Battle of Neighbourhoods -Antalya

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1- Introduction

This notebook is prepared for the final part of the capstone project of IBM data science course. In this notebook, we will try to define a business problem, look for usable data to use Foursquare location data to compare different districts of Antalya (a city in Turkey), and figure out possible solutions to our business problem.

2- Discussion and Background of the Business Problem

Antalya is a touristic city located on the southwest cost of Turkey. Surrounded by Taurus Mountains on the north and Mediterranean Sea on the south, it is the fifth most populous city of Turkey with an over one million people.

Thanks to its beautiful landscape, wonderful beaches and historical background, Antalya attracts over 10 million tourist each year from all over the World. According to Turkish state statistics office, a record 12.5 million tourists passed through the city in 2014.

During touristic season, especially summer times, visitors all over the world provides a huge opportunity for souvenir shops. Many people like to take a little something home with them

as a reminder of their travels, something to show for where they have been, something they can use to look back and reminisce about the fantastic experience they had during their holiday or something that will make their loved ones happy when they return. Therefore, in this project we will try to provide best location to open a souvenir shop among Antalya's 19 districts. We will especially concentrate on the central five districts that are closer to main province.

We will go through each step of this project and address them separately. I first outline the initial data preparation and describe future steps to start the battle of neighborhoods in Antalya.

This analysis mainly targets the stakeholders or business owners that are planning to open a souvenir shop or start business in souvenir shop in Antalya province of Turkey.

3- Data Preparation

For this project, we will get the post codes for each district in Antalya province and use Foursquare app to get nearby venues that attract more tourists. Also, we will examine nearby hotels and sight seeing places and based on this analysis we will try to make recommendations for the most suitable location for our souvenir business. Let's start by getting the location data for our target city.

Getting District Data for Antalya

Fist of all we will try to optain district data for the Antalya Province. Lucily we have the data available on the state postal office website as a zip file on this link http://postakodu.ptt.gov.tr/. I have downloaded and arranged the data as csv format and uploaded the IBM cloud. Here, we will read this data into a pandas dataframe. After that, we need to modify Postcode column to start with 0 and convert it to type string. and also we need to remove dublicate values of Postcode since we only need the center of each district.

	Postcode	Province	City	District
0	07010	ANTALYA	MURATPAŞA	ESKİSANAYİ
1	07020	ANTALYA	KEPEZ	VARSAK
2	07025	ANTALYA	KEPEZ	DOKUMA
3	07030	ANTALYA	MURATPAŞA	MELTEM
4	07040	ANTALYA	MURATPAŞA	ÇARŞ

Get the Location Coordinates for each District

Now our Postcodes are ready. We can start getting geolocation for each district. In order to do that, we will import and install neccessary librareis first.

	Postcode	Province	City	District	location	point	latitude	longitude	altitude
0	07010	ANTALYA	MURATPAŞA	ESKİSANAYİ	(Cumhuriyet Mahallesi, Muratpaşa, Antalya, Akd...	(36.9041492, 30.700651575000002, 0.0)	36.904149	30.700652	0.0
1	07020	ANTALYA	KEPEZ	VARSAK	(Antalya, Muratpaşa, Antalya, Akdeniz Bölgesi,...	(36.9009641, 30.6954846, 0.0)	36.900964	30.695485	0.0
2	07025	ANTALYA	KEPEZ	DOKUMA	(Özgürlük Mahallesi, Kepez, Antalya, Akdeniz B...	(36.91393495, 30.67963175, 0.0)	36.913935	30.679632	0.0
3	07030	ANTALYA	MURATPAŞA	MELTEM	(Muratpaşa, Antalya, Akdeniz Bölgesi, 07030, T...	(36.8804352369126, 30.784500713480504, 0.0)	36.880435	30.784501	0.0
4	07040	ANTALYA	MURATPAŞA	ÇARŞI	(Antalya, Muratpaşa, Antalya, Akdeniz Bölgesi,...	(36.8934522, 30.7015535, 0.0)	36.893452	30.701553	0.0
5	07050	ANTALYA	MURATPAŞA	BAHÇELİEVLER	(Aqua, Adnan Menderes Bulvarı, Sorgun, Manavga...	(36.758141, 31.4275232, 0.0)	36.758141	31.427523	0.0

4- Methodology

We will use Foursquare to get venue data for our project. First we will enter our credentials and get all the hotels within 1km radius

	District	District Latitude	District Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	ESKİSANAYİ	36.904149	30.700652	Denizhan Otel	36.899248	30.702850	Hotel
1	ESKİSANAYİ	36.904149	30.700652	Hotel Grand Kayalar	36.898951	30.699908	Hotel
2	ESKİSANAYİ	36.904149	30.700652	Hotel Star Palace	36.896029	30.699938	Hotel
3	ESKİSANAYİ	36.904149	30.700652	ELİTE OTEL	36.900154	30.702313	Hotel
4	ESKİSANAYİ	36.904149	30.700652	Elips Royal Otel	36.899703	30.706909	Hotel

We can get a bar graph of the number of hotels in each district of Antalya.

Number of Hotels in each district
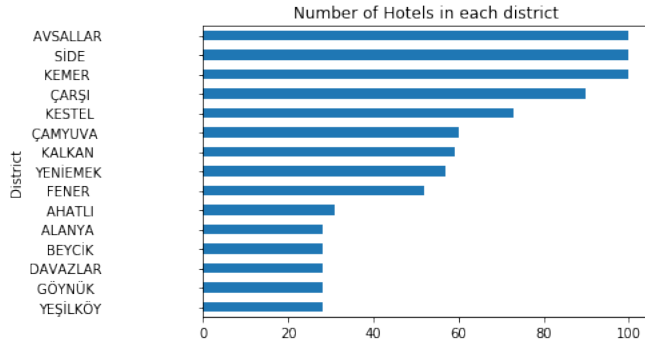
Similarly, we can get the number of souvenir shops in each district

	District	District Latitude	District Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	ESKİSANAYİ	36.904149	30.700652	ASK Çelik Teflon Ticaret Ltd.	36.896582	30.699328	Souvenir Shop
1	ESKİSANAYİ	36.904149	30.700652	ipekyolu hediyelik	36.896599	30.704788	Souvenir Shop
2	ESKİSANAYİ	36.904149	30.700652	Falez Hediyelik	36.897017	30.706312	Souvenir Shop
3	ESKİSANAYİ	36.904149	30.700652	Mercan Oyuncak	36.895532	30.700520	Souvenir Shop
4	VARSAK	36.900964	30.695485	ASK Çelik Teflon Ticaret Ltd.	36.896582	30.699328	Souvenir Shop

Let's make a bar graph for the number of souvenir shops in each district

Number of Souvenir Shops in each district
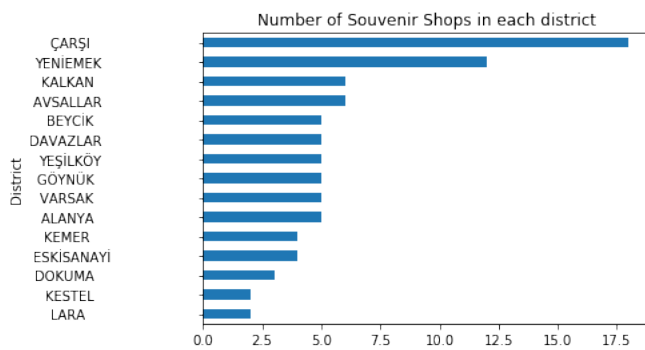
5- Results

Finally, we can merge each data frame and find the best district which has the least number of souvenir shops (less competitors) and the most number of hotels (more costumers).

	District	HotelCount	SouvenirCount
0	SİDE	100	0
1	KEMER	100	4
2	AVSALLAR	100	6
3	ÇARŞI	90	18
4	KESTEL	73	2
5	ÇAMYUVA	60	0
6	KALKAN	59	6
7	YENİEMEK	57	12
8	FENER	52	2
9	AHATLI	31	0
10	VARSAK	28	5
11	DAVAZLAR	28	5
12	YEŞİLKÖY	28	5
13	GÖYNÜK	28	5
14	BEYCİK	28	5
15	ALANYA	28	5
16	MAVİKENT	26	0
17	OVA	26	0
18	BELDİBİ	26	0
19	AYDINKENT	26	0
20	DEMRE	26	0
21	DEMİRTAŞ	26	0
22	CEVİZLİ	26	0
23	AKSEKİ	26	0
24	AKÇAY	26	0
25	GÜNDOĞMUŞ	26	0
26	BAHÇELİEVLER	26	0
27	ÇOLAKLI	26	0
28	KINIK	26	0
29	GÖMBE	26	0
30	TEKİROVA	26	1
31	GENÇLİK	25	2

	District	HotelCount	SouvenirCount
32	LİMAN	19	1
33	ESKİSANAYİ	15	4
34	LARA	13	2
35	ERENKÖY	11	1
36	DOKUMA	10	3
37	MANAVGAT	9	0
38	DÜDENBAŞI	9	1
39	KAŞ	5	0
40	DURALİLER	5	0
41	SÜTÇÜLER	3	0
42	TAŞAĞIL	2	0
43	MEYDANKAVAĞI	2	2
44	AKSU	1	0
45	KIZILTOPRAK	1	0
46	KALE	1	0
47	ARAPSUYU	1	0
48	ALTINOVA	1	1

Here is a bar graph representation of our final result. We can clearly see that SIDE district is the most suitable location for our souvenir shop. It has the least number of souvenir shops and the most number of hotels.

Hotel Counts vs Souvenir Counts in Antalya
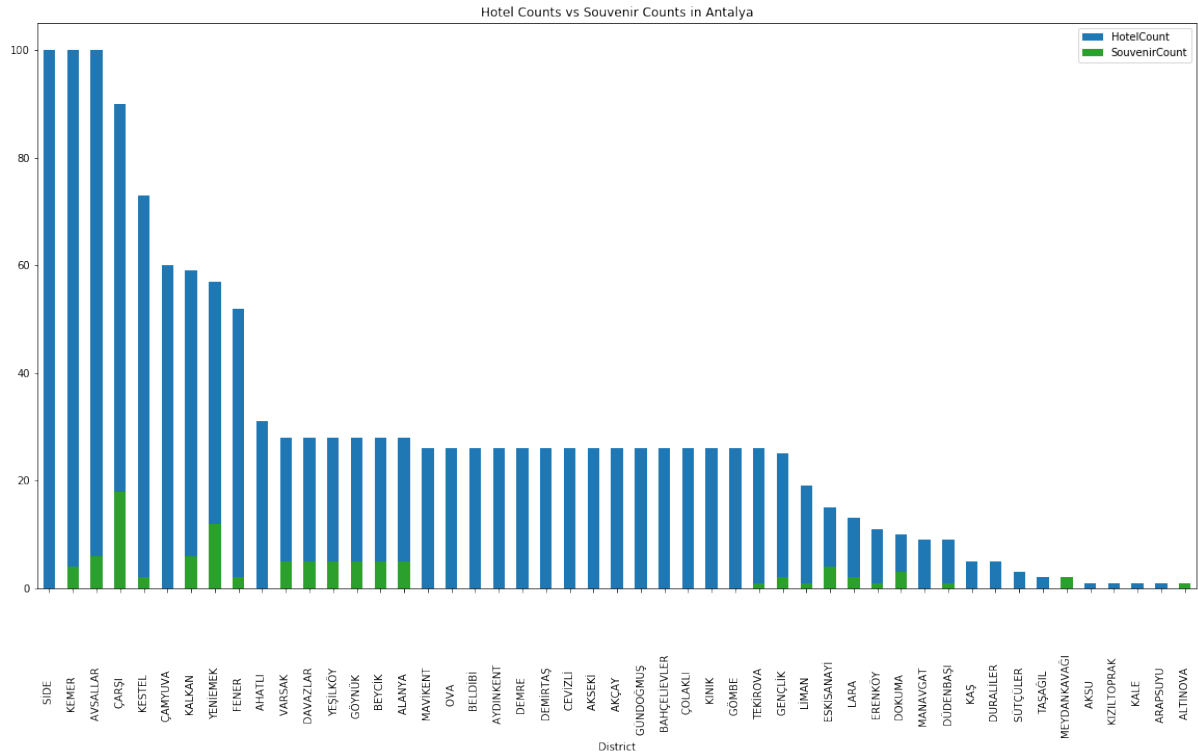
6- Discussion

As I mentioned before, Antalya is Turkey's fifth largest city with millions of visitors each year.

In this analysis, I tried to solve location data of many districts of Antalya and acquire as many insights as I can. One approach I used was to get the district name which has the greatest number of hotels (that means more visitors and more customers) and the least number of souvenir shops (a smaller number of competitors).

I used foursquare app data to get nearby hotels and souvenir shops in each district center and used this data to make my final conclusion.

Finally, I used different kinds of piloting techniques to present final results visually.

7- Conclusion

As a result, for people who are looking for perfect spot in their souvenir businesses, we can make recommendations according to our results.

We can apply same method for many other businesses and make suggestions to improve their profits

8- References

1. http://postakodu.ptt.gov.tr/
2. Foursquare app
3. Turkish State Statistics Office