Data Science Capstone project

USING DATA LOCATION TO IDENTIFY PLACES TO OPEN ART CAFFEE IN MOSCOW

Tatiana Shumskaya

Introduction

A description of the problem and a discussion of the background

Moscow is the capital and largest city of Russia. The city stands on the Moskva River in Central Russia, with a population estimated over 20 million residents in the Moscow Metropolitan Area. The city covers an area over 26,000 square kilometres (10,000 sq mi). Moscow is among the world's largest cities, being the largest city entirely within Europe. Also, Moscow has one of the largest municipal economies in Europe and it accounts more than one-fifth of Russia's gross domestic product (GDP).

Despite the economic difficulties and the unstable ruble exchange rate, the public catering market in Russia is growing steadily. In comparison with the indicators of 2014, it has grown by almost a trillion rubles: according to preliminary estimates, in 2019 its volume exceeded 2.2 trillion rubles. The industry continues to be profitable, and any catering establishment can become successful. Marketing research confirms the growing popularity of themed establishments among above-average Russians. This is due to the expanded opportunities for a good rest, which are provided in such places. These are places where you can listen to live music with friends and enjoy the taste of freshly prepared food. Thus, opening an art cafe in Moscow can be successful and bring profit to the business owner. However, Moscow is a city with a large territory and different population density. Also, the rental price for premises will vary greatly from district to district. It is important to choose a good place to open an art cafe based on what places are nearby. For example, in an industrial area, an art cafe will be unpopular due to the high cost of food, and in a business area, because of the unsuitable format of the establishment. It is also advisable to choose an area of the city with a minimum level of competition. Of course, the ideal option is to rent a room in the central or historical part of the city. However, in this case, the businessman must be ready for dumping from competitors. In addition, the rental rate in such areas may be too high. That is why it makes sense to think about opening an art cafe in a densely populated residential area, but close to the city center and

which contains establishments that may also be of interest to potential visitors to art cafes, such as theaters, museums, galleries, etc. One should note the popularity of public transport in Moscow, especially the metro. The proximity to the metro station is an important advantage for any facility, including a cafe.
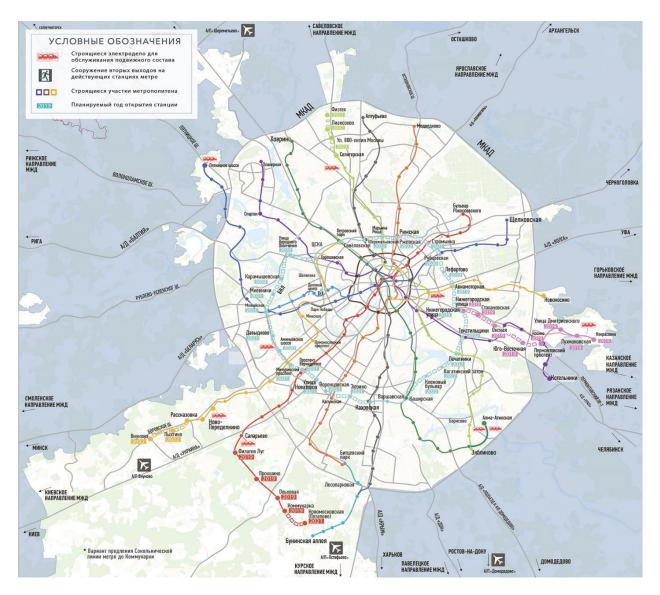

Figure 1. Moscow metro map

The aim of this project is to provide investors and business owners suitable areas, where they could potentially open a new Art café:

1. in location nearby theaters, museums, and galleries;

2. outside the city center, but as much close to the center as possible;

3. nearby one of metro stations.

In order to better understand the city of Moscow a dataset will be built through the use of web scraping and pulling venue data through the Foursquare API. A dataset with the geographical coordinates of metro stations will also be used, which will be processed using the Nominatum library. Once the data is collected it will be wrangled into shape and explored using the Pandas library and Seaborn plotting library. Analysis of the data will be carried out with the Scikit-learn library, in particular K-means clustering will be applied. Results will be displayed as plots as well as maps of the city, which will be produced using the Folium library. These maps can be used to quickly narrow down potential locations for a new restaurant from a bird's eye view or 1000m perspective.