Best location to open a restaurant in Helsinki

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Introduction

Restaurant business is very competitive. Over 50 percent of new restaurants goes out of business in their first three years period. However, having a good concept and location can help that the restaurant will succeed.

Helsinki is the capital of Finland. Traditionally, Finnish people like to eat their dinner at home. Therefore, there is not a strong restaurant scene. However, there has been more and more new restaurants emerging lately. Furthermore, there seems to be that people are eating more in restaurant.

In this project, we are trying to find out what would be best location to open a restaurant in the center of Helsinki. Furthermore, we will also determine what type of restaurant would best choice in that location.

Companies that have many different types of restaurants would most likely interested in this project. They have the resources to conduct this research and open any type of restaurant in any location possible.

Data

We will be using foursquare API to obtain our data. We use the foursquare's explore API to find restaurant in the coordinates of Helsinki. We get the coordinates using geolocator. The data columns that we are interested are name, id, categories, latitude, longitude and postal code. Categories will help us to determine what type of restaurant we want to establish. Latitude, longitude and postal code tell us locations of the restaurants.

We will enrich the data with tip counts, likes, ratings and price tier. We will get this data using the foursquare's venue API. We query the API using ids of the venues that we obtained with the explore API. The price tier of the venues will help us to determine the what type of restaurant would be best suited to certain location. The other data we will use to categories the venues by their popularity.

[57]:

	name	categories	lat	lng	postalCode	Tip Count	Likes	Rating	Price tier
0	Café Trocadero	Mediterranean Restaurant	60.165103	24.942498	00120	33	91	9.0	2.0
1	Boulevard Social	Mediterranean Restaurant	60.166128	24.942034	00120	60	179	8.9	2.0
2	Gaijin	Asian Restaurant	60.165949	24.941759	00120	98	255	8.9	3.0
3	Patisserie Teemu & Markus	Bakery	60.167899	24.938190	00100	30	55	8.9	1.0
4	Passio	Scandinavian Restaurant	60.167088	24.937240	00100	27	92	8.9	2.0
5	Penny	American Restaurant	60.164708	24.941308	00120	22	89	8.9	2.0
6	Ravintola Vinkkeli	Scandinavian Restaurant	60.164107	24.946349	00130	13	43	9.1	2.0
7	Ragu	Restaurant	60.165831	24.944672	00130	31	111	8.7	2.0
8	Ravintola Muru	French Restaurant	60.165268	24.935957	00120	44	133	9.1	3.0
9	Zucchini	Vegetarian / Vegan Restaurant	60.166160	24.949551	00130	8	37	8.9	3.0

Picture 1. List of ten restaurants in our data

Picture 1 contains a snip of our dataframe. It includes ten first restaurants in our dataset. We have dropped all the Id -column. We only needed it to get more information about the venues. In addition, we have dropped all the restaurants that had NaN-values.

Methodology

We decided to use k-means clustering algorithm to group our restaurants based on our numerical data. Our numerical data included tip count, likes, ratings and price tier. We also tried to use restaurant categories with one hot encoding in the clustering algorithm. However, the algorithm ended up with many clusters that had one restaurant. However, we still used one hot encoded categories when we did exploratory data analysis on the clusters. In k-means, we used k value of 10.

We grouped the dataset by cluster labels and took the mean values. We choose top5 cluster labels excluding cluster label 9. It included only one restaurant. Furthermore, we visualized location of each restaurant belonging to the 4 clusters. Restaurants belonging to different cluster where colored differently.

We also took the top10 restaurants of the dataset and visualized their location. We compared both maps and dataframes together.

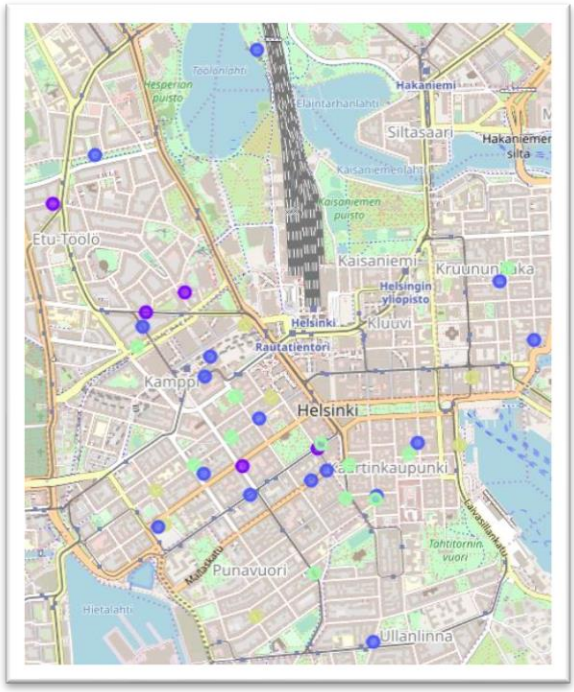
Results

	Cluster Labels	name	Tip Count	Likes	Rating	Price tier
33	9	Johan & Nyström	146	480	9.3	3.0
12	2	Cafe Rouge	11	32	9.2	2.0
14	6	Gran Delicato	99	251	9.2	2.0
4	2	Ravintola Vinkkeli	13	43	9.2	2.0
78	2	Sinisen huvilan kahvila	34	143	9.2	2.0
86	6	Lemon Grass	70	235	9.1	2.0
7	1	Ravintola Muru	44	133	9.1	3.0
2	2	Penny	22	89	9.1	2.0
29	2	Twisted Street Kitchen	23	95	9.1	2.0
10	2	Levant	25	105	9.1	2.0

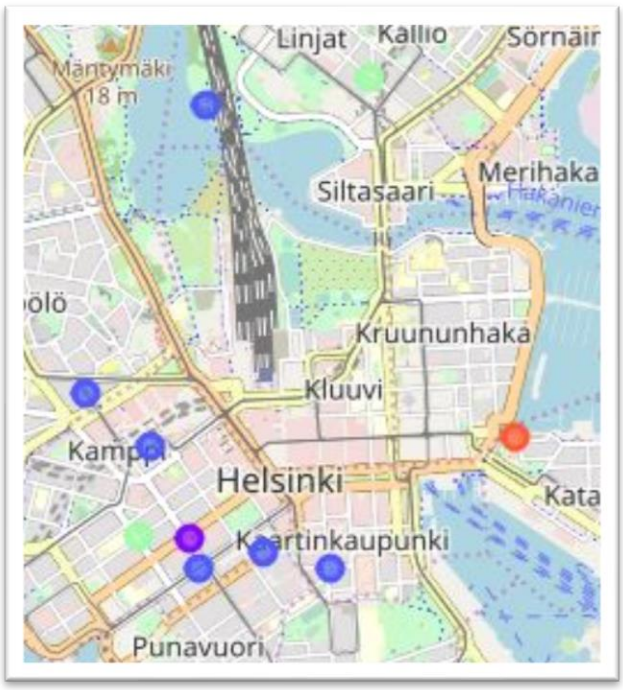
Picture 2. Top 10 restaurants by rating

Cluster Labels	Cluster count	Tip Count	Likes	Rating	Price tier
2	16	23.375000	78.437500	9.050000	2.0
1	5	55.600000	158.400000	8.960000	3.0
7	7	21.714286	64.714286	8.828571	1.0
6	13	73.307692	218.307692	8.730769	2.0

Picture 3. Top 4 clusters by rating



Picture 4. Restaurants belonging to 4 clusters.



Picture 5. Top 10 restaurants

In picture 2, there is the top 10 restaurants in Helsinki by rating. We have visualized the location of the restaurants in picture 5. From this picture, we can see that locations of restaurants with highest ratings are usually Kamppi (4/10). However, there is also restaurants located in Kaartinkaupunki, Etu-Töölö, Katajanokka, Punavuori and Kallio. In addition, 6 out of 10 highest rated restaurants belong to the cluster label 2, which is colored blue in the pictures. In picture 3, there is the results of k-means clustering. Every clusters have his own price tier. Highest rated clusters belong to price tier 2, which is moderate. Second highest rated cluster is price tier 3, which is expensive. Second highest rated cluster is colored as purple in the maps. Most of the restaurants belonging to this cluster are in Tutuola.

Analyzing the types of the restaurants, café and middle eastern restaurant is most popular types in top 10 restaurants. In clusters, Scandinavian restaurants is the most common type of the two highest rated restaurants. There is also one Scandinavian restaurant in top 10 restaurants.

Discussion

Based on the results, it seems that the best location to open a restaurant is Kamppi. However, the price tier of the restaurant also affects the best location. Highest rated price tier 3 restaurants are located mostly in Etu-Töölö. Therefore, if you are opening a price tier 3 restaurant in Helsinki, you should open it in Etu-Töölö. Price tier 2 restaurants seem to have best ratings. Therefore, you should open a price tier 2 restaurant. In addition, the Scandinavian restaurant was the most common type of the two highest rated cluster. Therefore, Scandinavian restaurant would be safe bet based on the data.

In this project, we assumed that the rating of the restaurant is the measure of the success of the restaurant. I think that there are many more things that affects the popularity of the restaurant. Therefore, we would need more data from multiple sources to have better understanding what affects the popularity of the restaurants. In addition, better locations have higher rents, which affects the success of the restaurant. Furthermore, higher price tier restaurants probably has higher employee cost.

Conclusion

In this project, we tried to find out what would be best location to open a restaurant in the center of Helsinki. In addition, we wanted to know what type of restaurant would be most popular one. We acquired the data from foursquare API. We choose the 100 restaurants located in the center of Helsinki.

We used k-means clustering algorithm to find most popular restaurants clusters We visualized the top 4 clusters in a folium map. In addition, we analyzed the top 10 restaurants in Helsinki based on rating. Furthermore, we visualized the location of the restaurants also in a folium map. Afterwards, we compare the results. We found out that the best location to open a restaurant in Helsinki is Kamppi. However, there were also many other areas that had high rated restaurants. Furthermore, the price tier of the restaurant also affects the best location of the restaurant.

The most popular type of the restaurant is a price tier 2 Scandinavian restaurant based on data. However, it seems to be that the type and price tier of the restaurant does not matter that much.