

Which is the best neighborhood to open a restaurant in Mexico City?

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February 2020

Introduction

Mexico City is one of the most largest and crowded cities in the world. There are almost 22 million people interacting in it. The income per capita among the "chilangos" (how people from Mexico City are called) is one of the highest in the country. The large amount of people and the good wages make Mexico City a good place to open a restaurant. Nevertheless, there are some neighborhoods not worthy to consider, and mainly this is due insecurity. In this final assignment, I considered two main variables to decide where is the best neighborhood to open a restaurant, these variables are crime index and restaurants density. Combining these two variables, I made clusters to find the equilibrium with good restaurant's density neighborhoods and at the same time with low index crime.

Data

First, I downloaded Mexico City's neighborhoods ([Check the info here](#)). Mexico City is divided in 16 Alcaldías which are similar to counties in U.S. These Alcaldías are divided in 1,646 neighborhoods; nevertheless, I had to make a random sample from these neighborhoods due to license limits in the Foursquare API. Using Foursquare -and a 500m radius- I got the entire venue categories, around 246 categories are in those neighborhoods, but I only found 50 related with food services. Finally, I downloaded crime's data provided by government's city ([Check the info here](#)). There are 249 different labels for the crimes, I only used those related with robbery in any form: with and without violence; to individuals or firms, etc. After filtering there were only 15 categories, I added them to get the total robbers in the neighborhood.

Methodology

To make a proper use of Foursquare API I computed the inside centroids of each neighborhood. In order to find the restaurants or food related business I used a 500m radius. Once I had all the venue categories inside this radius I categorized them in "food related" and "not food related". Then, I counted all the business related to food: Pizza places, bars, restaurants of any kind, etc. To find the second variable, I created a crime index which is the total number of robberies in those neighborhoods. Crime Index and Restaurants were merged and with these two variables I generated four clusters using K-NN method -these four clusters were found using the Elbow plot. Finally, from the cluster with less crime index

and with higher number of restaurants I picked the best neighborhood in the sample to open a restaurant.

Results

Using crime index and restaurants density I found that "Presidentes Ejidales Primera Sección" is the best neighborhood to open a restaurant. There are already 50 restaurants over there which is a good sign of the high demand for food in that area. In addition, only three robberies were registered in 2019 making this area a safe zone.

Discussion

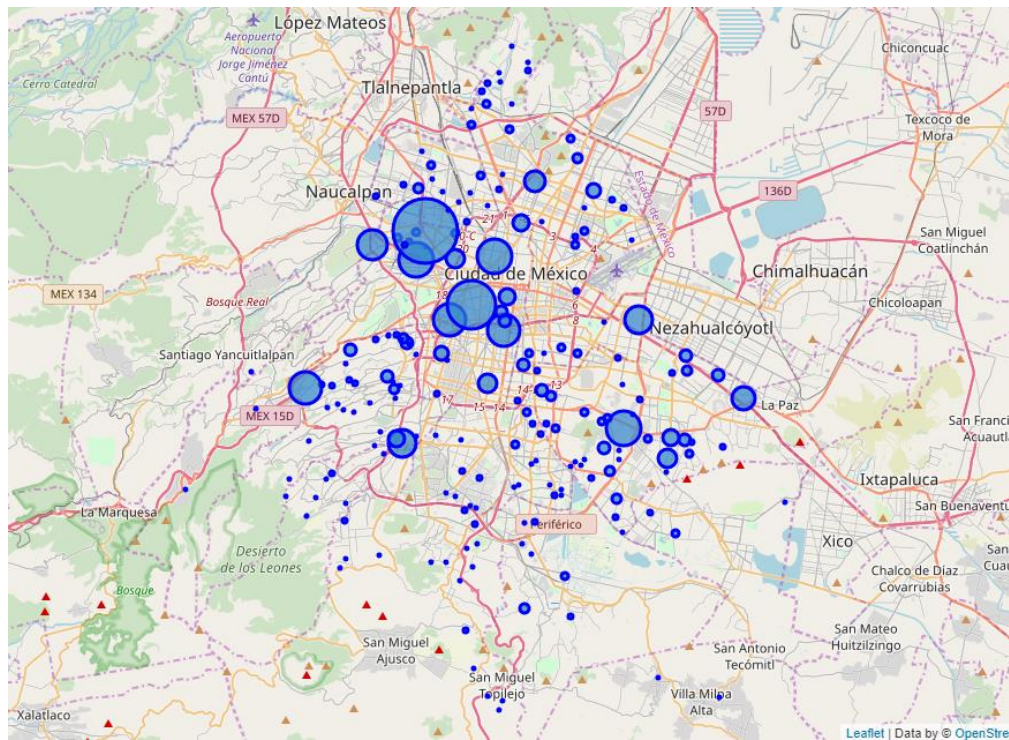
I could make further analysis to know the client's taste and willingness to pay; with these new variables, I can would estimates what kind of restaurant's type should be open, increasing the probability of success. Unfortunately, I found several limitations. Foursquare API limits the amount of queries, which has a direct impact in the accuracy of the predictions doing the analysis just in a sample.

Conclusions

To decide where is the best neighborhood to open a restaurant in Mexico City, I considered two main variables: crime index and restaurants density. Combining these two variables, I made clusters to find the equilibrium between good restaurant's density neighborhoods and low index crime neighborhoods. I found that "Presidentes Ejidales Primera Sección" is the best neighborhood to open a restaurant because its restaurant's demand and its security.

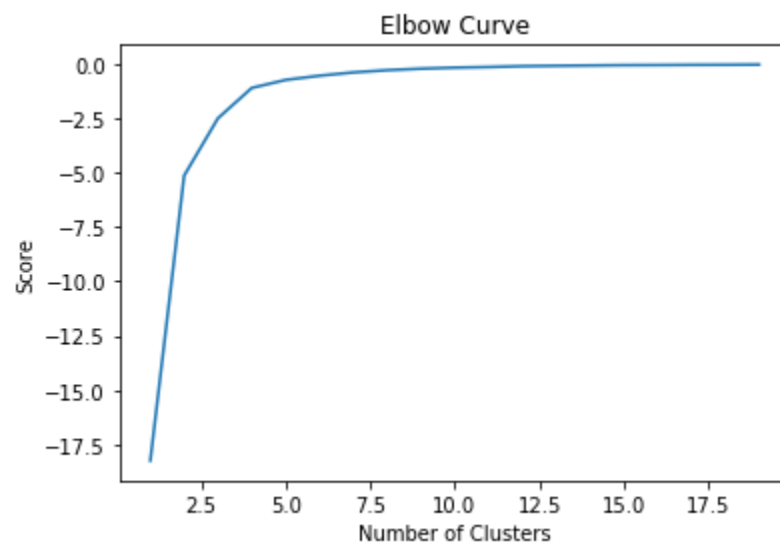
Appendix

Crime index map. Mexico City



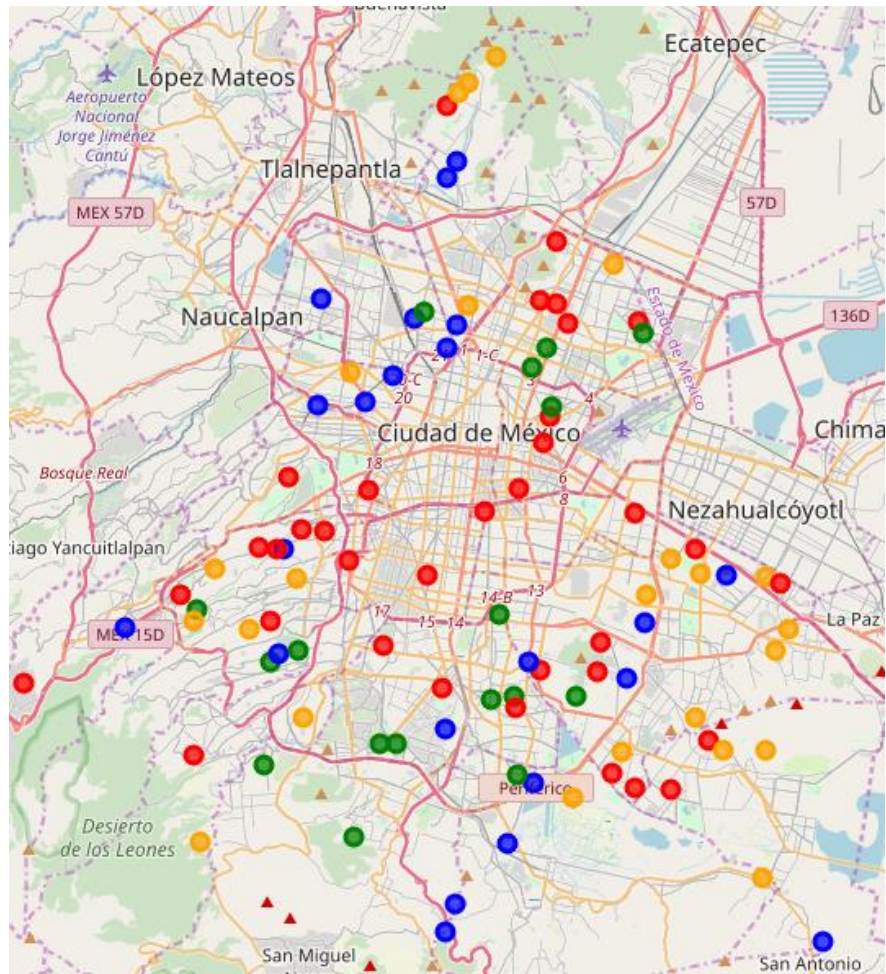
Note: Circles and number of robberies are proportional.

Elbow Curve



Note: I took four clusters.

Clusters in Mexico City



Note: Green is high recommended to open a restaurant, blue is probable, red I less probable and orange is not probable.