Introduction

Coffee, one of the most common drinks in Turkey. It has a deep root in Turkish culture. Most of the Turkish people like taste of it and it is getting popular because of its affordable price. Coffee consumption has increased 13% and average consumption is 1.1 kg/person in 2018.

This project is for who is planning to open a Coffee House in Ankara, Turkey. This project suggests the best locations for Coffee Houses in Ankara. Ankara is the capital of Turkey with a population of 5M. his report explores which neighborhoods of Ankara have the most as well as the best Coffee Houses. Also, this project answers the questions "Where should I open a Coffee House?" and "Where should I stay If I want a tasty coffee?"
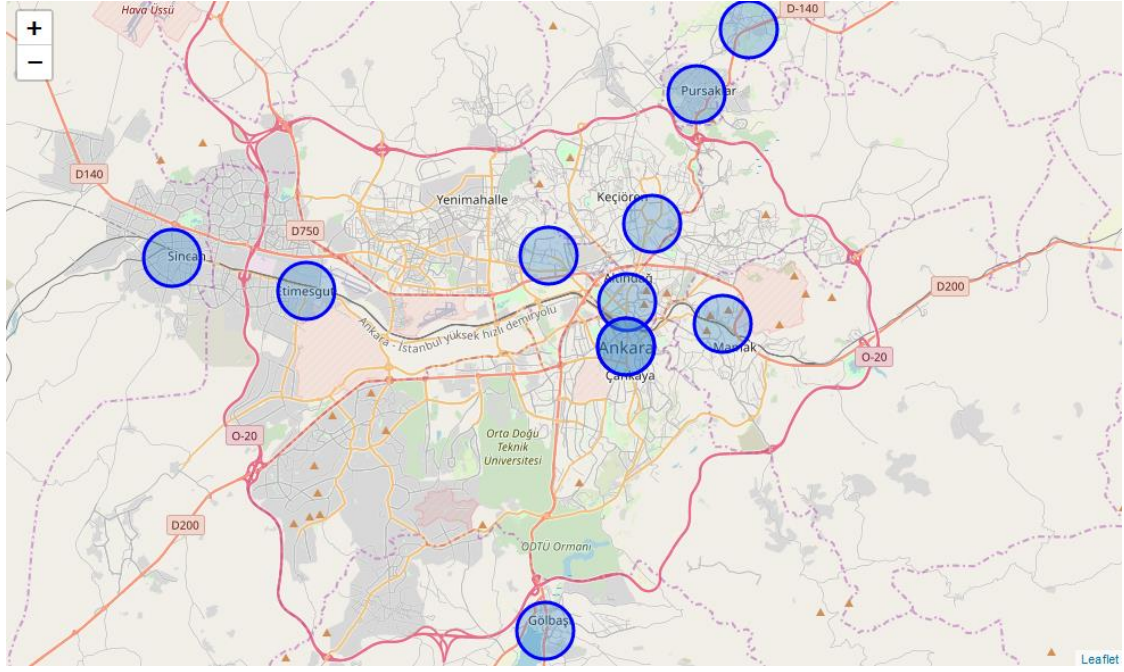
Data

- District of Ankara are obtained from
  https://en.wikipedia.org/wiki/Ankara_Province[1]
- Latitude and Longitude values are obtained by using "geocoder".
- All data related to locations are obtained by using Foursquare API and Python Libraries. [2]

Methodology

Master data which includes "District", "Latitude" and "Longitude" information of Ankara.

	District	Latitude	Longitude
0	Akyurt	40.13082	33.08719
1	Altındağ	39.94171	32.85445
2	Ayaş	40.01516	32.33270
3	Bala	39.55391	33.12352
4	Beypazarı	40.16811	31.92052

Python Folium library was used to visualize map of Ankara and its districts. In order to get Latitude and Longitudes of Ankara, geopy and geocoder are used. The map below was obtained.

In order to explore and categorize places Foursquare API was used. Limit was set to 100 and Radius was set to 500. Here is a head of the list Venues name, category, latitude and longitude information from Forsquare API. 15 venues are returned.

	name	categories	lat	lng
0	Meşhur Köfteci Bodur	Turkish Restaurant	40.130719	33.086776
1	Akyurt kültür parkı	Park	40.133123	33.085071
2	Yurtalan Restaurant	Kebab Restaurant	40.132672	33.084306
3	Beyazıt Sofrası	Steakhouse	40.130542	33.081901
4	Onur pide ve kebap salonu	Kebab Restaurant	40.130807	33.086422

232 unique venue categories were obtained.

	District	Latitude	Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Akyurt	40.13082	33.08719	Meşhur Köfteci Bodur	40.130719	33.086776	Turkish Restaurant
1	Akyurt	40.13082	33.08719	Akyurt kültür parkı	40.133123	33.085071	Park
2	Akyurt	40.13082	33.08719	Yurtalan Restaurant	40.132672	33.084306	Kebab Restaurant
3	Akyurt	40.13082	33.08719	Beyazıt Sofrası	40.130542	33.081901	Steakhouse
4	Akyurt	40.13082	33.08719	Onur pide ve kebap salonu	40.130807	33.086422	Kebab Restaurant

The table below shows top 10 venue category for each district.

	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	Akyurt	Park	Turkish Restaurant	Farm	Kebab Restaurant	Big Box Store	Stadium	Basketball Court	Basketball Stadium	Food Court	Shopping Mall
1	Altındağ	Hotel	Café	History Museum	Jewelry Store	Turkish Restaurant	Historic Site	Theater	Steakhouse	Antique Shop	Kebab Restaurant
2	Ayaş	Turkish Restaurant	Lake	Restaurant	Pool	Café	Food Court	Park	Kebab Restaurant	BBQ Joint	Farm
3	Bala	Electronics Store	Convenience Store	Turkish Restaurant	Mountain	Steakhouse	Bakery	Big Box Store	Business Service	Café	Soccer Stadium
4	Beypazarı	Turkish Restaurant	History Museum	Scenic Lookout	Restaurant	Bed & Breakfast	Bakery	Motel	Hotel	Tea Room	Plaza
5	Elmadağ	Café	Park	Convenience Store	Campground	Big Box Store	Bar	Dessert Shop	Kebab Restaurant	Jewelry Store	Forest
6	Etimesgut	Turkish Restaurant	Café	Steakhouse	Gym	Arcade	Restaurant	Dessert Shop	Shopping Mall	Kebab Restaurant	Park
7	Evren	River	Steakhouse	Grocery Store	Park	Yoga Studio	Fast Food Restaurant	Farmers Market	Farm	Event Space	Entertainment Service
8	Gölbaşı	Café	Turkish Restaurant	Park	Restaurant	Coffee Shop	Arcade	Breakfast Spot	Middle Eastern Restaurant	Kebab Restaurant	Dessert Shop

There are common venues in districts, so unsupervised K-means algorithm was used to cluster districts. K-Means cluster was set to 3 clusters, to reach optimum accuracy.
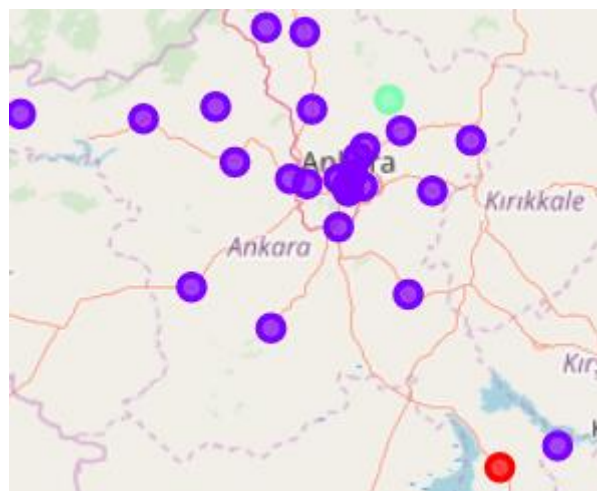
Cluster 0: "Cafe" and "Plaza"

Cluster 1: "Café" "Restaurant" and "Park"

Cluster 2: "Turkish Restaurant" and "Bistro"

Results

The clustered map is given below.

Cluster 1 includes most of the districts. Cafes are most common venues in Cluster 1.

Discussion and Conclusion

Kmeans algorithm was used as part of this clustering study. K value was set to 3. For more detailed and accurate guidance, the data set can be expanded, and the details of the neighbourhood or street can also be drilled.

It is obvious that Cluster 1 is the most viable clusters to open a new coffee house. Especially Cluster 1 districts which have most common venues not Café such as Ayaş and Akyurt.

References

[1] https://en.wikipedia.org/wiki/Ankara_Province

[2] https://developer.foursquare.com/