

Applied Data Science Capstone

The Battle of Neighborhoods (Week 2)

Introduction / Business Problem

- ▶ About 15 million people live in Istanbul
- ▶ About 5 million people live in Ankara
- ▶ Istanbul is the trade center of the country.
- ▶ Ankara is the political center
- ▶ Aim of the study is the comparison of two cities in terms of distribution of the venues

Data / Data Exploration

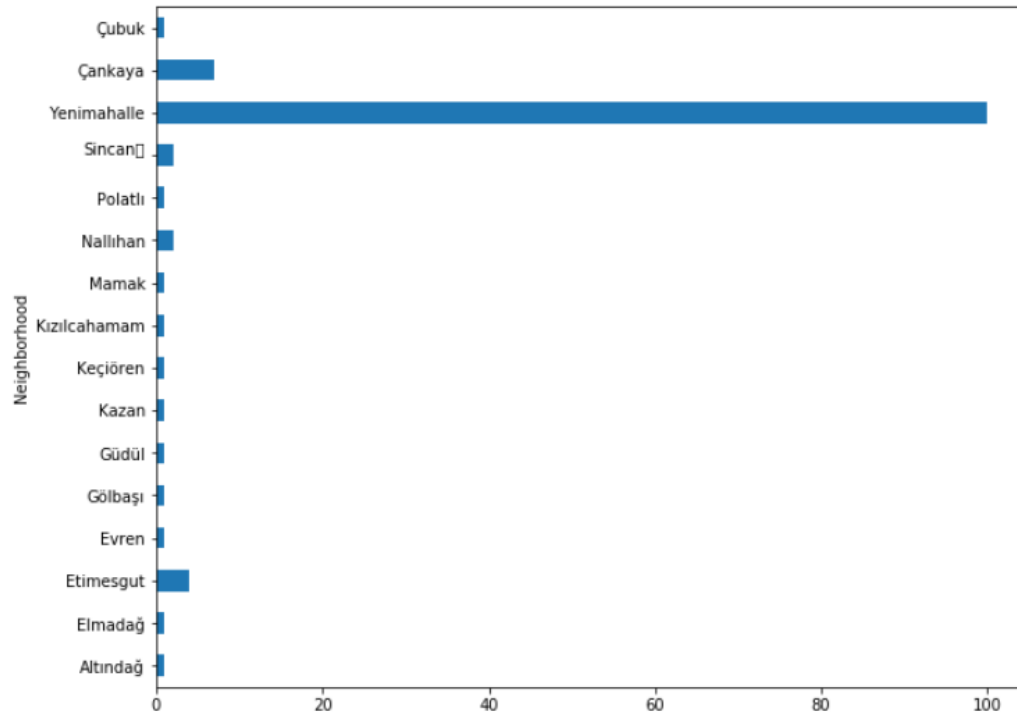
- ▶ Second-level Administrative Divisions of the Turkey from Spatial Data Repository of NYU
- ▶ Foursquare API for most common venues

Exploratory Data Analysis

- ▶ 24 boroughs for Ankara and 38 boroughs for Istanbul
- ▶ Coordinates of neighborhoods in boroughs could not be reached
- ▶ Radius is specified as 1000m for Foursquare queries
- ▶ 126 Venues are obtained for Ankara
- ▶ 2916 venues are obtained for Istanbul

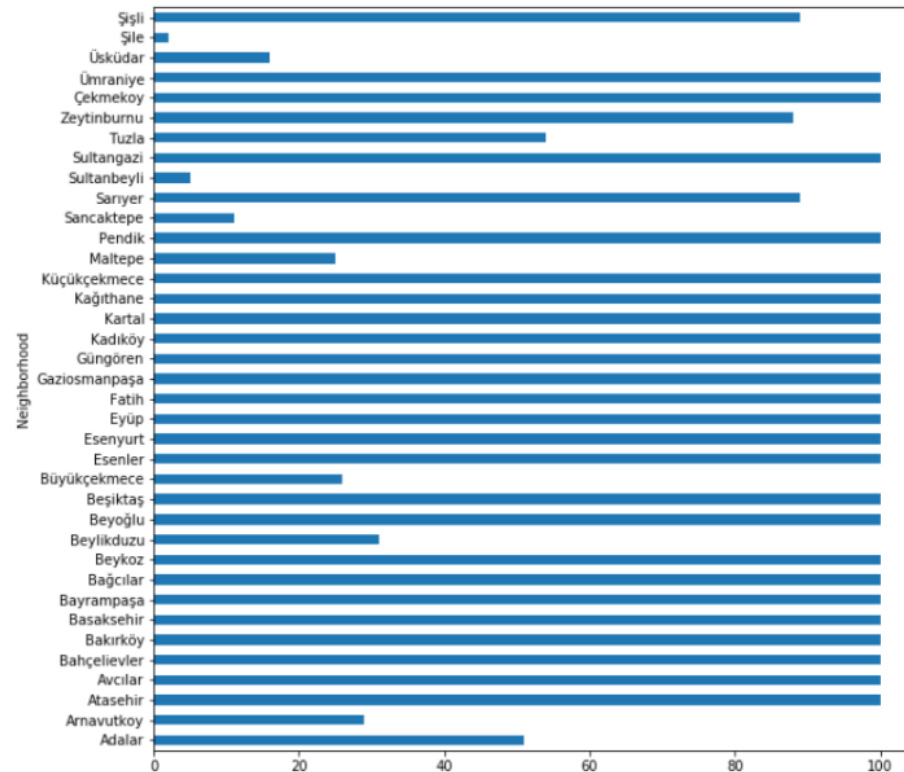
Data / Data Exploration

Bar Plot Of Ankara Venues



Data / Data Exploration

Bar Plot Of İstanbul Venues



Data / Data Exploration

Table of 5 Most Common Venues in Boroughs of Ankara

	Neighborhoods	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
0	Altındağ	Garden	Turkish Restaurant	Donut Shop	Hookah Bar	Historic Site
1	Elmadat	Mountain	Turkish Restaurant	Donut Shop	Historic Site	Herbs & Spices Store
2	Etimesgut	Farm	Mountain	Costume Shop	Turkish Restaurant	Donut Shop
3	Evren	Exhibit	Turkish Restaurant	Donut Shop	Hookah Bar	Historic Site
4	Gölbasi	Farm	Turkish Restaurant	Donut Shop	Hookah Bar	Historic Site
5	Güdül	Campground	Turkish Restaurant	Donut Shop	Hookah Bar	Historic Site
6	Kazan	Racetrack	Doner Restaurant	Historic Site	Herbs & Spices Store	Gym / Fitness Center
7	Keçiören	Farm	Turkish Restaurant	Donut Shop	Hookah Bar	Historic Site
8	Kızılcahamam	Garden	Turkish Restaurant	Donut Shop	Hookah Bar	Historic Site
9	Mamak	Mountain	Turkish Restaurant	Donut Shop	Historic Site	Herbs & Spices Store
10	Nallihan	Lake	Campground	Turkish Restaurant	Donut Shop	Historic Site
11	Polatlı	Historic Site	Turkish Restaurant	Donut Shop	Hookah Bar	Herbs & Spices Store
12	Sincan'ın	Garden	Turkish Restaurant	Donut Shop	Hookah Bar	Historic Site
13	Yenimahalle	Café	Turkish Restaurant	Park	Bakery	Dessert Shop
14	Çankaya	Restaurant	Turkish Restaurant	Paintball Field	Farm	Moving Target
15	Çubuk	Farm	Turkish Restaurant	Donut Shop	Hookah Bar	Historic Site

Data / Data Exploration

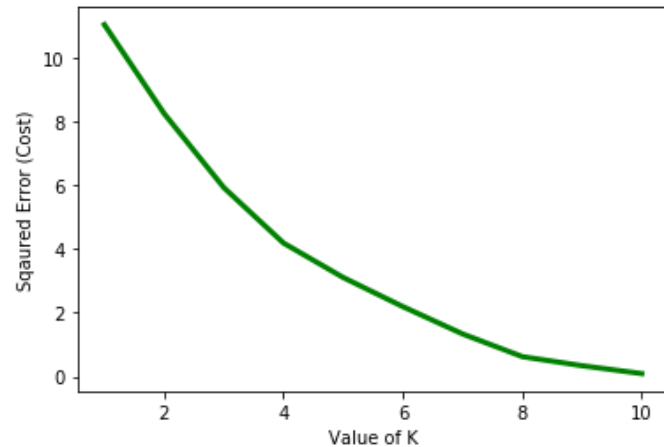
Table of 5 Most Common Venues in Boroughs of İstanbul

	Neighborhoods	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
0	Adalar	Café	Seafood Restaurant	Dessert Shop	Beach	Boat or Ferry
1	Arnavutköy	Turkish Restaurant	Farm	Wings Joint	Tea Room	Plaza
2	Atasehir	Café	Park	Coffee Shop	Turkish Restaurant	Restaurant
3	Avcılar	Café	Turkish Restaurant	Dessert Shop	Steakhouse	Restaurant
4	Bahçelievler	Turkish Restaurant	Café	Gym / Fitness Center	Gym	Bakery
5	Bakırköy	Café	Turkish Restaurant	Dessert Shop	Steakhouse	Restaurant
6	Basaksehir	Coffee Shop	Hotel	Clothing Store	Sporting Goods Shop	Steakhouse
7	Bayrampaşa	Café	Coffee Shop	Clothing Store	Cosmetics Shop	Park
8	Bağcılar	Café	Turkish Restaurant	Gym / Fitness Center	Gym	Clothing Store
9	Beykoz	Café	Seafood Restaurant	Breakfast Spot	Restaurant	Historic Site
10	Beylikduzu	Turkish Restaurant	Boat or Ferry	Restaurant	Food	Bakery
11	Beyoğlu	Hotel	Restaurant	Coffee Shop	Soccer Stadium	Café
12	Beşiktaş	Café	Fast Food Restaurant	Gym	Restaurant	Steakhouse
13	Büyükdere	Beach	Hotel	Surf Spot	Resort	Motel
14	Esenler	Café	Coffee Shop	Clothing Store	Cosmetics Shop	Park
15	Esenyurt	Café	Turkish Restaurant	Electronics Store	Coffee Shop	Clothing Store
16	Eyüp	Café	Restaurant	Turkish Restaurant	Bakery	Historic Site
17	Fatih	Café	Restaurant	Art Gallery	Coffee Shop	Steakhouse
18	Gaziosmanpaşa	Café	Turkish Restaurant	Restaurant	Gym / Fitness Center	Coffee Shop
19	Güngören	Clothing Store	Turkish Restaurant	Gym / Fitness Center	Café	Hotel
20	Kadıköy	Restaurant	Coffee Shop	Gym / Fitness Center	Kebab Restaurant	Turkish Restaurant
21	Kartal	Café	Restaurant	Bar	Turkish Restaurant	Seafood Restaurant
22	Kağıthane	Turkish Restaurant	Café	Hotel	Hookah Bar	Restaurant
23	Küçükçekmece	Café	Clothing Store	Turkish Restaurant	Fast Food Restaurant	Coffee Shop
24	Maltepe	Pet Store	Restaurant	BBQ Joint	Steakhouse	Buffet
25	Pandık	Café	Restaurant	Bar	Turkish Restaurant	Seafood Restaurant

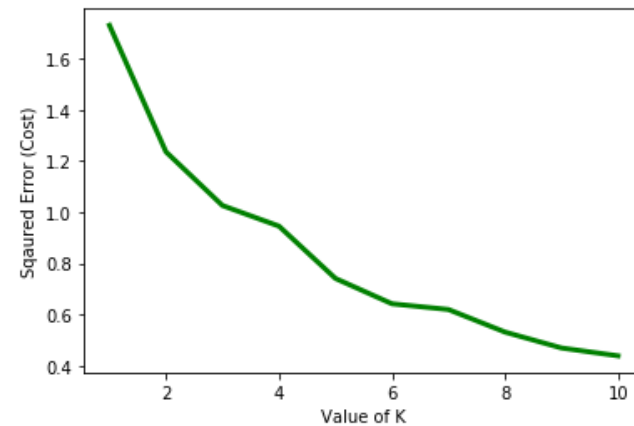
Clustering

- ▶ According to the elbow method number of clusters for k-means for Ankara is specified as 8 and for Istanbul as 6

Elbow Method for Ankara



Elbow Method for Istanbul



Results

- ▶ There is a big difference between the cities in terms of number of venues
- ▶ Most of the boroughs in Istanbul include more than 100 venues
- ▶ In Ankara only Yenimahalle includes more than 100 venues
- ▶ In İstanbul most common venues are cafes, restaurants, coffee shops and stores.
- ▶ In Ankara, Turkish restaurants, farms, gardens, donut shops are the most common venues

Discussion

- ▶ Since the coordinates of the neighborhoods in the boroughs could not be reached venues could not be reached effectively.
- ▶ Although Çankaya is known to be the center of the city there are not as much places as in Yenimahalle.
- ▶ If the neighborhood coordinates are obtained the venues in Çankaya can be obtained more effectively.
- ▶ Venues are seem to be more intensified in Istanbul boroughs
- ▶ The venues in Ankara is gathered in the center of the city
- ▶ In Istanbul venues are distributed almost equally among all the boroughs.

Conclusion

- ▶ There are big differences in terms of the distribution of the venues between two cities as expected.
- ▶ These analysis should be expanded with the neighborhood coordinates.
- ▶ Investors and people who think about working in these cities can benefit from these kind of analysis.