# The battle of Amman neighborhoods

Coursera_Datascience_Capstone final project

# Introduction

Amman is one of the most crowded cities in the middle east, given its size and population, almost 4 million people live in the area of 1,680 km² with tons and tons of restaurants and venues, Amman is famous for its diversity, which makes opening a new small business kind of risky

# Clustering a city to identify its dense spots

- When talking about running a new business, we need to compare different areas within the city of interest which is here : Amman,Jordan, to recommend the hottest spots for an imaginary contactor who is planning to open a restaurant or any other business in a popular area within a certain city.

- Anyone with small money capital planning to open a new business, would be very interested in checking the hottest or dense places before choosing where their business is going to take place, to avoid competition and possible loss.

# Data Acquisition and cleaning

1-A list of the venues in the city of amman from foursquare api.
2-filling the missing venues and neighborhoods.
3-A data frame with 5 columns and 100 venues.
4-replacing the misclassified venues and neighborhoods.
5- 17 neighborhoods that contain the 100 venues.

categories
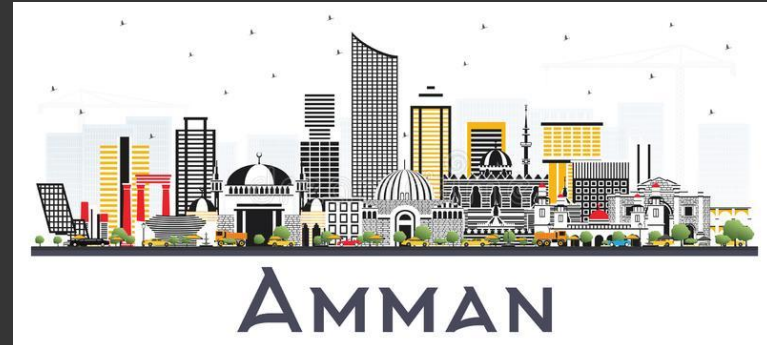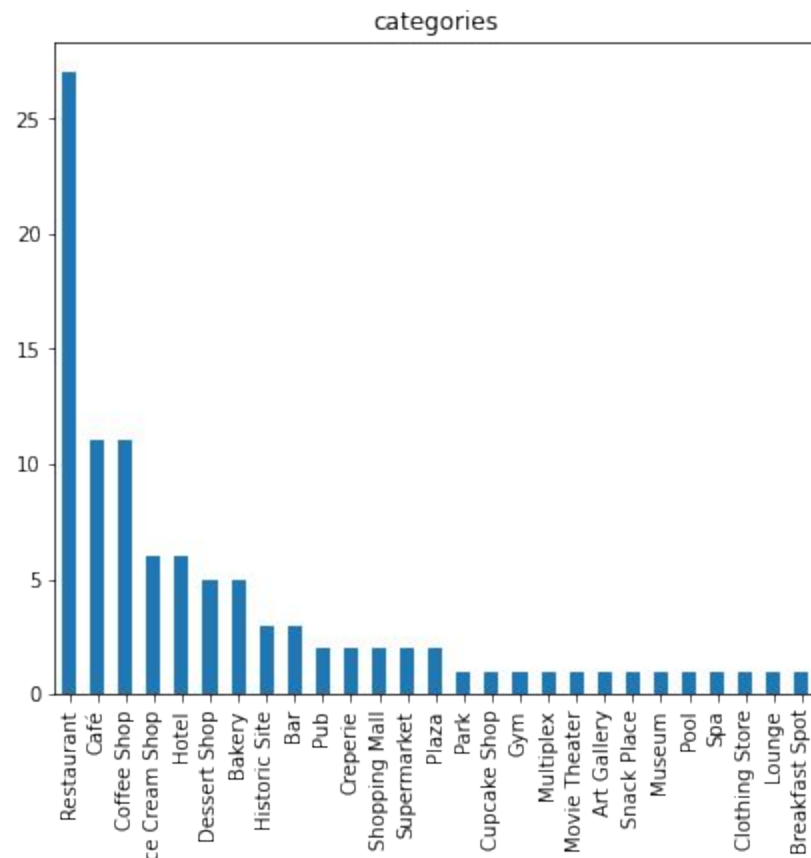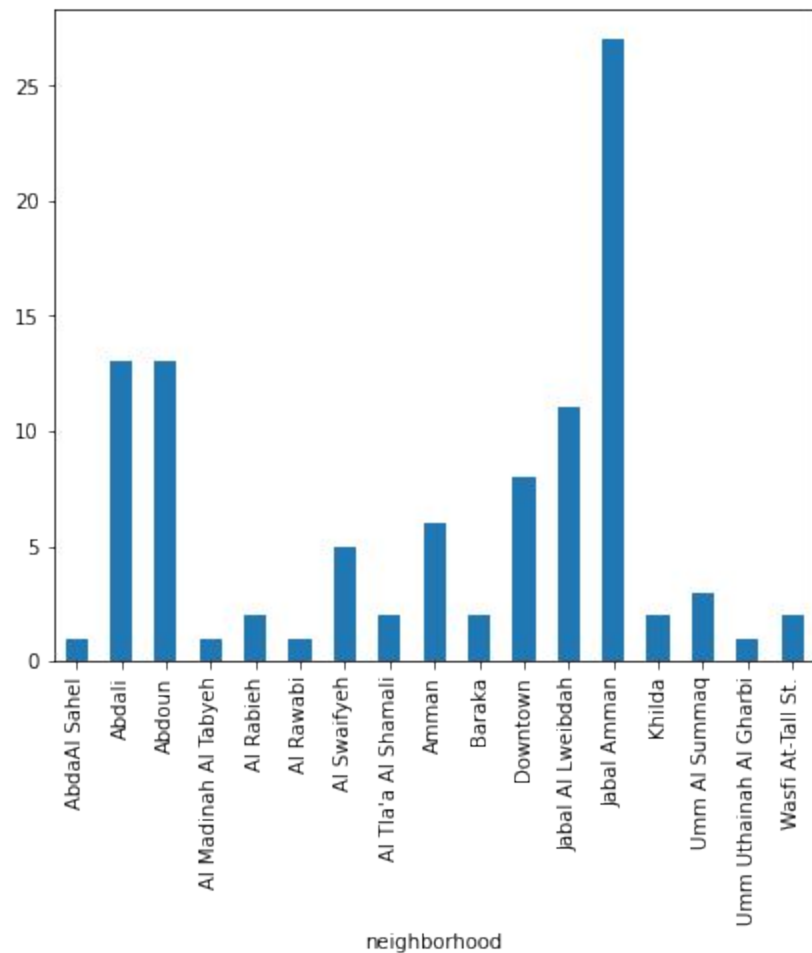
| | Cluster Labels | neighborhood | 1st Most Common Venue | 2nd Most Common Venue | 3rd Most Common Venue | 4th Most Common Venue | 5th Most Common Venue | 6th Most Common Venue | 7th Most Common Venue | 8th Most Common Venue | 9th Most Common Venue | 10th Most Common Venue |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | AbdaAl Sahel | Lounge | Supermarket | Hotel | Bakery | Bar | Breakfast Spot | Café | Clothing Store | Coffee Shop | Creperie |
| 1 | 1 | Abdali | Hotel | Restaurant | Bakery | Shopping Mall | Plaza | Coffee Shop | Movie Theater | Dessert Shop | Supermarket | Gym |
| 2 | 1 | Abdoun | Restaurant | Supermarket | Gym | Shopping Mall | Pub | Café | Multiplex | Coffee Shop | Bakery | Bar |
| 3 | 4 | Al Madinah Al Tabyeh | Museum | Supermarket | Hotel | Bakery | Bar | Breakfast Spot | Café | Clothing Store | Coffee Shop | Creperie |
| 4 | 1 | Al Rabieh | Ice Cream Shop | Café | Hotel | Bakery | Bar | Breakfast Spot | Clothing Store | Coffee Shop | Creperie | Cupcake Shop |
| 5 | 2 | Al Rawabi | Creperie | Supermarket | Hotel | Bakery | Bar | Breakfast Spot | Café | Clothing Store | Coffee Shop | Cupcake Shop |
| 6 | 1 | Al Swaifyeh | Bakery | Ice Cream Shop | Bar | Coffee Shop | Hotel | Breakfast Spot | Café | Clothing Store | Creperie | Cupcake Shop |
| 7 | 5 | Al Tla'a Al Shamali | Restaurant | Supermarket | Hotel | Bakery | Bar | Breakfast Spot | Café | Clothing Store | Coffee Shop | Creperie |
| 8 | 1 | Amman | Coffee Shop | Café | Pool | Cupcake Shop | Supermarket | Hotel | Bakery | Bar | Breakfast Spot | Clothing Store |
| 9 | 1 | Baraka | Restaurant | Café | Supermarket | Hotel | Bakery | Bar | Breakfast Spot | Clothing Store | Coffee Shop | Creperie |
| 10 | 1 | Downtown | Historic Site | Café | Dessert Shop | Restaurant | Supermarket | Hotel | Bakery | Bar | Breakfast Spot | Clothing Store |
| 11 | 1 | Jabal Al Lweibdah | Café | Restaurant | Art Gallery | Snack Place | Plaza | Park | Clothing Store | Coffee Shop | Gym | Bakery |
| 12 | 1 | Jabal Amman | Restaurant | Ice Cream Shop | Coffee Shop | Bakery | Bar | Hotel | Pub | Breakfast Spot | Café | Dessert Shop |
| 13 | 2 | Khilda | Creperie | Dessert Shop | Supermarket | Hotel | Bakery | Bar | Breakfast Spot | Café | Clothing Store | Coffee Shop |
| 14 | 1 | Umm Al Summaq | Ice Cream Shop | Café | Coffee Shop | Hotel | Bakery | Bar | Breakfast Spot | Clothing Store | Creperie | Cupcake Shop |
| 15 | 3 | Umm Uthainah Al Gharbi | Spa | Supermarket | Hotel | Bakery | Bar | Breakfast Spot | Café | Clothing Store | Coffee Shop | Creperie |
| 16 | 5 | Wasfi At-Tall St. | Restaurant | Supermarket | Hotel | Bakery | Bar | Breakfast Spot | Café | Clothing Store | Coffee Shop | Creperie |

# The map of Amman with its venues before clustering
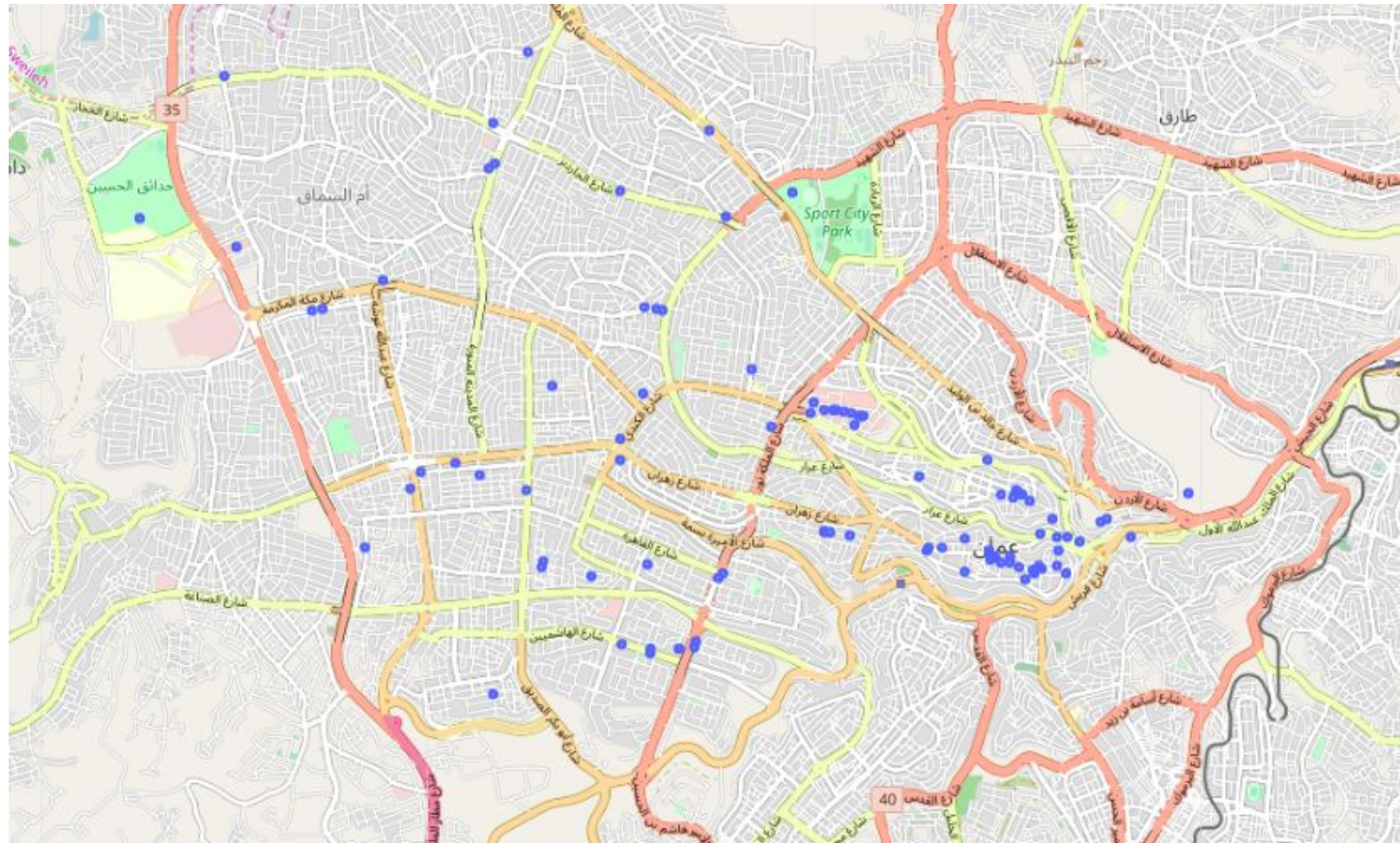
# The map of Amman with its venues after clustering
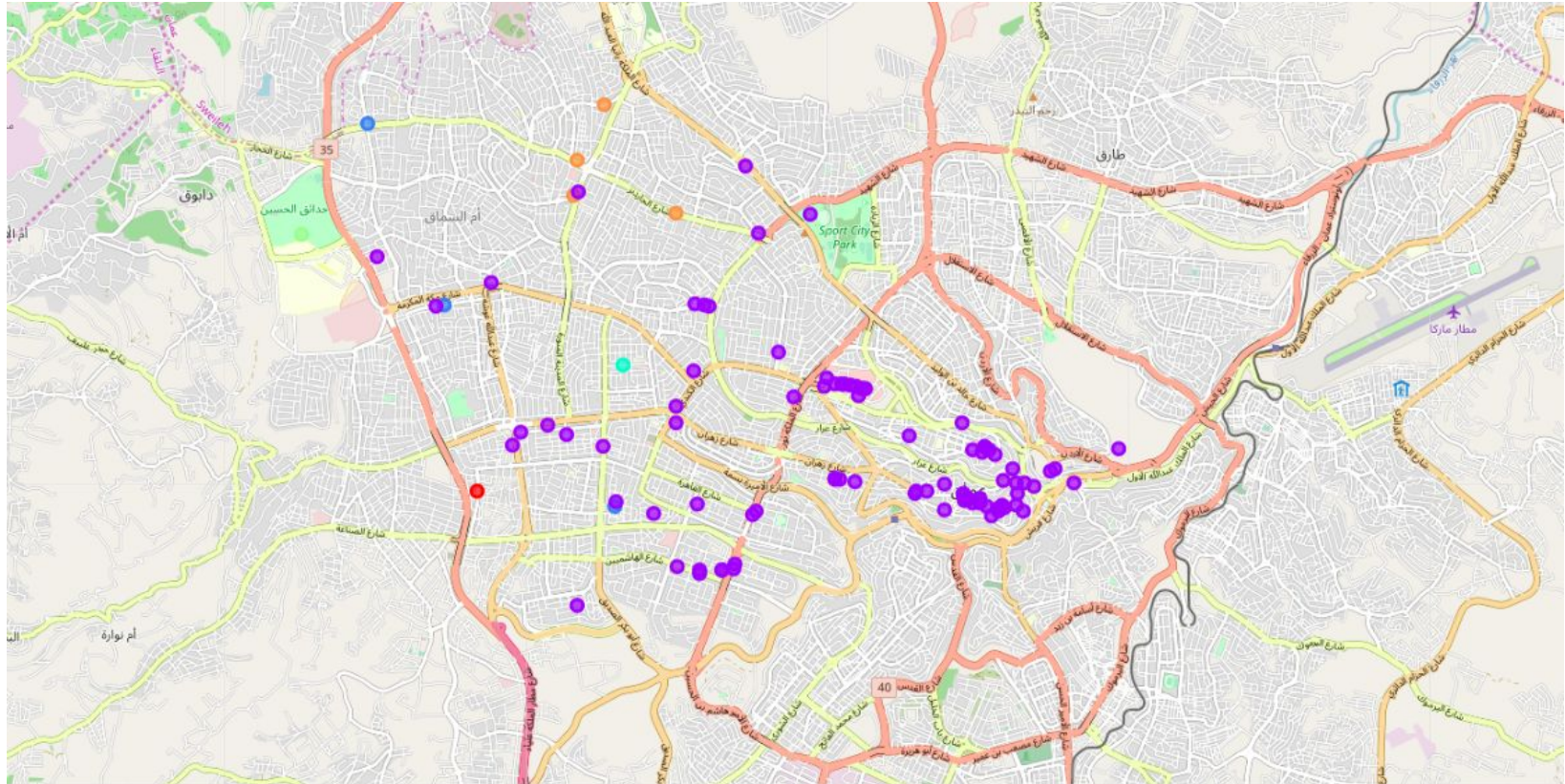
Elbow method plot, to select the perfect number of clusters



The Elbow Method using inertias
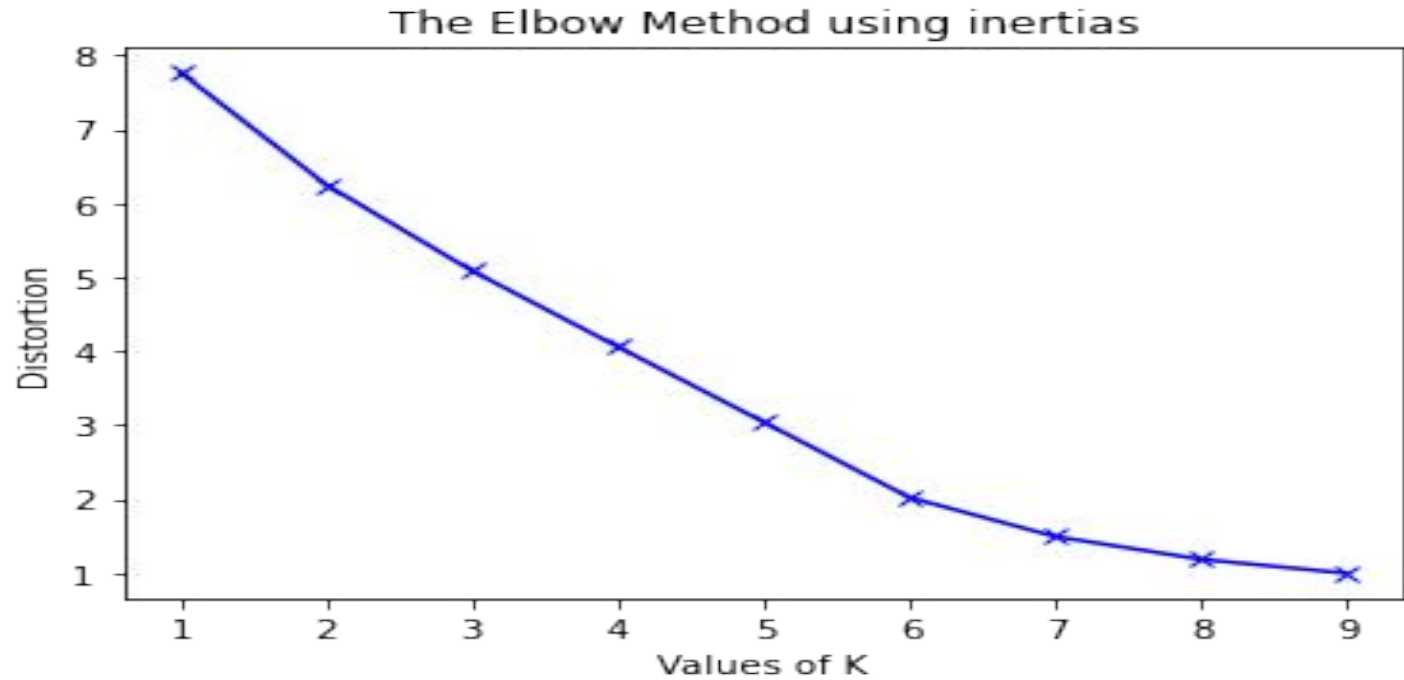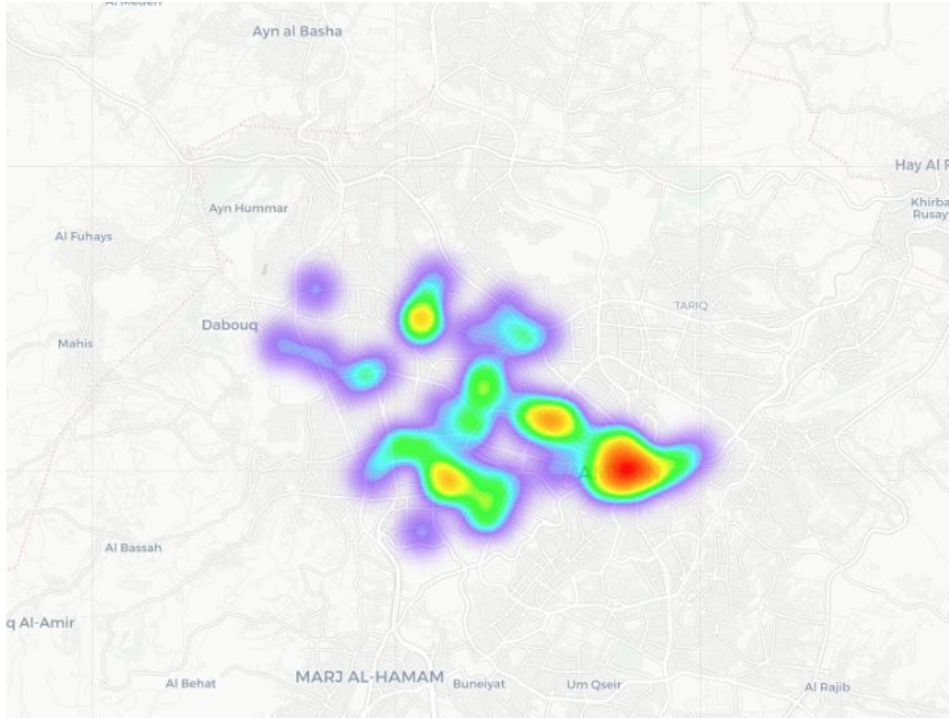
# Heatmap of Amman after clustering

In this map, i used the clustered dataset to check the most dense area, which is Jabal Amman.

# Clustered Heatmap of Amman

In this map, i used the clustered dataset along with the 2 previous maps and merged them to check the venues in each area.

# Folium marker cluster.

In this method i used the marker cluster method provided by folium to cluster the original dataset i cleaned first, to check whether i will get the same results or not.

*Story for illustration purposes only*
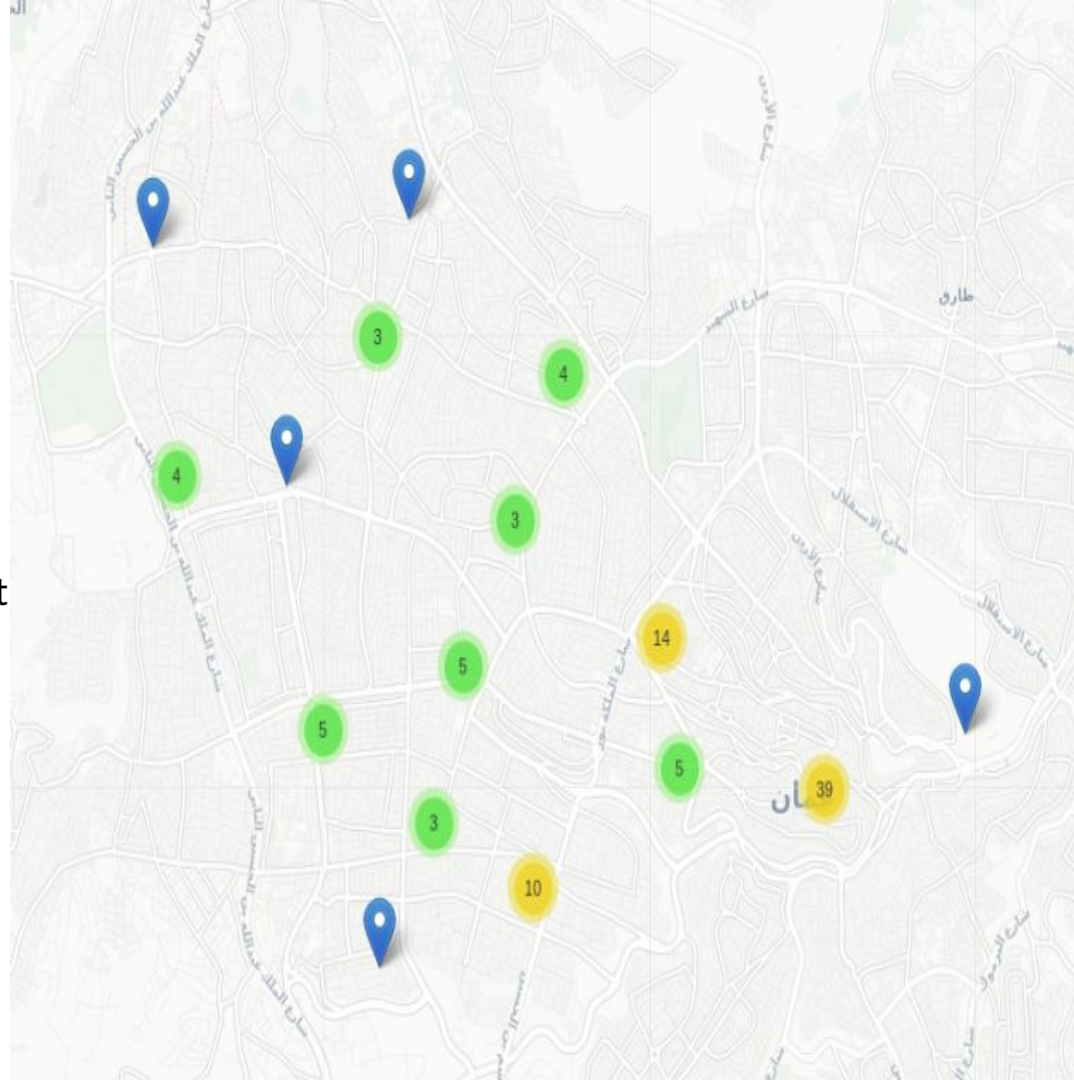
# Conclusion

Purpose of this project was to identify Amman areas that are popular with a low number of restaurants, in order to aid stakeholders in narrowing down the search for the optimal location for a restaurant. By calculating venue frequency distribution from Foursquare data

Clustering of those locations was then performed in order to create major zones of interest (containing greatest number of potential locations) and addresses of those zones were used for final exploration by stakeholders.

Final decision on optimal restaurant location will be made by stakeholders based on specific characteristics of neighborhoods and locations in every recommended zone, taking into consideration additional factors like frequency of each venue in each location and its density.