

Open a restaurant in Amsterdam

1. Introduction

The purpose of this project is to help finding a top ten list of locations in Amsterdam with the lowest density of Italian Restaurants (i.e. locations where the competitors are most far away).

I will help entrepreneurs who want to open an Italian restaurant in Amsterdam to make the best decision based on locations which are as far as possible from their competition.

I am italian living in the Netherlands, so this data analysis is very interesting for me. Italian restaurants are relatively cheap compared to other types of restaurants and they are suitable for all types of customers, therefore I will assume that the wealth of a certain neighborhood will not influence the chances of success of the restaurant. As a first analysis, I will consider the vicinity to another italian restaurant as the main cause of lower incomes generated.

Opening a restaurant in Amsterdam is a very attractive option. Amsterdam is a capital city with a huge amount of tourists all over the year.

The problem is that Amsterdam is also very pricy, rents can be sky high so the investment can be also very risky due to the high costs of maintaining the restaurant.

To make sure there is a return in the investment of opening a restaurant, I will study where opening a restaurant in Amsterdam is the most profitable due to the lowest amount of competitors in the vicinity.

2. Problem I try to solve

The major purpose of this project is to provide a list to a potential entrepreneur willing to open an italian restaurant in Amsterdam of areas where competitors would be most far away.

3. Data

Foursquare API

This project will use Four-square API as its prime data gathering source as it has a database of millions of places, especially their places API which provides the ability to perform location search, location sharing and details about a business. Using credentials of Foursquare API features of near-by places of the neighborhoods would be mined.

Neighborhoods of Amsterdam

As data I need a list of the neighborhoods present in Amsterdam with: their postcode and possibly latitude and longitude (otherwise latitude and longitude can be generated from geocoder).

I used data from here: <https://github.com/bobdenotter/4pp/blob/master/4pp.csv> which comprehends postcodes with latitude and longitude for all major cities in The Netherlands. Then I filtered the dataset to take into account only Amsterdam.

4. Methodology

I looked at the italian restaurants present in the different neighborhoods and then found the postcodes where there were no other Italian restaurants. After having retained only the postcodes of Amsterdam where there were no Italian restaurants, I looked at the postcodes with highest number of total restaurants (as an indication of vibrant parts of the city).

The top ten postcodes with: 1) no other Italian restaurants and 2) a maximum number of other restaurants were reported and they will be shared with the entrepreneur that can then evaluate where to open his/her restaurant also based on rents price for example.

Libraries I will Use to Develop the Project:

Pandas: For creating and manipulating dataframes. Folium: Python visualization library to visualize the neighborhoods cluster distribution of using interactive leaflet map. Matplotlib: Python Plotting Module.

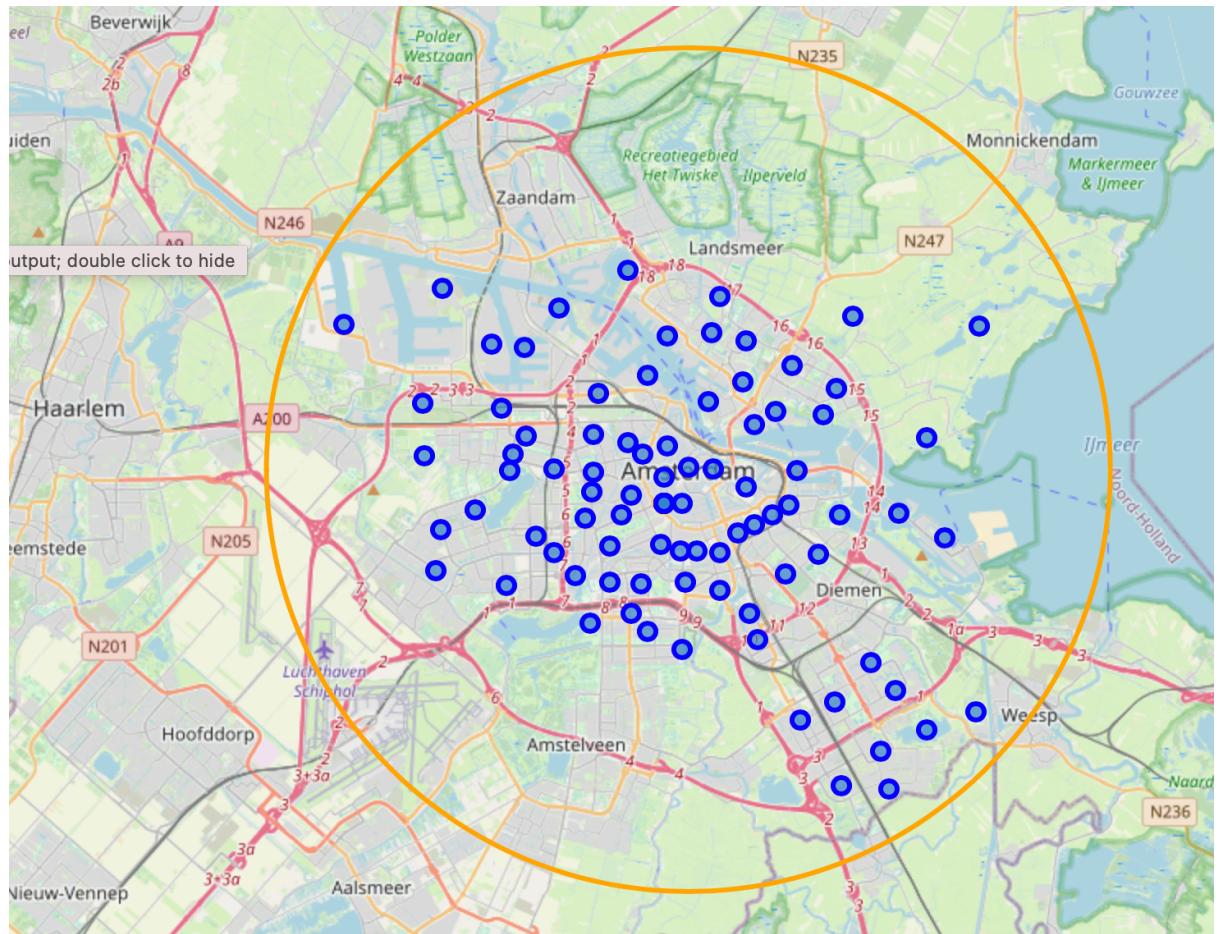
5. Results and Discussion

5.1. Data retrieval and filtering

Data was taken from <https://raw.githubusercontent.com/francescarivello/4pp/master/4pp.csv>

Since we are interested in opening a restaurant in Amsterdam, I **Filtered the data to keep only gemeente Amsterdam**.

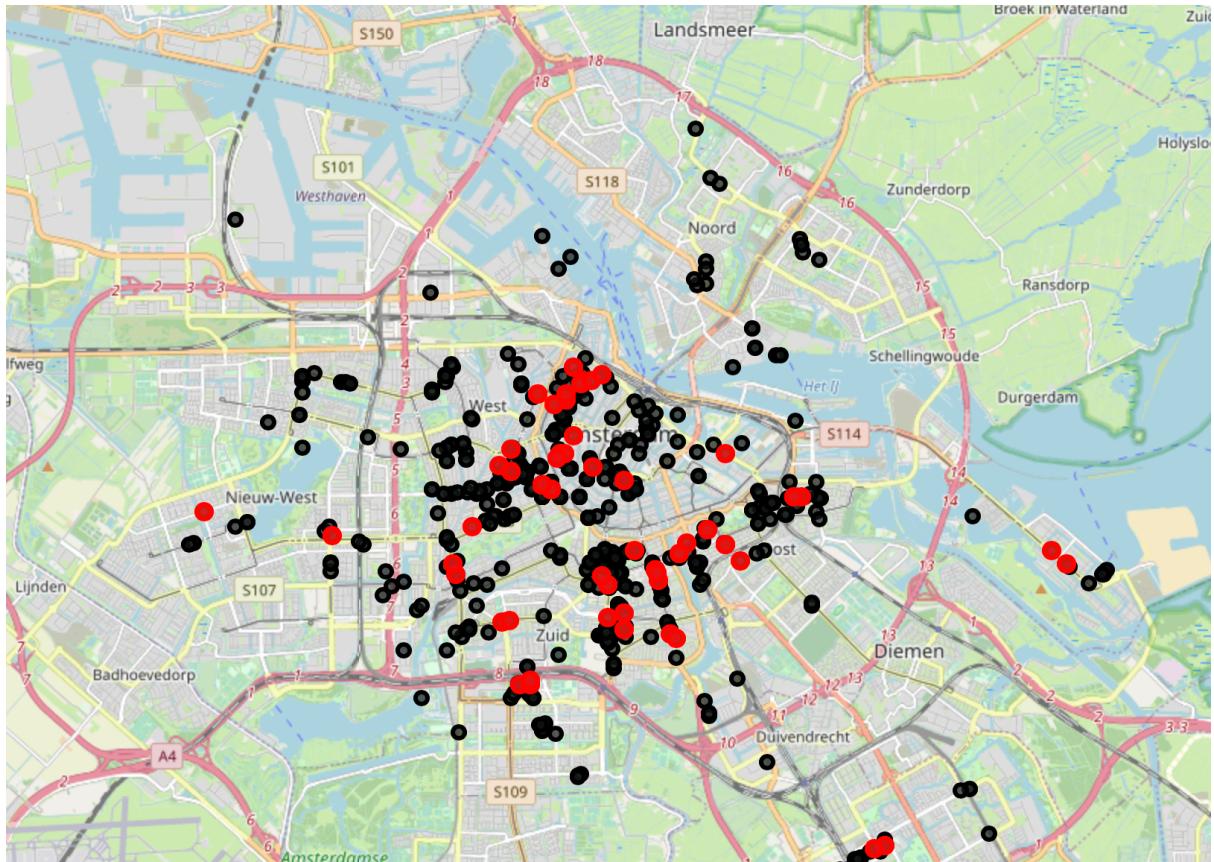
All the postcodes (blue dots) present in our database where in a radius of 12 km from the center of Amsterdam (orange circle).



The venues of interest were then retrieved from Foursquare and filtered in order to have:

- 1) where all types of restaurants are located in Amsterdam
- 2) where Italian restaurants in particular are located in Amsterdam

The geographical locations of all types of restaurants (black dots) and of Italian restaurants (red dots) were also visualized on the map of Amsterdam (here below).

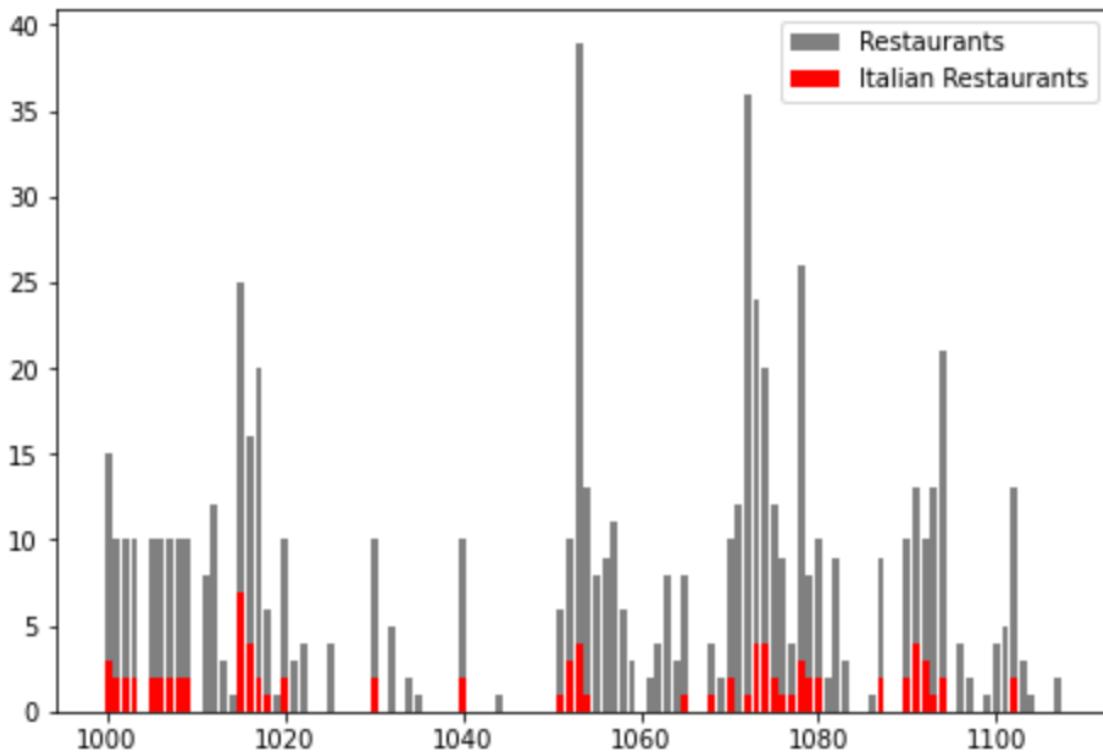


We can already see from the map that Italian restaurants are mostly in the Centrum, West, Zuid and Oost. The Nieuw-West has some restaurants but only one Italian and the Noord has no Italian restaurant.

Quantitative visualization of the number of restaurants and Italian restaurants in particular per barcode

From the map above it is already clear that there are some areas in Amsterdam, quite densely populated by restaurants but that have a few/none Italian restaurants. As I explained in the first part of the assignment, these neighborhoods would be perfect for starting an Italian restaurant due to: 1) the limited competition and 2) to the fact that there are still enough clients going.

To better visualize therefore where would be most convenient to open an Italian Restaurant, I am going to plot the histogram of Italian restaurants versus all types of restaurants.



From the above histogram, it is clear that there are different proportions of Italian restaurants VS total number of restaurants in the different postcodes of Amsterdam. However, from the plot it is quite difficult to determine exactly where we have a minimum number of Italian restaurants VS total number of restaurants.

Postcodes with no Italian restaurants

As a first step I kept only the postcodes having restaurants but no Italian restaurants. The full list of these postcodes is here below:

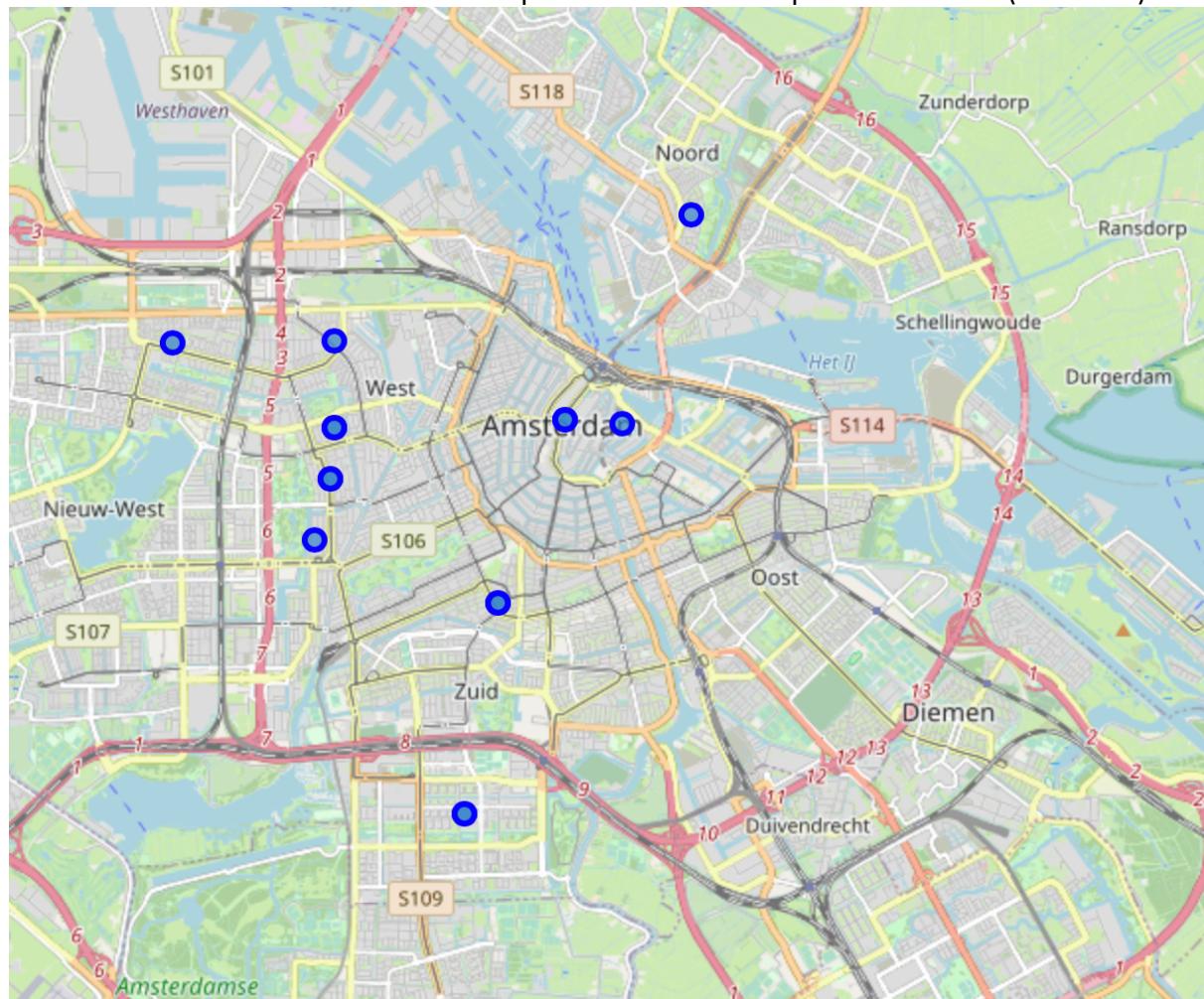
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[1011, 1012, 1013, 1014, 1019, 1021, 1022, 1025, 1032, 1034, 1035, 1044, 1055, 1056, 1057, 1058, 1059, 1061, 1062, 1063, 1064, 1069, 1071, 1081, 1082, 1083, 1086, 1096, 1097, 1099, 1100, 1101, 1103, 1104, 1107])
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From these postcodes I selected the top 10 list of the ones having the highest number of restaurants in general. You can see the list below with also the number of restaurants per postcode written down:

postcode	Nb restaurants	Nb italian restaurants
1071	12	NaN
1012	12	NaN
1057	11	NaN
1082	9	NaN
1056	9	NaN
1063	8	NaN
1055	8	NaN
1011	8	NaN
1058	6	NaN
1032	5	NaN

This is the top 10 list I will deliver to the entrepreneur who wants to open an Italian restaurant in Amsterdam.

To be more clear I also visualized these postcodes on the map of Amsterdam (blue dots):



6. Conclusions

1. We visualized on the map of Amsterdam where all italian restaurants are and where are all types of restaurants are. From that we could already see that that italian restaurants are mostly in the Centrum, West, Zuid and Oost. The Nieuw-West has some restaurants but only one italian and the Noord has no italian restaurant.
2. From the histograms visualization and the further analysis of postcodes where there are no italian restaurants but a maximum number of other restaurants we found that the best postcodes where to start an Italian restaurant in Amsterdam are 1071, 1012, 1057, 1082 and 1056.
3. The 10 postcodes which were found most suitable to open an Italian restaurant are visualized on the map on Amsterdam