The battle of neighborhoods

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Outline

Introduction

Athens is the capital and largest city in Greece. It is widely referred to as the cradle of Western civilization and the birthplace of democracy, largely because of its cultural and political impact on the European continents. In modern times, Athens is a large cosmopolitan metropolis and central to economic, financial, industrial, maritime, political and cultural life in Greece. Athens is a global city and one of the biggest economic centers in southeastern Europe.

Athens has a lot of business opportunities and business friendly environment. This means that the market is highly competitive and therefore any business venture in the country needs to be reviewed carefully and strategically in order to make the business as profitable as possible.

Business Problem

The restaurant 'ABC' is interested in opening a new restaurant in Athens. Considering that the choice of location (i.e. neighborhood) is very important, the owner of the restaurant has addressed our data science team.

The main **objective** is to locate and recommend to the management which neighborhood could be the best choice to start off the particular business. The management also expects to figure out the rationale of these recommendations.

Data

The data used for the purpose of the project comes from the following locations:

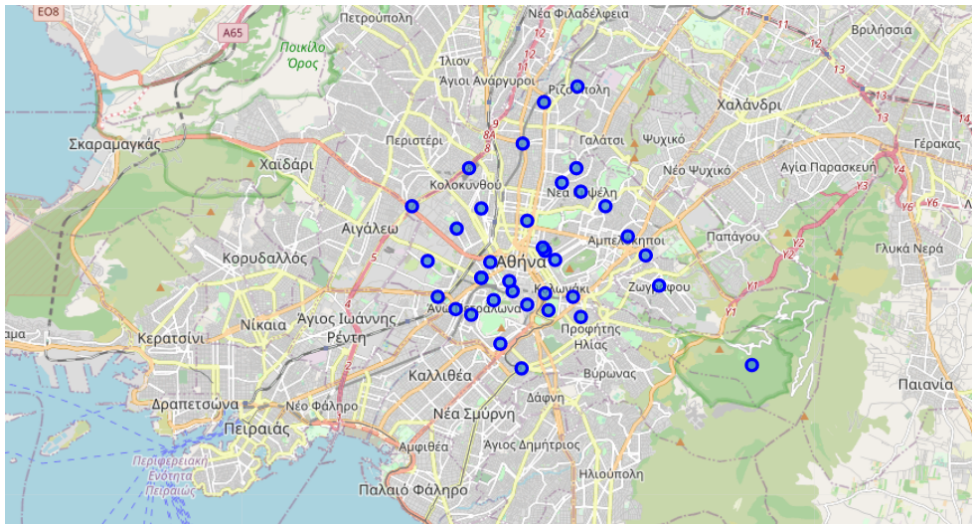
- Foursquare: It is a local search-and-discovery service which provides information on different types of entertainment, drinking and dining venues. Foursquare has an API that can be used to query their database and find information related to the venues, such as location, category, reviews and tips.
- Athens neighborhood names available on https://www.google.com/maps
- Athens geographic coordinates available on https://www.gps-coordinates.net

Methodology

1. We have collected the data from the above sources.
2. We get the latitude and longitude values of Athens.

The geographical coordinates of Athens are 37.9839412, 23.7283052.

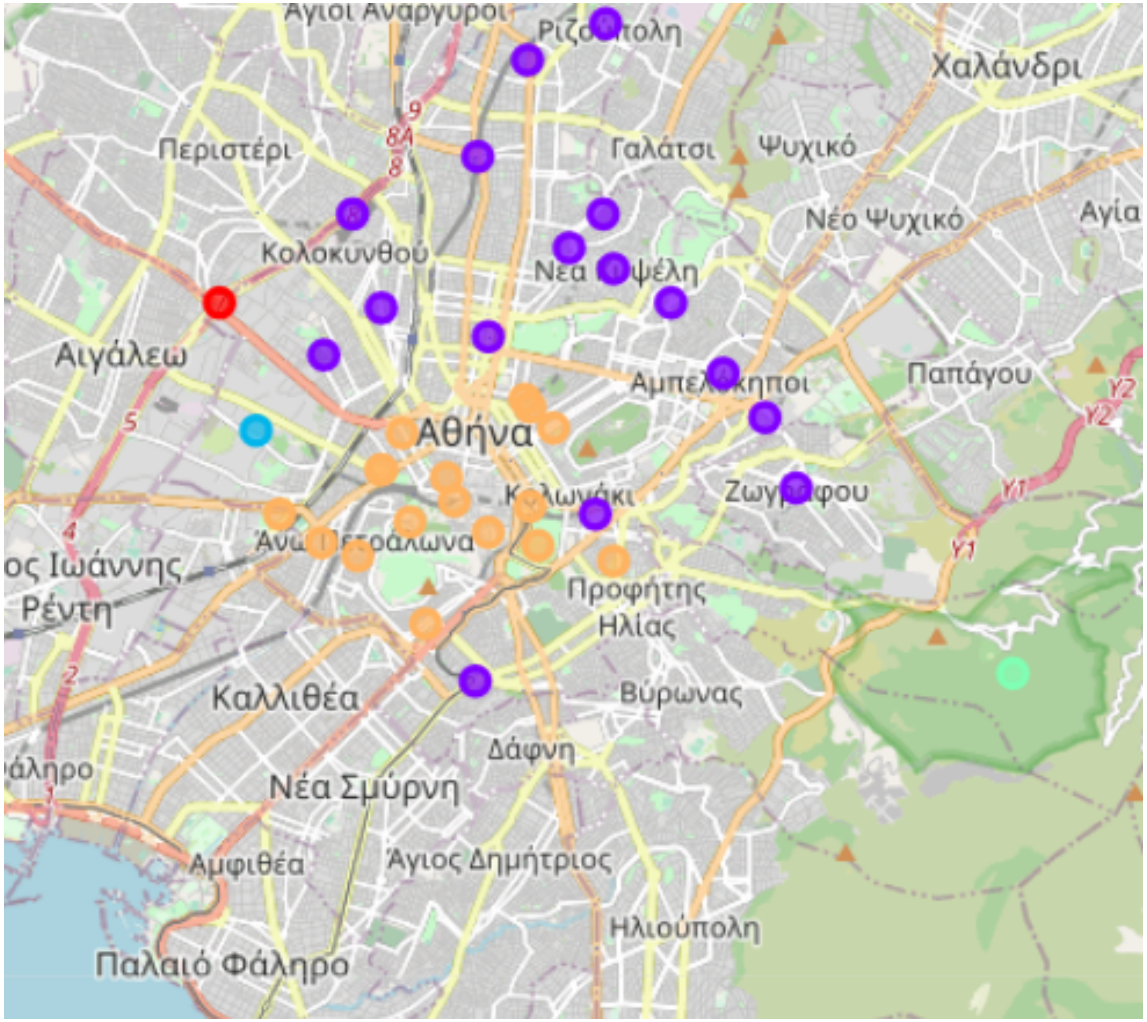
3. We find all venues for each neighborhood using Foursquare API.
4. Then we create a map of Athens using latitude and longitude values.



Methodology

5. By using a custom function, calling the 'explore' endpoint, we create a dataset with the top 100 venues within 500 radius of the center of each neighborhood.
6 Then we count how many venues were returned for each neighborhood.
7. We check the unique categories. In our cases are 206 unique categories.
8. We analyze each neighborhood and find the top 5 most common venues.
9.We create a new dataframe which displays the top 10 venues for each neighborhood.
10. We run k-means method to cluster the neighborhood into 5 clusters.
11.We visualize the results and create a map.

Methodology



Discussion

After analyzing the data and the various clusters produced by the machine learning algorithm, the ideal solution is the cluster with the number 2.
We observe that people prefer these neighborhoods for entertainment and we suggest opening the specific restaurant there in order to make the business profitable.

Conclusion

We were able to determine a good set of ten options in order to suggest opening a new restaurant, considering the variables described in the previous sections.
For upcoming projects with similar characteristics, we could examine other characteristics such as the population and the income and also other clustering algorithms.