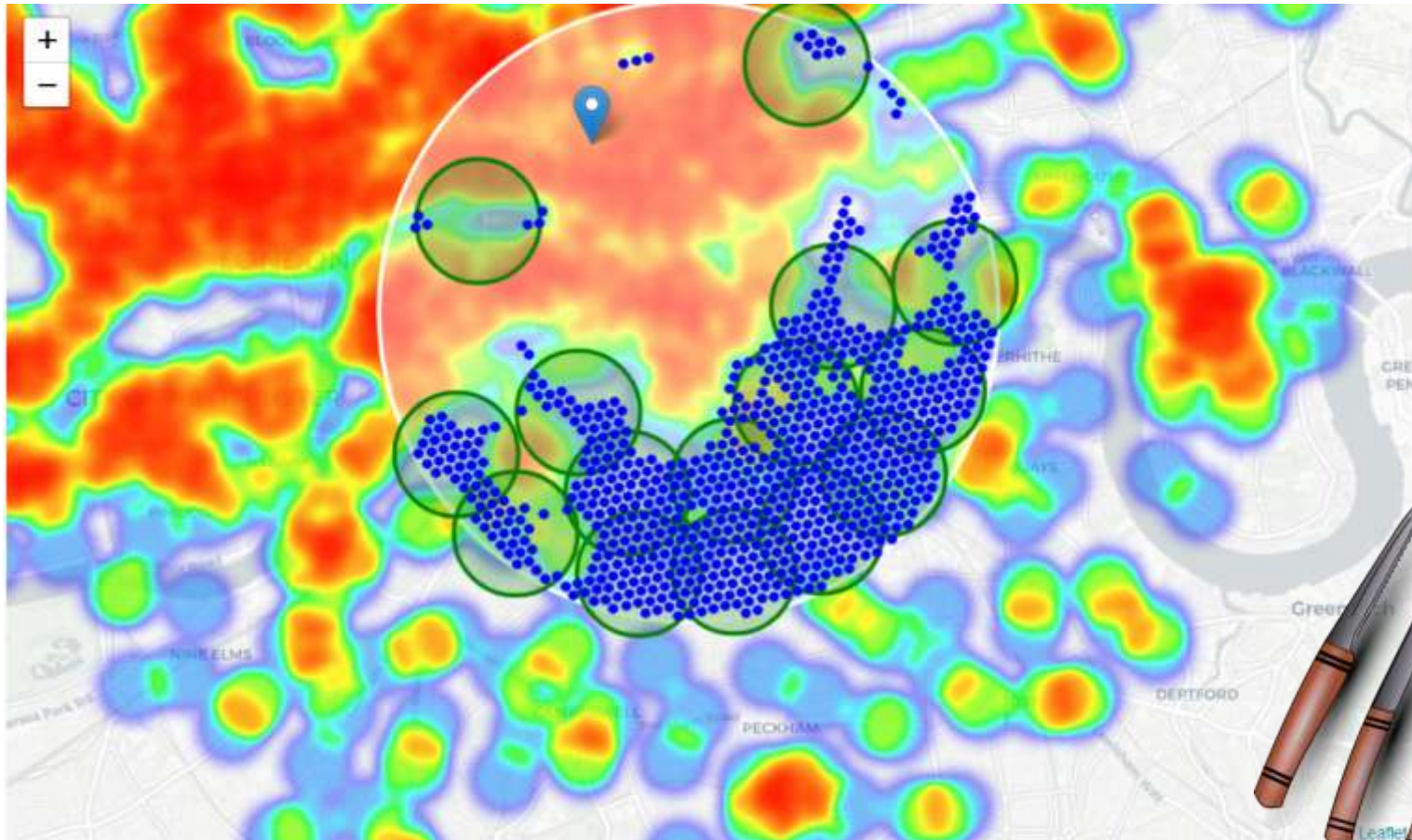


Further reduce the location search to 250m and a new criteria of no. Indian restaurants in a radius of 400m.



Cluster Analysis

Unsupervised learning K-means algorithm to cluster the borough.
15 clusters to give adequate choice to the stakeholders to choose from



Result

Results based on the finding from the cluster analysis.

- Stevenson Crescent, Ledbury Estate, Bermondsey => 3.7km from City of London
- Penry Street, Ledbury Estate, Walworth => 3.0km from City of London
- Granary Road, Globe Town, Whitechapel => 2.2km from City of London
- Bermondsey Wall East, Bermondsey => 2.5km from City of London
- The Queens Walk Borough of Southwark => 1.2km from City of London
- Michael Faraday Primary School, Hopwood Road => 3.5km from City of London
- Polperro Mews Borough of Lambeth, SE11 4TY => 2.7km from City of London
- Albion Primary School, Clack Street, Canada Water => 3.4km from City of London
- Waite Street, Trafalgar Avenue, Ledbury Estate, => 3.7km from City of London
- Walworth Garden, 206, Manor Place, Elephant and Castle => 3.2km from City of London
- Shadwell Basin, Monza Street, Shadwell => 2.8km from City of London
- Southwark Park Estate, Southwark Park Road => 3.5km from City of London
- 70-90, Woolstaplers Way, Ledbury Estate => 2.9km from City of London
- 4, Henshaw Street, Walworth => 2.6km from City of London
- Alphabeta, Finsbury Square, Saint Lukes => 0.8km from City of London



Conclusion

A brief summary of the project analysis:

- identify London areas close to center with low number of restaurants (particularly Indian restaurants).
- By calculating restaurant density distribution from Foursquare data I have first identified borough Southwark that justify further analysis.
- generate extensive collection of locations which satisfy some basic requirements regarding existing nearby restaurants.
- Clustering of those locations was then performed in order to create major zones of interest containing greatest number of potential locations.



THANK YOU

