Analysis of Venue Places of Ankara

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1. Introduction

1.1 Background

Ankara is the capital city of Turkey. It includes lots of universities and workplaces. Students and workers are the important customers of restaurants. For this reason, some parts of Ankara such as Bahçelievler and Kızılay incredibly famous places for students. Because these locations include lots of cafes, coffee shops, bookstores and restaurants. Lots of café and coffee shops give chance to students for studying there. Students and workers search good places to eat or drink something. I will be work on recommending a place to stakeholders who wants to open a restaurant in Ankara which is capital of Turkey. In addition to cafe venues, tourists who come to Ankara and searching a hotel for accommodation hotel venues were analyzed. The project will be useful for entrepreneur who will open a new restaurant and someone who searches a good restaurant, café or hotel in Ankara.

1.2 Interest

Someone who are searching good café or restaurant places in Ankara and tourists or newcomers who come to Ankara and search for a place for accommodation may be interested.

2. Data

2.1 Data sources

- Data which is accessible with using Foursquare API
- Latitute and longitude values are retrieved by using geocoder
- Data which is accessible with using Foursquare API

3. Methodology

In this project two famous venues of Ankara that are Kızılay and Bahçelievler are investigated. Categories of places that are in 500 radius meters are founded and clustering operation is done according to these categories.

name	categories	lat	lng
Pawn Burger & Hotdog	Burger Joint	39.928833	32.819582
Metin Usta Erzurum Cağ Kebabı	Kebab Restaurant	39.929157	32.819494
Ankara Atlı Spor Kulübü	Sports Club	39.931755	32.816215
Piranha Cafe	Café	39.930373	32.823565
Bosco caffè e tiramisù	Coffee Shop	39.928545	32.819529

Figure 1. Venues and categories of venues in Bahçelievler

Venues that are retrieved by using Foursquare API are shown in Figure 1 and Figure 2. Latitude and longitude values of these locations are found with geocoder function.

name	categories	lat	lng
Dost Kitabevi	Bookstore	39.919727	32.855377
Tripod Foto	Camera Store	39.920695	32.851861
Yapı Kredi Yayınları	Bookstore	39.921322	32.854022
GSStore	Sporting Goods Shop	39.921364	32.853649
Kalem Kitap Kültür Sanat	Bookstore	39.920384	32.851633

Figure 2. Venues and categories of venues in Kızılay

3.1 Data Analysis

In this section, each category that place in the dataframe is counted and a bar plot is created. According to the bar plot venues that are located in the search place are most commonly belongs the cafe category. Second most common category is bookstore. Bar plots of Kızılay and Bahçelievler locations are shown in the Figure 3.
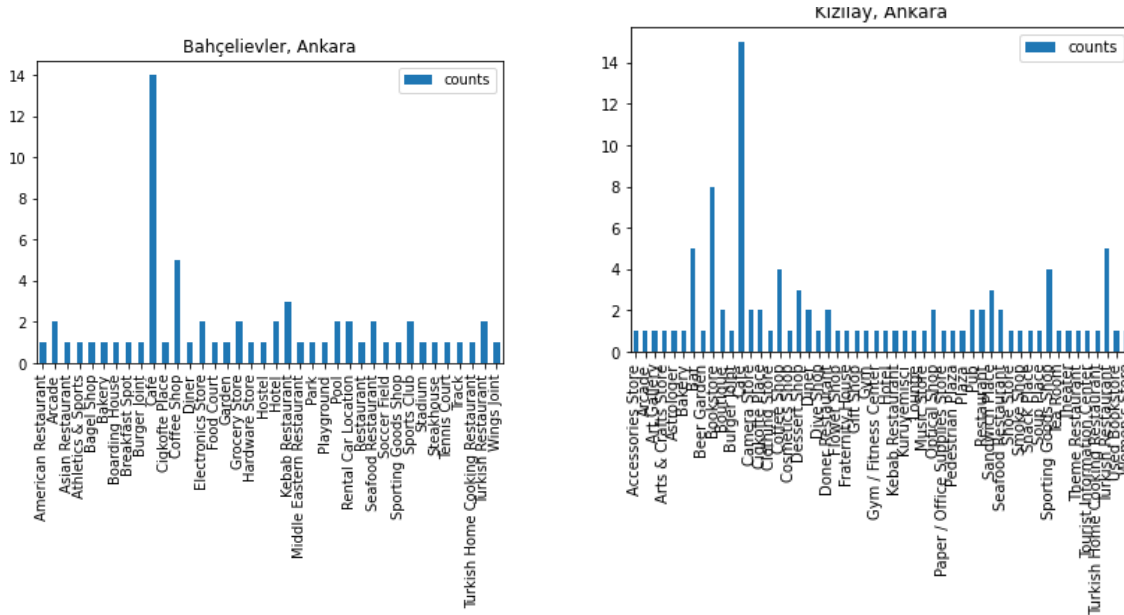
Figure 3. Counts of categories in Ankara

3.2 Analysis of restaurant venues

In the second step restaurant categories that are shown in Figure 1 and Figure 2 is seperated from other categories and they visualized in the map.

Venue	Neighborhood	Lat	Lng	Category
Adana Kebapçısı Mekan 01	Green Oto Kiralama	39.924660	32.822793	Kebab Restaurant
Ala Restaurant ve Spor Tesisi	Ankara Atlı Spor Aktiviteleri Binicilik Okulu	39.930071	32.813379	Restaurant
Ankara Alacarta Restaurant	Ankara Alacarta Restaurant	39.934460	32.818975	Restaurant
Ankara Roof	Deniz Erin Astroloji ve Danışmanlık Merkezi	39.918945	32.854470	Restaurant
Ata Aspava	Kafe Karanfil	39.918694	32.855251	Restaurant

Figure 4. Restaurant venues in Bahçelievler

Visualization of restaurant venues in Bahçelievler and Kızılay places are shown in the Figure 5 with red circle.
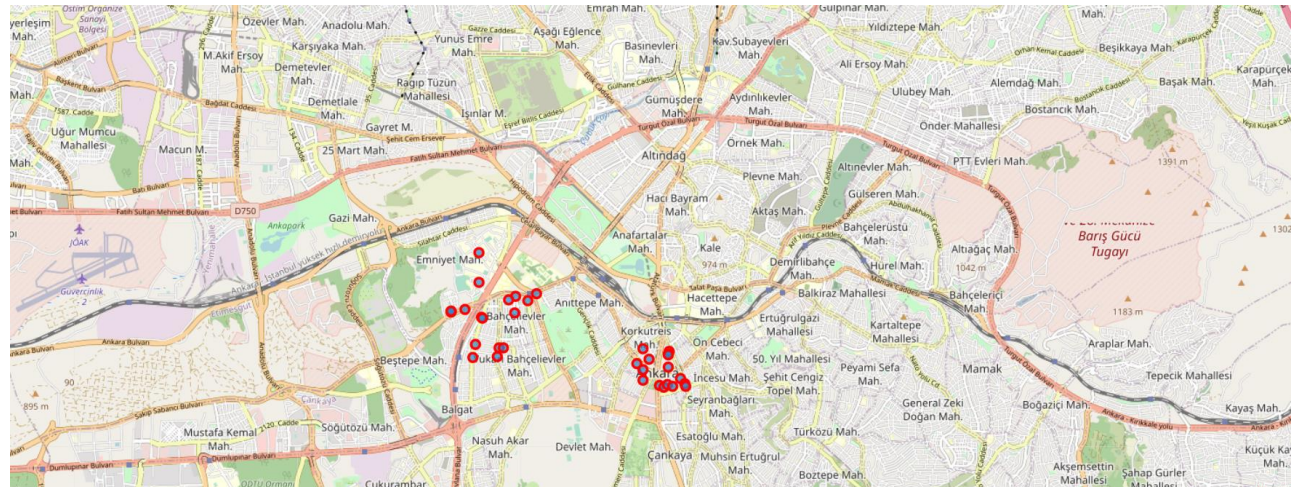

Figure 5. Visualization of restaurant venues on the map

3.3 Analysis of cafe venues

In the third step cafe venues has been examined seperately. The rating value if exists was found and saved in a dataframe. First five rows of this dataframe are shown in Figure 6.

name	categories	address	lat	lng	labeledLatLngs	distance	postalCode	cc	city	state	country	formattedAddress	crossStreet	neighborhood	id	venue_rating
Bizim Cafe&Kahvaltı	Breakfast Spot	Bişkek Caddesi No:17	39.929435	32.819675	[{'label': 'display', 'lat': 39.92943536012476...	188	6320.0	TR	Ankara	Ankara	Türkiye	['Bişkek Caddesi No:17', '06320 Ankara']	NaN	NaN	59d48c474f0e582b69d80ee8	NaN
Café Lizbon	Café	Gazi Üniversitesi Tıp Fakültesi Hastanesi Zemi...	39.933724	32.822836	[{'label': 'display', 'lat': 39.93372442455786...	380	NaN	TR	Ankara	Ankara	Türkiye	['Gazi Üniversitesi Tıp Fakültesi Hastanesi Ze...	NaN	NaN	54df7f34498e0e161e80dc1a	7.1
Doğa Cafe	Café	Meriç Sokak 2/B BEŞTEPE	39.929659	32.816867	[{'label': 'display', 'lat': 39.92965921135479...	309	6510.0	TR	Ankara	Ankara	Türkiye	['Meriç Sokak 2/B BEŞTEPE (mevlâna bulvarı)', ...	mevlâna bulvarı	Çankaya	4f367974e4b0d9574becc633	7.7
Piranha Cafe	Café	Bahçelievler Mh.eski 53 sokak.. Yeni , 43. Sk..	39.930373	32.823565	[{'label': 'display', 'lat': 39.93037301082143...	318	34180.0	TR	Ankara	Ankara	Türkiye	['Bahçelievler Mh.eski 53 sokak.. Yeni , 43. ..	3 cadde	NaN	4f59dedee4b081a30f04ebf3	8.6
Seyir Cafe	Café	Prof Dr Muammer Aksoy Cad No 2	39.932492	32.826190	[{'label': 'display', 'lat': 39.93249213008535...	553	6500.0	TR	Ankara	Ankara	Türkiye	['Prof Dr Muammer Aksoy Cad No 2 (Bahriye Üçok...	Bahriye Üçok Caddesi	NaN	53fe1c51498e4f91f39c45c7	6.8

Figure 6. Café venues with rating values

If location has no rating value, it's rating value saved as 'NaN'.

A folium map was created and cafe venues were shown in this map. In addition this, the rating values of each place was added to the map. Place that has highest rating value is shown with red marker and other places is shown with blue marker. Places that have high rating values have been recommend to the users.
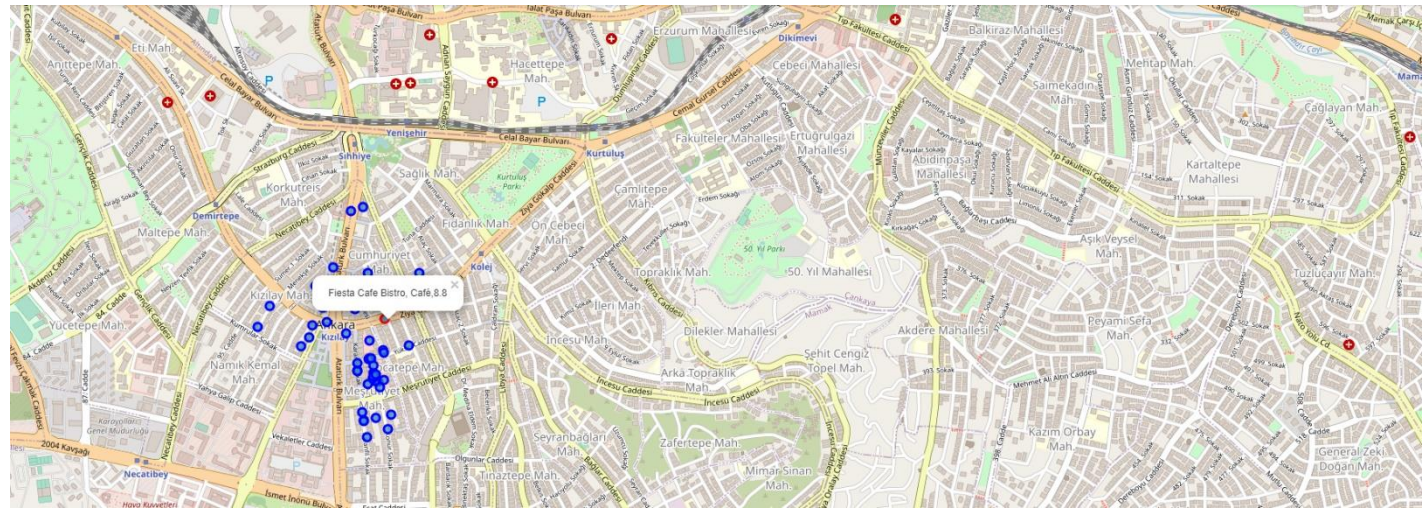

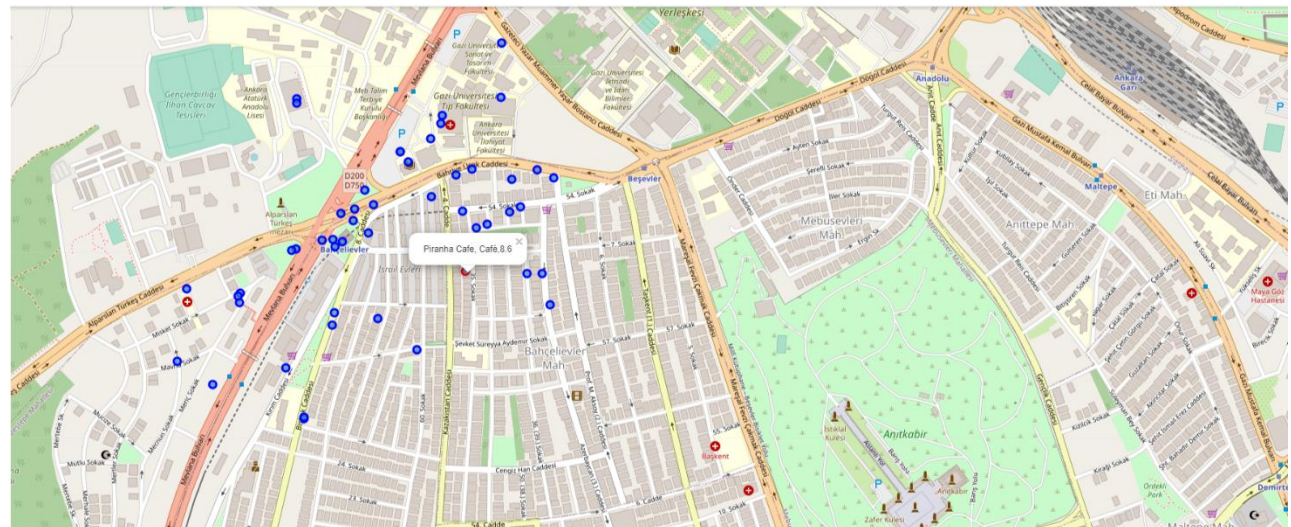Figure 7. Café venues with high rating values in Kızılay

Figure 8. Café venues with high rating values in Bahçelievler

3.4 Analysis of hotel venues

In the last step hotel venues has been examined seperately. If exists, the rating of value of hotels was found and saved in a dataframe. First five rows of the hotels and rating values dataframe of Kızılay location is shown in Figure 9 and dataframe of Bahçelievler location is shown in Figure 10.

id	name	categories	location.address	location.lat	location.lng	location.neighborhood	venuePage.id	venue_rating
54ea4ffd498e7e280596285f	New Starton Hotel ⭐⭐⭐⭐	[{'id': '4bf58dd8d48988d1fa931735', 'name': 'H...	Dr.Medıha Eldem sok. No:37 Kızılay	39.920893	32.859777	Çankaya	NaN	8.7
4f8bfb1fe4b0cec3ad85a180	Grand Midyat Hotel	[{'id': '4bf58dd8d48988d1fa931735', 'name': 'H...	Kizilay, Kızılay Mh., 06450 Ankara	39.918216	32.855096	NaN	NaN	7.8
4c553ed906901b8d0d35234d	Alba Hotel	[{'id': '4bf58dd8d48988d1fa931735', 'name': 'H...	Yüksel Cd. No:19 Kızılay	39.919878	32.857841	NaN	NaN	7.6
4c8fd331fbe58cfabcdb1cb9	Hotel Etap Mola	[{'id': '4bf58dd8d48988d1fa931735', 'name': 'H...	İzmir Cad. No: 27	39.922811	32.853448	NaN	NaN	5.6
58ad45d00b565621cc306d21	Hotel 2017	[{'id': '4bf58dd8d48988d1fa931735', 'name': 'H	Necatibey caddesi no:68	39.923140	32.848580	NaN	NaN	8.2

Figure 9. Hotel venues with rating values for Kızılay

id	name	categories	location.lat	location.lng	location.address	venue_rating
52a80a6e498e1820a462b2e2	Voleyy Hotel Ankara	[]	39.932392	32.818812	NaN	NaN
5513256b498eac835dd7bb66	Radisson Hotel	[{'id': '4bf58dd8d48988d1fa931735', 'name': 'H...	39.929537	32.816463	Bakanlıklar Cad.	NaN
4f4122c6e4b0102f0e418848	Volley Hotel	[{'id': '4bf58dd8d48988d1fa931735', 'name': 'H...	39.935708	32.820692	Emniyet Mah. Milas Sok. No:9/E Beşevler	8
504f51efe4b02256942baf4a	Voley Hotel Ankara	[{'id': '4d954b06a243a5684965b473', 'name': 'R...	39.935725	32.820716	Emniyet Mahallesi	NaN
5740108d498ea491049f759f	Volley Hotel Toplantı Salonu	[{'id': '4bf58dd8d48988d173941735', 'name': 'A...	39.935752	32.820646	NaN	NaN

Figure 10. Hotel venues with rating values for Bahçelievler

If location has no rating value, it's rating value saved as 'NaN'.

A folium map was created and hotel venues were shown in this map. The rating values of each place was added to the map. Hotel that has highest rating value is shown with red marker and other hotels is shown with blue marker. Hotels that have high rating values have been recommend to the users who search for a place for accommodation.
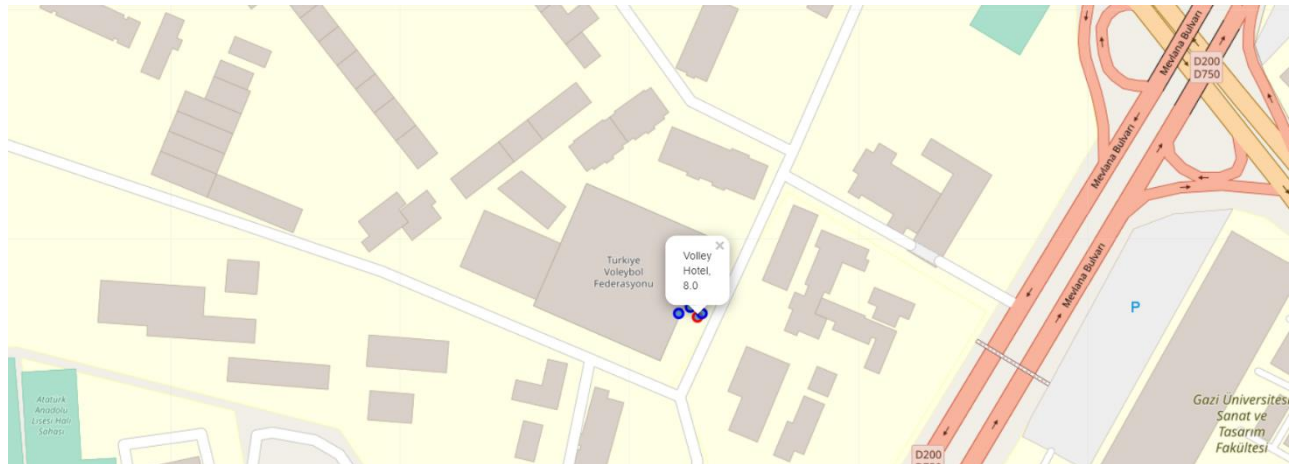

Figure 11. Hotel venues with high rating values in Bahçelievler

Hotel venues of Bahçelievler and Kızılay are shown in Figure 11 and Figure 12. For Bahçelievler highest rating value of hotels were found as 8.0. In Kızılay, highest rating value of hotels were found as 8.7.
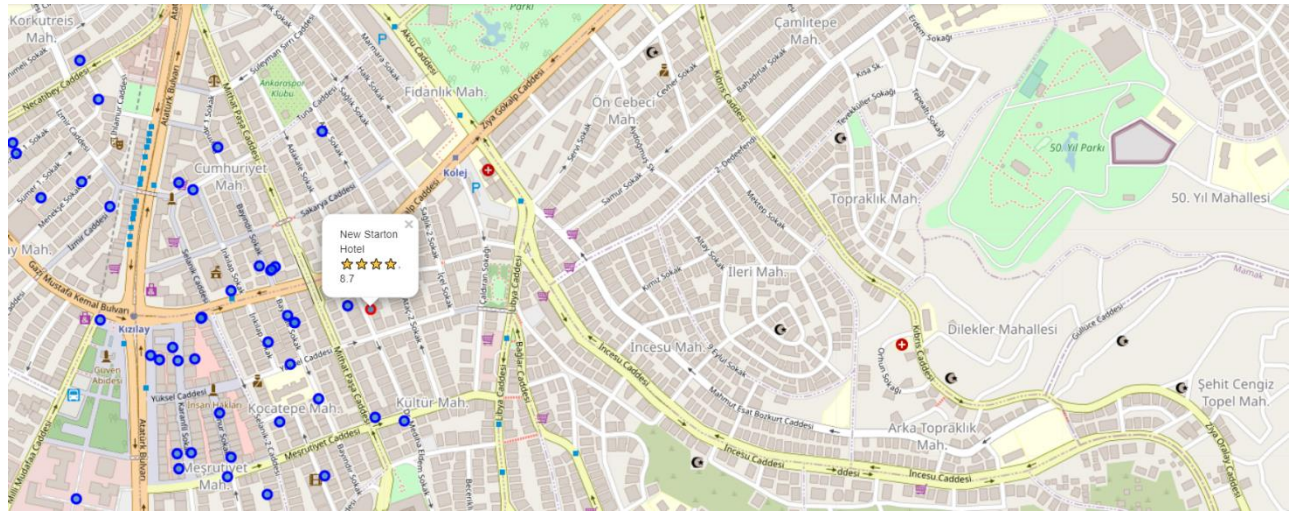
Figure 12. Hotel venues with high rating values in Kızılay

4. Results and Discussions

Results show that cafe, coffe shops and restaurant are most popular places both Kızılay and Bahçelievler in Ankara. For this reason, if someone who wants to open cafe or coffe shops may open in the Bahçelievler or Kızılay.

Restaurant venues examined seperately also. They were found and shown on the Ankara map. Results showed that the number of restaurant venues are less than total number of cafe and coffe shops. But more than other categories.

Rating values of cafe venues are extracted and saved to the dataframe. They have shown on the map with different color from others. These will help users that search a good cafe around specified places. In the extraction of the rating process a problem occurred. This problem was some venues do not have any rating value so rating values of these venues assigned as NaN. Results shows that, the fullness of the rating values of Kızılay is more than Bahçelievler's rating values.

Lastly, the rating values of hotel venues were extracted and saved to the dataframe. They have shown on the map with different color from others. This process will help tourists or newcomers who come to Ankara and search for a place for accommodation. Results shows that, Kızılay have much more hotel venues according to Bahçelievler and the fullness of the rating values of Kızılay' hotel venues is more than Bahçelievler's hotel venues rating values.

5. Conclusions

The aim of this project is analysis of Ankara that is capital city of Turkey. Two favorite places of Ankara which are Kızılay and Bahçelievler are analyzed. Restaurants, doner and kebab restaurants are found and visualized in the map. In addition that, for someone who is searching good cafe in Bahçelievler or Kızılay if exists the rating of each cafe venue was found. Cafe places were shown on the map and the highest rating cafe that place in the searched location is shown with a different color. Same operation was repeated for hotel venues. The rating values of hotels were found and hotel that has maximum rating value is shown on the map with different color.

This project will be useful for someone who is searching good cafe, restaurant or hotel in Ankara.

6. Future directions

This project may be extend with analysis of all places of Ankara.