Where to invest for a restaurant in Istanbul?

Data Science Approach
05.04, Düsseldorf

Introduction

I am a talented chef who wants to start my own business by opening a restaurant with variety of different cuisines offered in its menu in Istanbul, Turkey.

What is the best place to open a restraurant in Istanbul? Where is the busiest but relatively cheap part of town? Which part of the city has high demand to restaurants with lowest possible rent rates?

Criterias / Assumption

Let's summarize expenses of a restaurant in 4 main groups:

- Employee salaries
- Rent
- Equipment and ingredients
- Fixed costs (i.e. Electricity, gas, water, heating)

Out of those 4, all of them except rent is independent of the location of the place. Employee salaries, taxes, fixed costs and ingredients are all in the same price range wherever you open up the location. Whereas rent of the restaurant is heavily dependent on the location.

Methodology

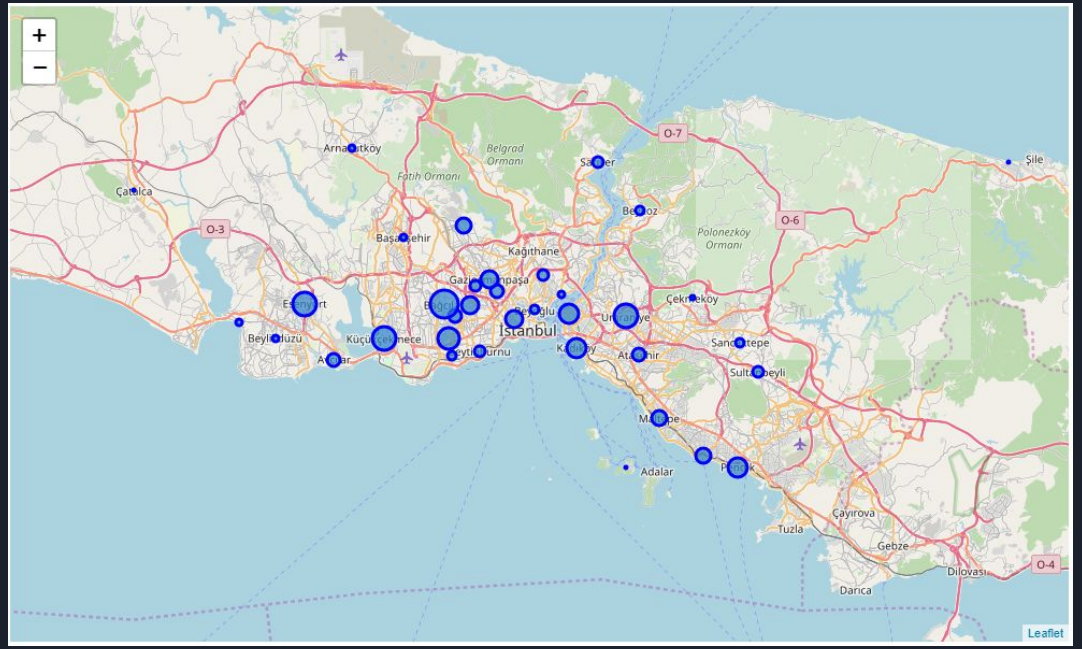
Therefore in this project;

- I will first collect list of all municipalities in Istanbul, their coordinates, populations and unit rent values per square meter.
- With the help of **Foursquare** API, I will then analyse the restaurants in istanbul, find their distribution in different municipalities
- Then I will cluster them according to their similarities with **k-means clustering** technique.
- Finally I will try to detect a municipality which is similar to most busiest and highly restaurant dense areas with the lowest rent possible.

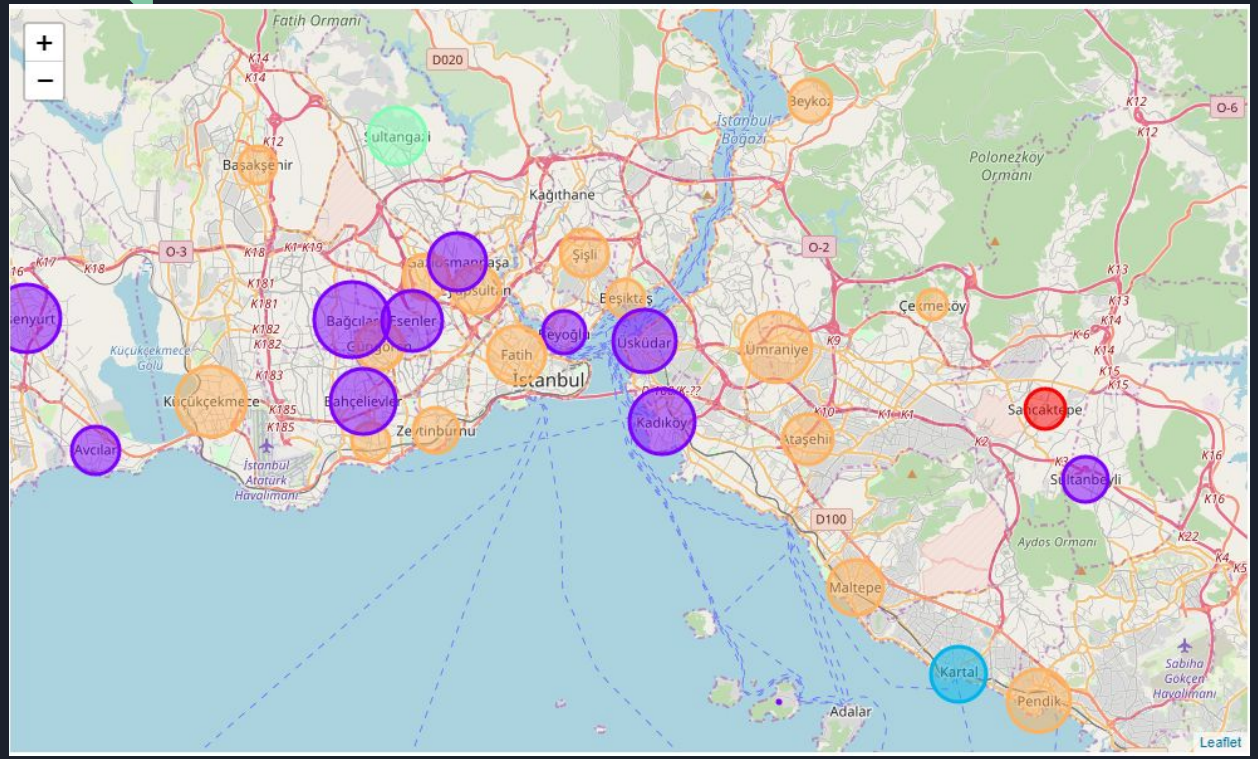
Data & Visualization

Out[161]:

	Municipality	Unit Rent	Population	Unit Rent Per Capita	Latitude	Longitude
0	Sarıyer	29	276407	0.000104918	41.170603	29.054363
1	Beşiktaş	27	191513	0.000140983	41.042847	29.007528
2	Beyoğlu	27	247256	0.000109199	41.028423	28.973681
3	Bakırköy	24	214821	0.000111721	40.983541	28.867974
4	Şişli	22	314684	6.99114e-05	41.061273	28.985020
5	Kadıköy	20	550801	3.63108e-05	40.991572	29.027017
6	Adalar	19	15623	0.00121616	40.876259	29.091027
7	Eyüpsultan	19	317695	5.98058e-05	41.046044	28.925324
8	Fatih	18	455498	3.95172e-05	41.019297	28.947802
9	Zeytinburnu	18	288743	6.23392e-05	40.988118	28.903635
10	Ataşehir	16	345588	4.62979e-05	40.984749	29.106720



Results After Clustering



Two leading categories are generated by the algorithm.

Discussion

Category 3 has the most restaurants as top 5 venues. So we will open our restraurant in a category 3 type location.

If we look at the dataframe sorted by most crowded municipality, we will see the first place with category 3 is "Ümraniye".

Ümraniye is also with average rent of 12 TL/m2, cheaper than Istanbul average which is 14.6 TL/m2.

In addition to that, restaurants are not most common venues listed in Ümraniye. This might mean:

1. There are not so many restaurants existing in Ümraniye.
2. Or they are not worth/qualified enough to attract people.

Conclusion

In either case, this is our chance to test our chef skills for the first time!

We not only expertised in Turkish cuisine but also in data science now.

Cooking skills combined with a smart brain would lead into a business full of success and money.

That's a risk worth to take. Let's cook!

Bon Appétit