Capstone Project - The Battle of Neighborhoods
Foreign restaurants in Beijing

December 13, 2020

1 Introduction

1.1 Business problem

In this project we will try and identify ideal districts in Beijing to open an italian restaurant.

1.2 Background

With thousands of restaurants across its 16 districts, Beijing is certainly a world-renowned food capital. Although mostly focused on chinese cuisine, the city is open to international culinary traditions, in particular korean, japanese and italian. Ideal places to taste foreign cuisine might still be limited to specific areas.

With the help of Foursquare location data and machine learning we will try and uncover locations within the city which seem the most open to foreign cuisine. Specifically, we will cluster Beijing districts relative to their restaurant venues information collected on Foursquare.

2 Data

For this project we will scrape the table with the districts of Beijing available at: *https://en.wikipedia.org/wiki/List_of_administrative_divisions_of_Beijing*

Geospatial coordinates for each district will be obtained via the geocoder class of the GeoPy Python library.

By using the Foursquare API we will get all the venues in each neighborhood. We can filter these venues to get only restaurants and pizzerias.

3 Methodology

Information on the neighborhoods in Beijing will be scraped from Wikipedia and read in a dataframe. Information on the venues available in the different

neighborhoods will be collected through Foursquare. Venues will be filtered for restaurants and pizza places. Finally, the neighbourhoods will be clustered through the K-Means algorithm (n = 2). Results will be visualised with the aid of the folium Python library.

4 Results & Discussion

The algorithm clustered the 12 neighborhoods for which venues information was available in two almost equally sized clusters. The two clusters seem to partly reflect a division between neighborhoods where almost exclusively Chinese cuisine restaurants are found, and neighborhoods that display a mixture of Chinese and foreign cuisine. In the latter cluster we find neighborhoods that, together with Chinese venues, host Italian, Mexican, Japanese, American, Korean, French, Middle Eastern and Australian restaurants among the most common. Unexpectedely, these neighboorhoods don't seem to occupy the very core centre of the city of Beijing, in line with the expectation that more international venues are generally found in the busier and more touristic inner metropolitan area; but rather at the outskirt of the city.

5 Conclusion

Data on the most common food venues available in the different areas of Beijing was extracted from Foursquare and employed to cluster the city neighborhoods via K-Means clustering algorithm (n clusters = 2). The results could elucidate on most likely areas where to find international cuisine restaurants. There seems to be two categories of neighborhoods, one with an extremely large prevalence of Chinese cuisine restaurants, the other with a mix of local and international cuisine venues. The latter category is situated in areas of the city that are not the most central. An italian restaurant is probably more likely to succeed in an area where foreign cuisine already seems appreciated.