Capstone Project - The Battle of Neighborhoods

Launch of a network of fitness clubs in Saint Petersburg

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Introduction

Saint Petersburg is a large city in Russia. A healthy lifestyle is becoming more and more popular among residents of Saint Petersburg. Residents want to play sports, but there are not many places for this. There is a lack of sports clubs in the city.

Investors plan to open a network of sports clubs in St. Petersburg. To do this, they need to find out the most favorable points for placing clubs in the new network. The main mode of transport in the city is the metro, so you need to understand at which metro stations there is a high density of sports clubs, at which stations there is a shortage of sports clubs and at which stations residents are eager to open a gym.

A very important point is the number of available places for opening clubs. Investors believe that to maintain the profitability of the network, it is necessary to open at least seven clubs in different parts of the city. It is necessary to check whether the necessary number of places for new gyms is available.

Data

To solve the problem we will use the following data:
- list of Saint Petersburg metro stations
- latitude and longitude coordinates of stations
- foursquare venue data, especially data about gyms, sport clubs.

Sourses:
https://en.wikipedia.org/wiki/List_of_Saint_Petersburg_Metro_stations - Wikipedia page with list of Saint Petersburg Metro stations.
The Saint Petersburg Metro is a rapid transit system in Saint Petersburg and Leningrad Oblast, Russia. It has been open since 15 November 1955. The network currently consists of 5 lines with a total length of 124 kilometres (77 mi). It has 72 stations including 7 transfer points.
Latitude and longitude coordinates of stations are taken from parsing by python geocoder library.
Foursquare venue data were taken from location-based service Foursquare API.

Methodology

- Data were collected from Wikipedia, cleaned, and processed into dataframe by pandas.
- Latitude and longitude coordinates of stations were taken from parsing by python geocoder library.
- Foursquare venue data about gyms were taken from location-based service Foursquare API.
- Data were sorted and clustered by k-means method by sklearn library.
- Moreover, data were visualized by python folium library.

Results

Saint Petersburg metro stations were divided into 3 clusters:

- Cluster 1 - the low density of gyms (red)
- Cluster 2 - the average density of gyms (blue)
- Cluster 3 - the high density of gyms (green)
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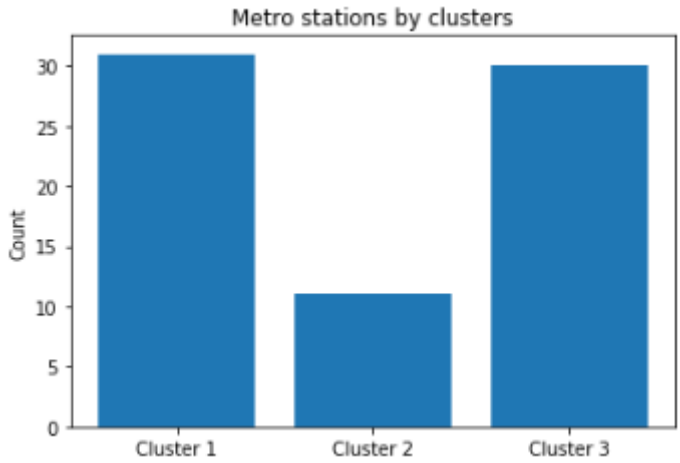


So, we have more than seven stations in Cluster 1.

Discussion section

We found not only a sufficient number of stations with a lack of gyms , but also a sufficient number of stations where there are no gyms at all. The city has a huge need to increase the number of gyms, so it makes sense to consider investing in this area.

In addition, if the new network will have a competitive advantage over competitors, it makes sense to invest in sports facilities on the territory of cluster 2 in order to develop a strategy and attract customers. This will help you reach the next level-open gyms on the territory of cluster 3.

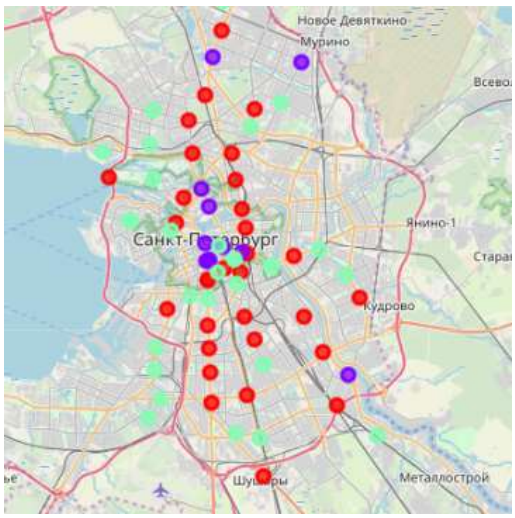
Neighborhood	Gym / Fitness Center
Ligovsky Prospekt	0.0
Narvskaya	0.0
Moskovskiye Vorota	0.0
Moskovskaya	0.0
Obukhovo	0.0

Conclusion

We recommend that investors invest in the development of a network of fitness clubs (if they are confident in their business model). There is a shortage of gyms in the city and with growing demand, the investment should pay off.

The number of stations for initial launch exceeds the required seven stations. Full list of stations (marked in red on the map):

Ligovsky Prospekt, Narvskaya, Moskovskiye Vorota, Moskovskaya, Obukhovo, Zvenigorodskaya, Lomonosovskaya, Prospect Prosvesheniya, Lesnaya, Shushary, Park Pobedy, Sportivnaya, Tekhnologichesky Institut, Novokrestovskaya, Prospekt Slavy, Pionerskaya, Yelizarovskaya, Vyborgskaya, Volkovskaya, Politekhnicheskaya, Bukharestskaya, Chernyshevskaya, Ploshchad Lenina, Chkalovskaya, Ploshchad Vosstaniya, Ulitsa Dybenko, Udelnaya, Elektrosila, Chyornaya Rechka, Novocherkasskaya.



App: Saint Petersburg metro Map