

Selection of a location for a Russian restaurant in Tokyo

Andrey Slyadnev

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1. Introduction

1.1 Background

Tokyo metropolis is one of the most populous metropolitan areas in the world with more than 13.9 million residents as of 2019. Occupying the area of 2,194km², it consists of 23 special wards, 26 cities, 1 district and 4 subprefectures. The metropolis is well known for its highly developed and very competitive food service industry which has been given a considerable boost in anticipation of the 2020 Summer Olympics that Tokyo was going to host. In 2020, however, the outbreak of COVID-19 pandemic confused all plans. The International Olympic Committee and local organizers decided to postpone the Olympic Games till 2021 leaving the food service and other businesses without long hoped-for revenues and customers. On the other hand, unlike other countries the Japanese authorities have never legally enforced any hard lockdowns so even during the pandemic the restaurants and other food service companies continued their business operations.

1.2 Problem

A changing landscape may bring new opportunities. The purpose of this project is to acquire data on Tokyo restaurant venues, allocate venues to corresponding clusters with a focus on ethnic type venues. In particular, this research should help understand how many Russian food restaurants are available throughout the area and if there is any room for a new Russian restaurant.

1.3. Audience

The outcome of this study may be of a particular interest to restaurant business owner as well as potential investors who consider investing into or starting a business in Tokyo metropolitan area.

2. Data acquisition and wrangling

2.1 Data sources

The initial data will be obtained via Wikipedia, the Foursquare API and other internet resources as necessary.

2.2 Data wrangling and analysis

At the first step, the *geographic coordinates (longitude and latitude)* and *names of Tokyo Wards* will be scraped from Wikipedia or other sources. These data will be used to plot them and build a dataset of Tokyo Wards and *their Russian food venues*. The data on the venues will be acquired using Foursquare API. Following that all food restaurants will be sorted out, plotted and clusterized to get a general picture of restaurants distribution. At the final step, Russian food restaurants will also be singled out and plotted.

3. Exploratory data description and analysis

As mentioned in Section 2.1, the core data on 23 Tokyo Wards was scraped from Wikipedia, please refer to https://en.wikipedia.org/wiki/Special_wards_of_Tokyo. It was, however, impossible to locate a web source containing all necessary decimal geographic coordinates. As a result, latitude and longitude of the Wards were acquired via a manual internet search, added to a separate dataset, which was then merged the Wards dataframe.

The Foursquare API was applied to make calls for Russian restaurants located within a 4,000m radius of every Ward location.

4. Study results

Although the initial idea was to get a total number of food and drink venues in every ward and estimate the percentage of Russian venues, it could not be implemented because the maximum number of venues returned by every API call was limited to 100 per ward due to the available Foursquare developer account settings. For this very reason, at this stage of the study it was only possible to identify 4 Wards where no Russian restaurants are currently available (Adachi, Nerima, Edogawa, Suginamij) and 10 more Wards where the number of Russian restaurants does not exceed 4 venues. These wards are proposed as targets for further research.

The result of the aforementioned study was a map of the Tokyo metropolitan area with plotted Russian food venues, which makes it easy visualize their spatial distribution. At this point, no machine learning techniques could be applied yet as it was difficult to acquire all the required data (e.g. the total number of food and drink venues per ward). However, if these data become available, it should be possible to make a model to predict the potential growth of food and drink venues in different Tokyo wards by considering the ratio of the number of restaurants and the ward population.

5. Conclusion

Selecting a location for a new restaurant in a country with the highest density of restaurants/cafeteria in the world with one restaurant for each 266 people can be quite a challenge. Data analysis techniques can help significantly narrow down the problem if not solve it.