



IBM Data Science Capstone

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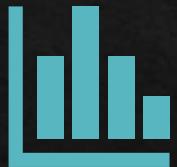
Battle of the Neighborhoods

(Doha Vs Rest of Qatar)



Objective

Saving Money on rents
Find Alternatives to Doha
Insights to Investors



Analysis

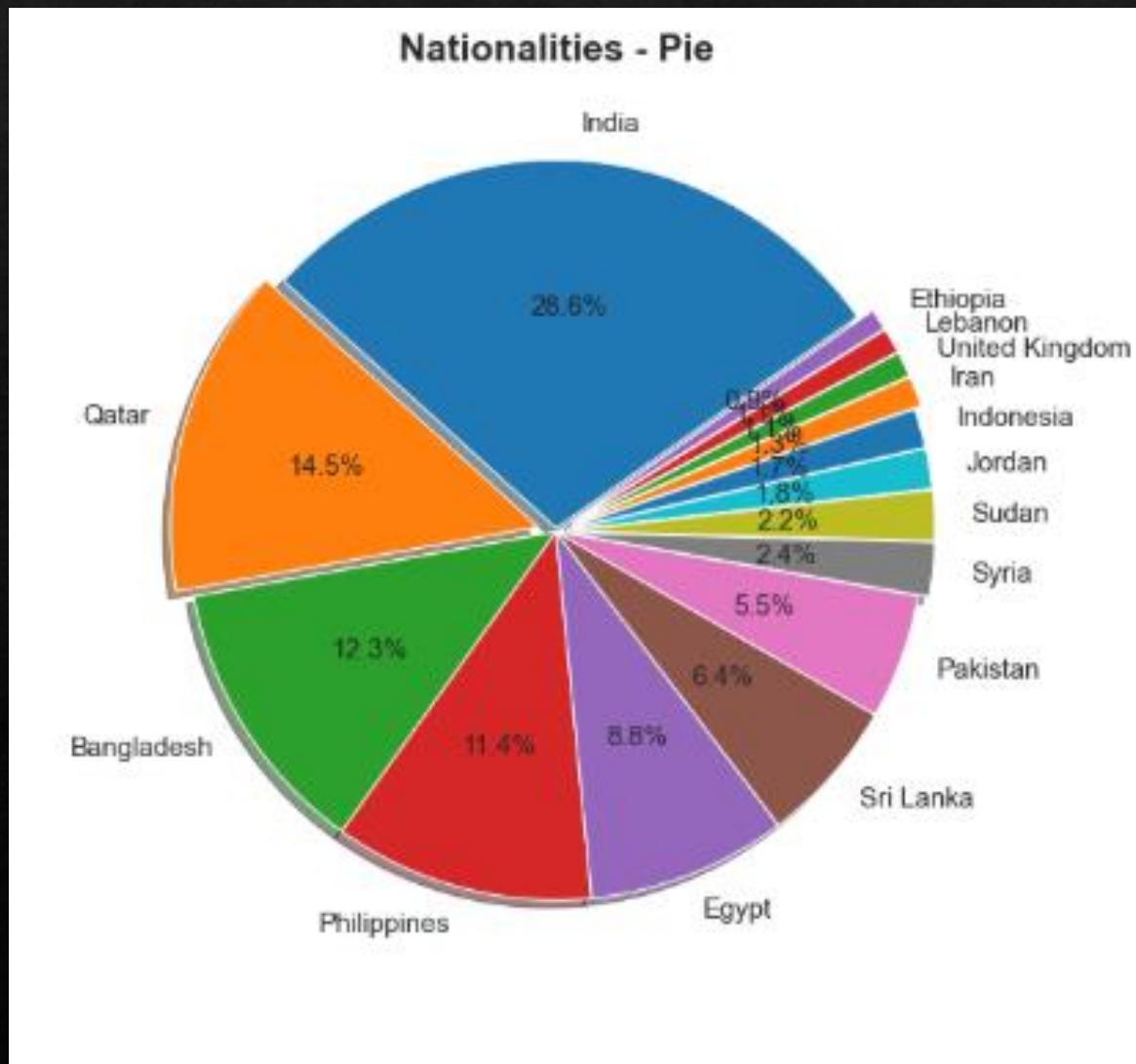
Demographics
Location data
K-means clustering



Conclusions

Neighborhood alternatives
Solution to Doha
Future Opportunities

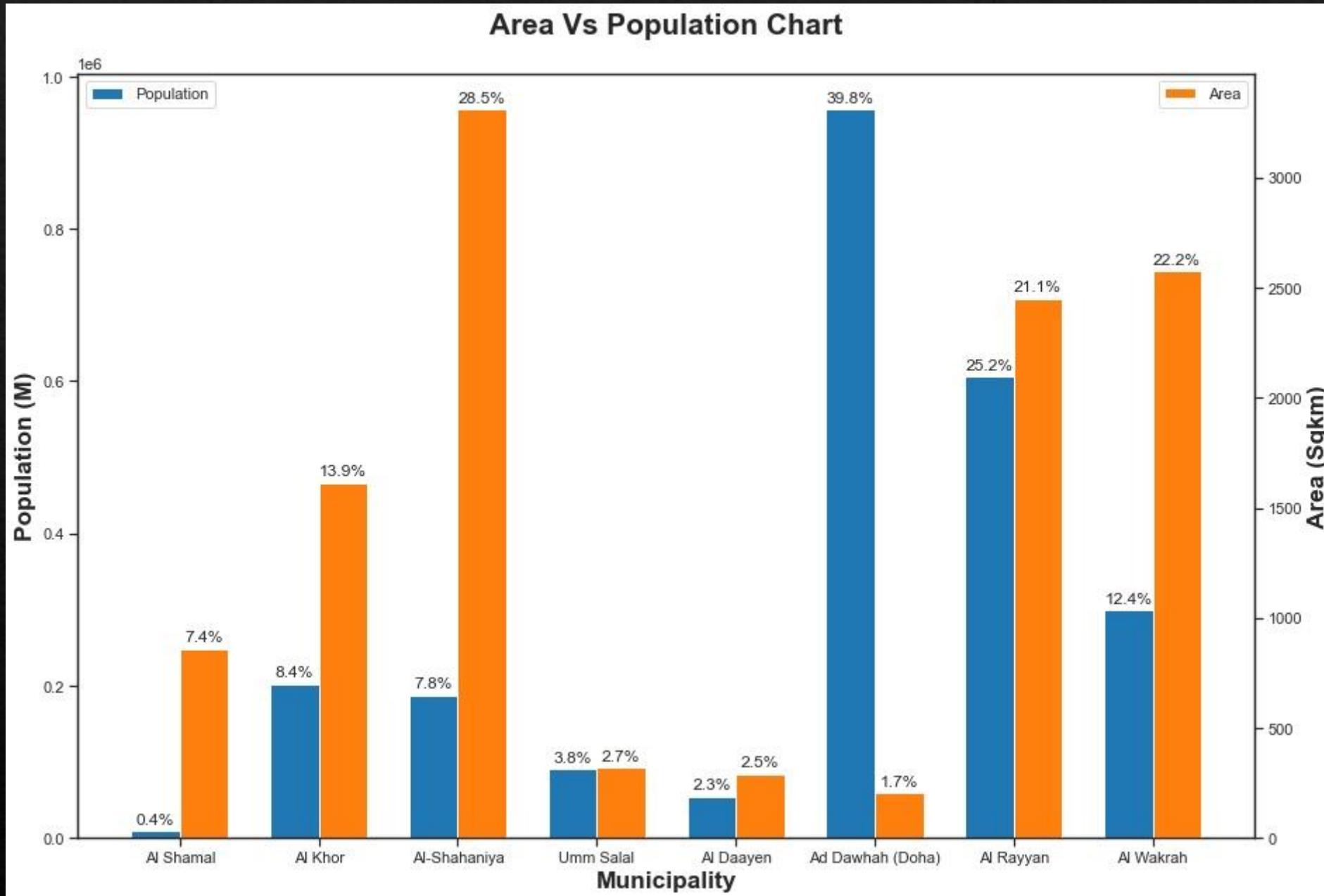
Demographics of Qatar



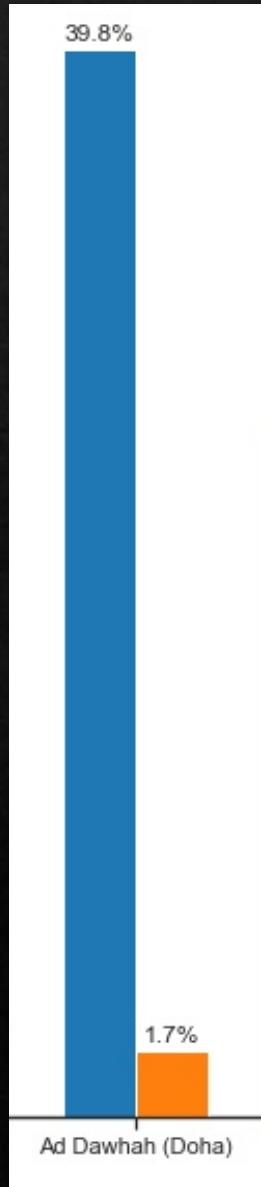
- ❖ Basic population analysis reveals that Qatari population is dominated by Indians (28.6%)
- ❖ Local population of Qatari nationals is at second place (14.5%)
- ❖ Other major expatriates are from Bangladesh, Philippines, Egypt, Sri Lanka and Pakistan.
- ❖ Total non-Qatari population in the country is 85.5%

Geography and Population

Area Vs Population Chart



Doha Problem



- ❖ Doha (capital of Qatar) is the smallest City of the country.
- ❖ Doha represents mere 1.7% of the land.
- ❖ However, Doha holds staggering 39.8% of the population.
- ❖ There are 64 Neighborhood in Doha alone out of 148 total in Qatar.
- ❖ Above conditions create a mix of problems and the opportunities for the residents and investors the same time in Qatar.

Doha comparison

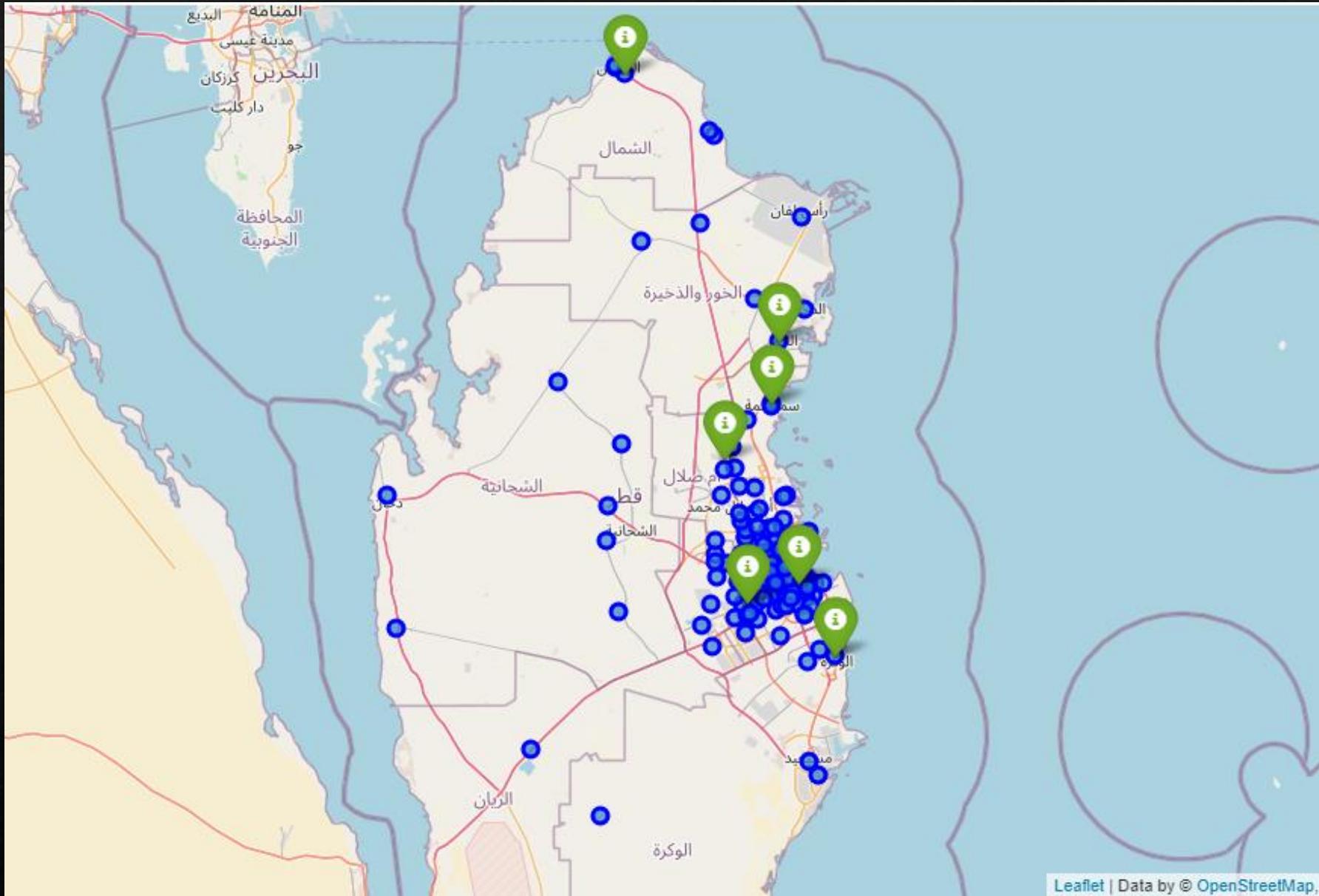
Problems

- ❖ Extremely high living costs
- ❖ Congestion and increased traffic
- ❖ Possibilities to spread pandemics easily such as COVID-19

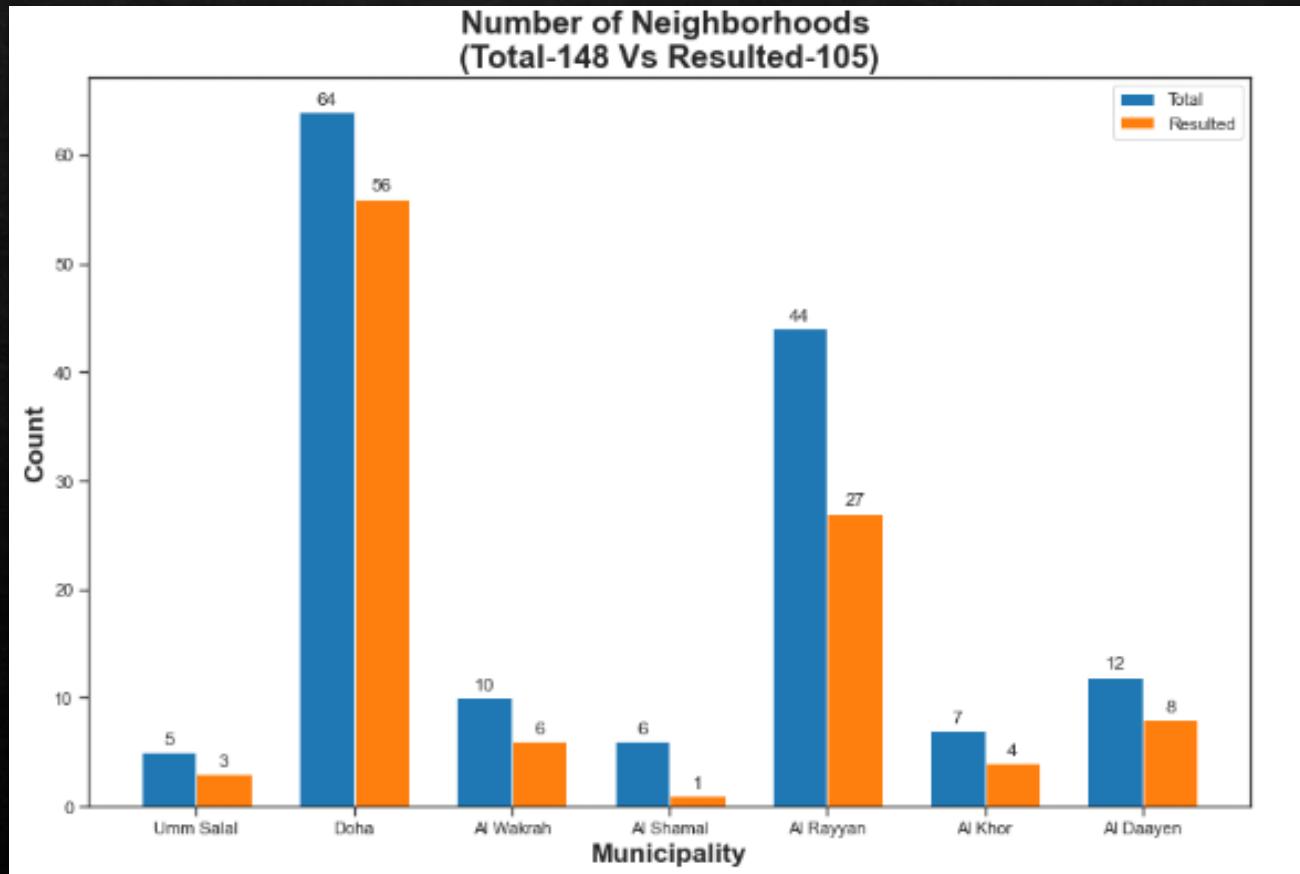
Opportunities

- ❖ Added Convenience being closer to everything
- ❖ High rentals are good for Investors
- ❖ Need for alternative Cities and developments

Qatar Neighborhoods - MAP

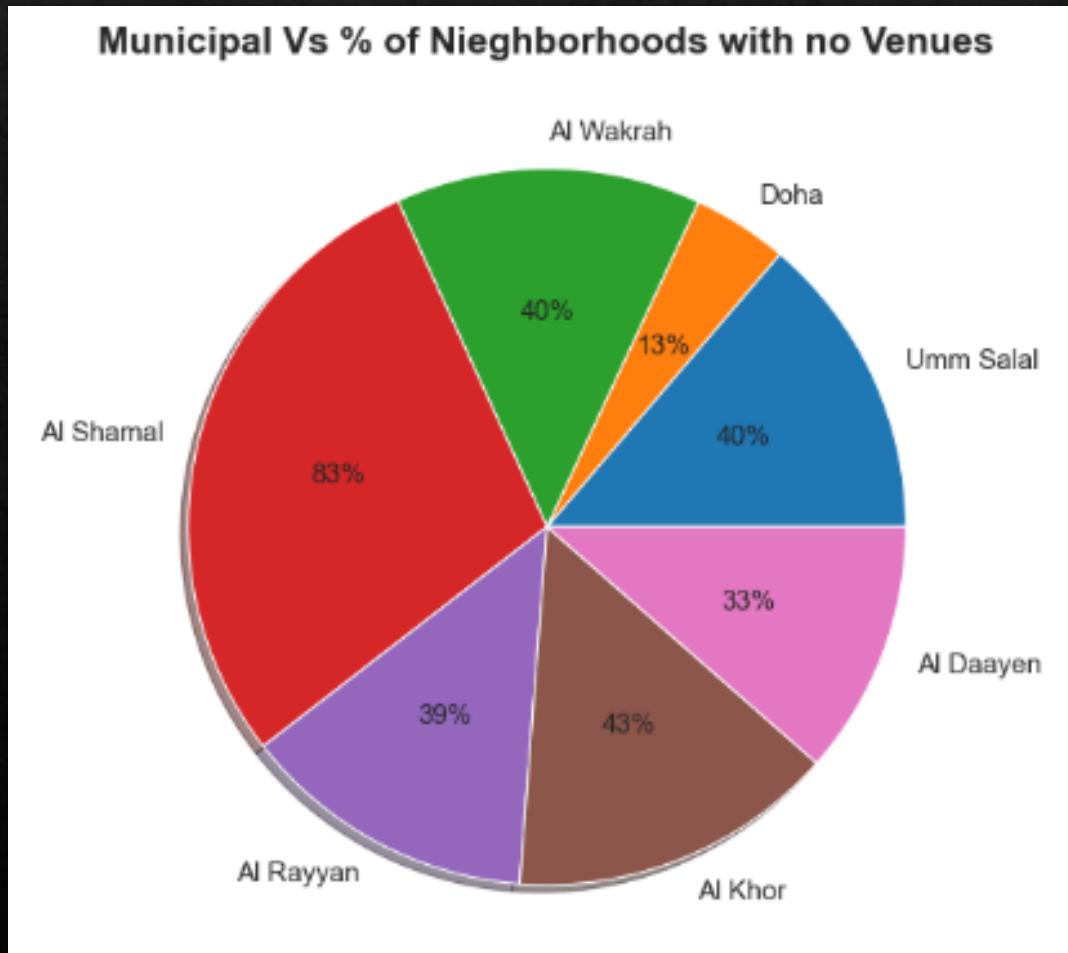


Foursquare – Searching for Venues



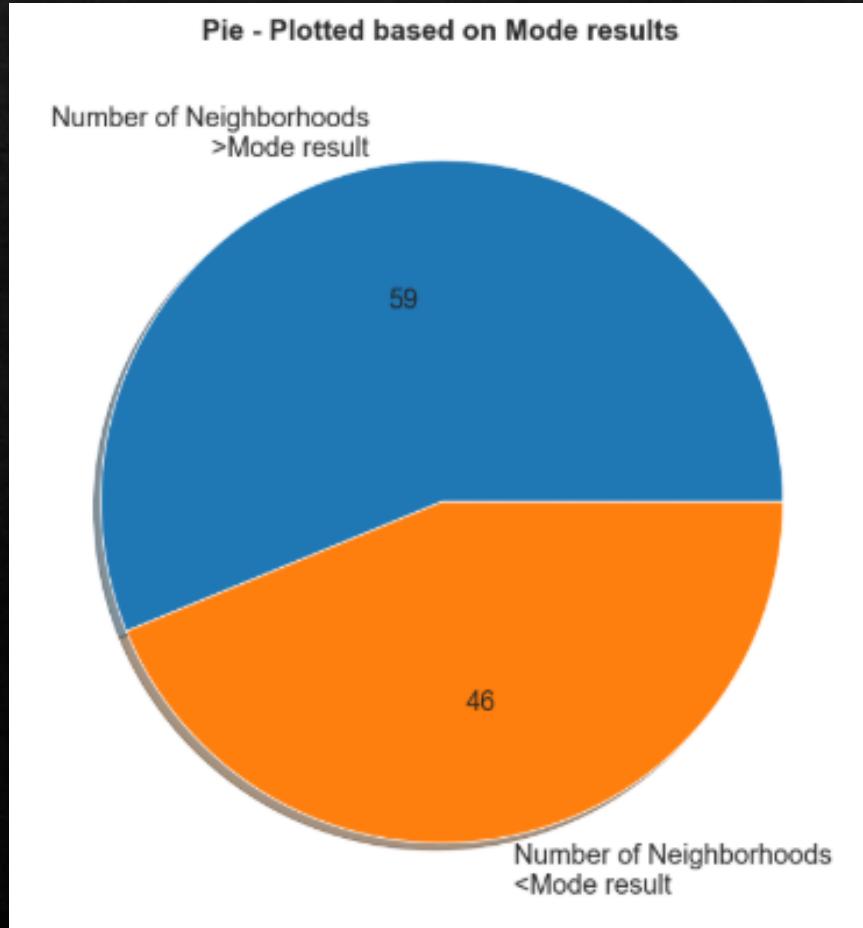
- ❖ Using Foursquare we obtain
 - Results for 105 out of 148 Neighborhoods in Qatar
 - Majority of results from Doha followed by Al Rayyan

Missing Foursquare results



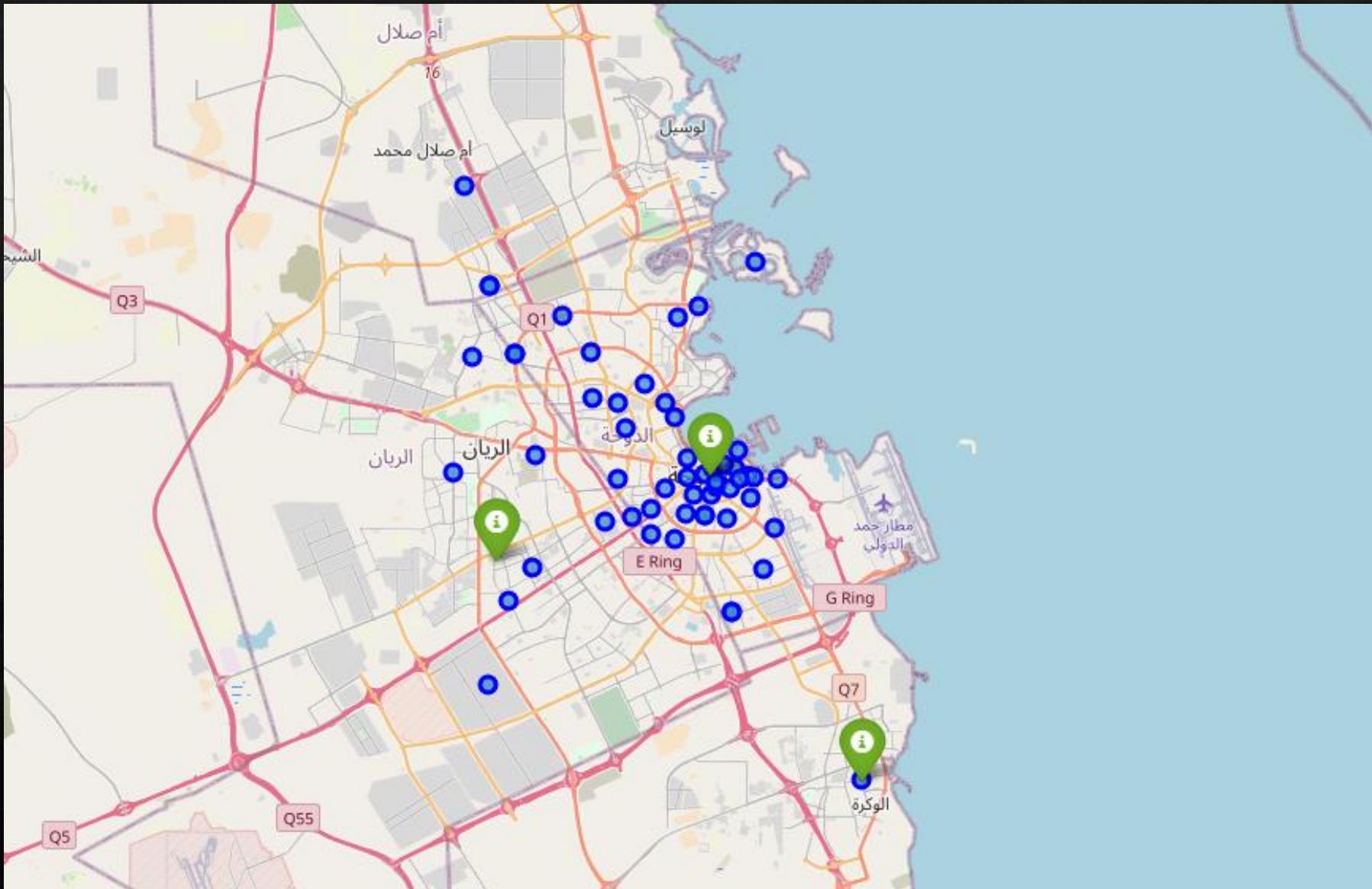
- ❖ 43 out of 148 Neighborhoods did not get any nearby result from Foursquare.
- ❖ It is evident that Desert and Isolated cities are consistent with the missing venue results.

Narrowing the Analysis based on Quantity of venue results

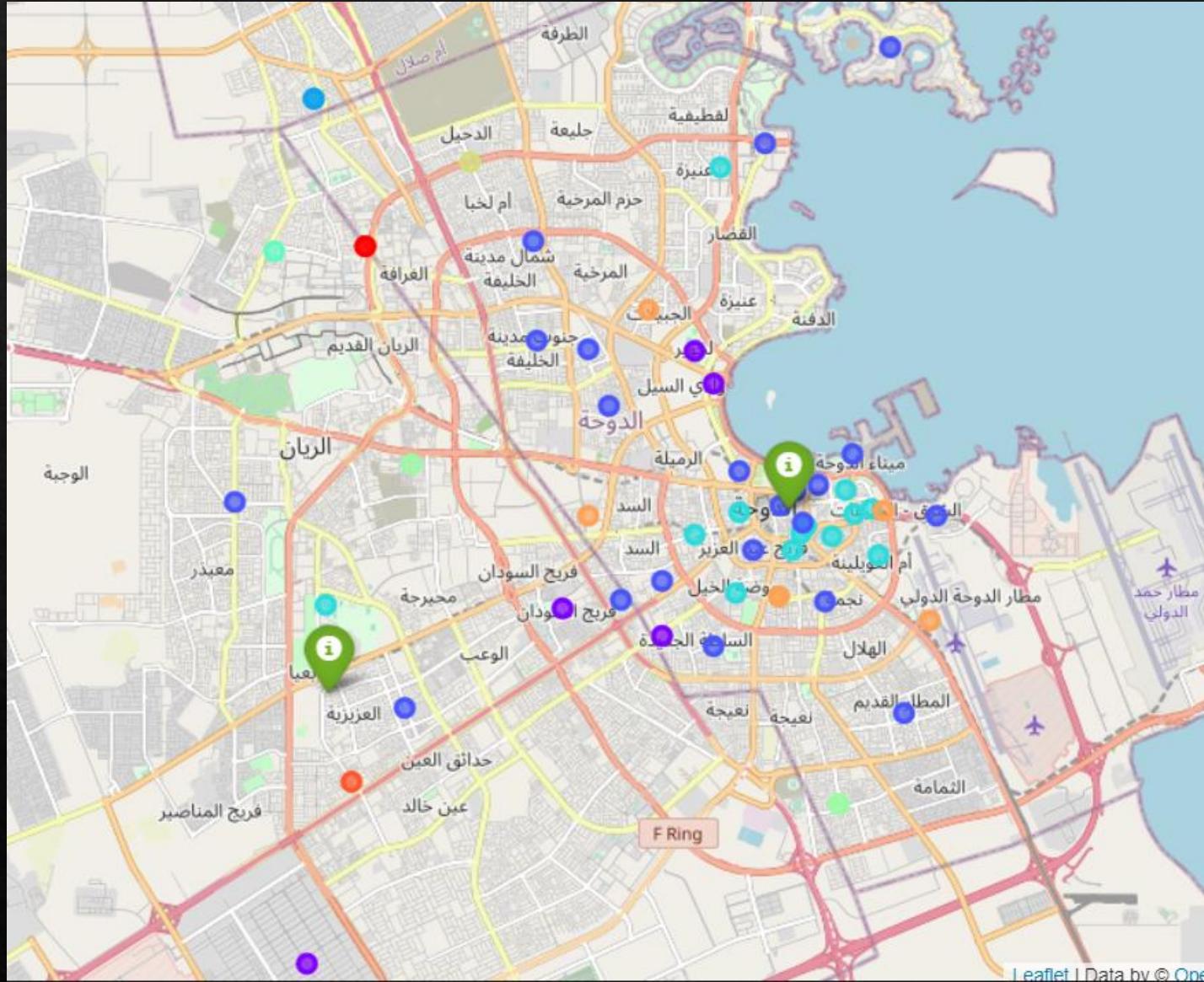


- ❖ Based on the number of venues per Neighborhood, it is further determinant that by comparison with Mode (= 4), 59nos of Neighborhoods can be shortlisted for the Clustering and comparison with Doha.

Re-Mapping the Neighborhoods



K-means Clustering (k=10) based on Top10 venues



Outcomes of Clustering

Table 2. Doha Clusters

Cluster_Label	Neighborhood_count	Remarks
2	19	
4	12	
8	6	
1	3	
6	1	
7	1	

- ❖ Doha is clustered in to 7 types of Neighborhoods.
- ❖ Cluster label 2 is the most common type of Neighborhood.
- ❖ Followed by Cluster label 4 and Cluster label 8 respectively.

Characterizing the Cluster labels

Table 4. Characterizing the Clusters

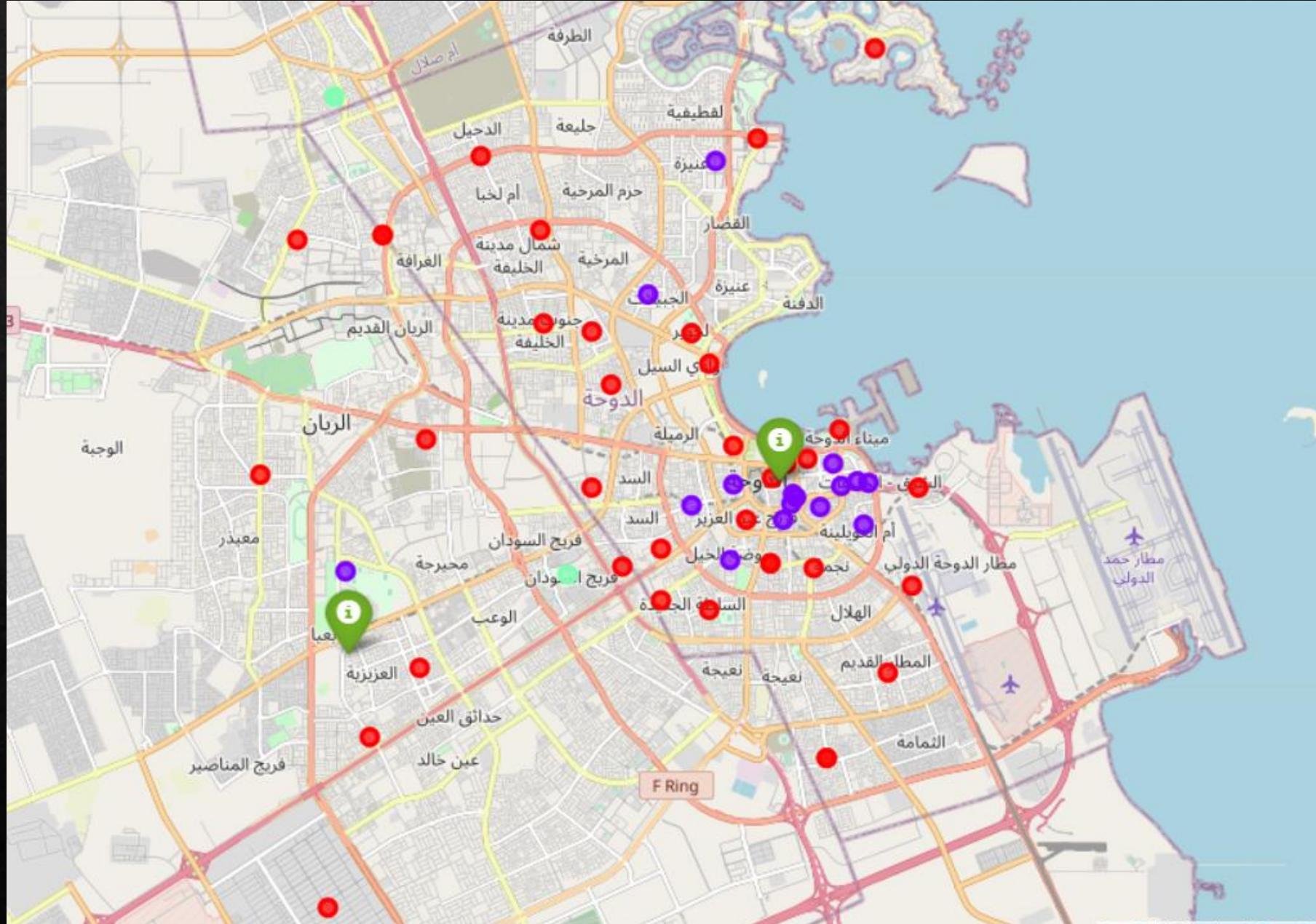
<u>Cluster_Label</u>	<u>Summery of Venue Categories</u>	<u>Brief on Cluster Charachteristics</u>
2	Range of Café & Restaurants, Hotels, Grocery Store, Park.	Neighborhood for Bachelors
4	Number of Hotels, Range of Restaurants, Pizza place, Jewelry Store	Neighborhood for travellers
8	Range of Café & Restaurants, Hotels, Convenience Stores & Department Stores, Pool Hall, Palace	Neighborhood for Families

Basic Conclusions

Municipality	Cluster Labels	Count of Neighborhoods
Al Khor	2	1
	8	1
Al Rayyan	2	1
	4	1
Al Wakrah	2	1
	8	1
Umm Salal	2	1

- ❖ Doha is unique and very few neighborhoods resembles capital city in the other Municipalities.
- ❖ Al Rayyan is identified as the most potential successor to Doha.
- ❖ Al Khor and Wakrah provides few comparable Neighborhoods too.

K-means Clustering (k=3) based on Top10 venues



Future

- ❖ It is prominent in throughout the Capstone during various Analysis that Al Rayyan has the **Most Potential** to become the best Alternative City for Doha.
- ❖ Wakra and Al Khor being closest to the two (2) major Oil and Gas industries in the country, development in these Municipalities will draw more population directly involved or service in these Industries.
- ❖ It is also inevitable that Doha will soon become over populated and overly congested. Hence, it is an ideal opportunity for investors to look at similar studies to this Capstone and make right choices when establishing their next business.