A description of the problem and a discussion of the background.

Client runs a chain of Italian restaurants. They offer the classical italian kitchen and target customers typically in major cities. Venues are typically located in major city centers. The managing director of the client wants to open additional restaurants and wants to get an overview on the density of italian restaurants in two major cities – Toronto city center and Manhattan.

A description of the data and how it will be used to solve the problem.

Data used will be:

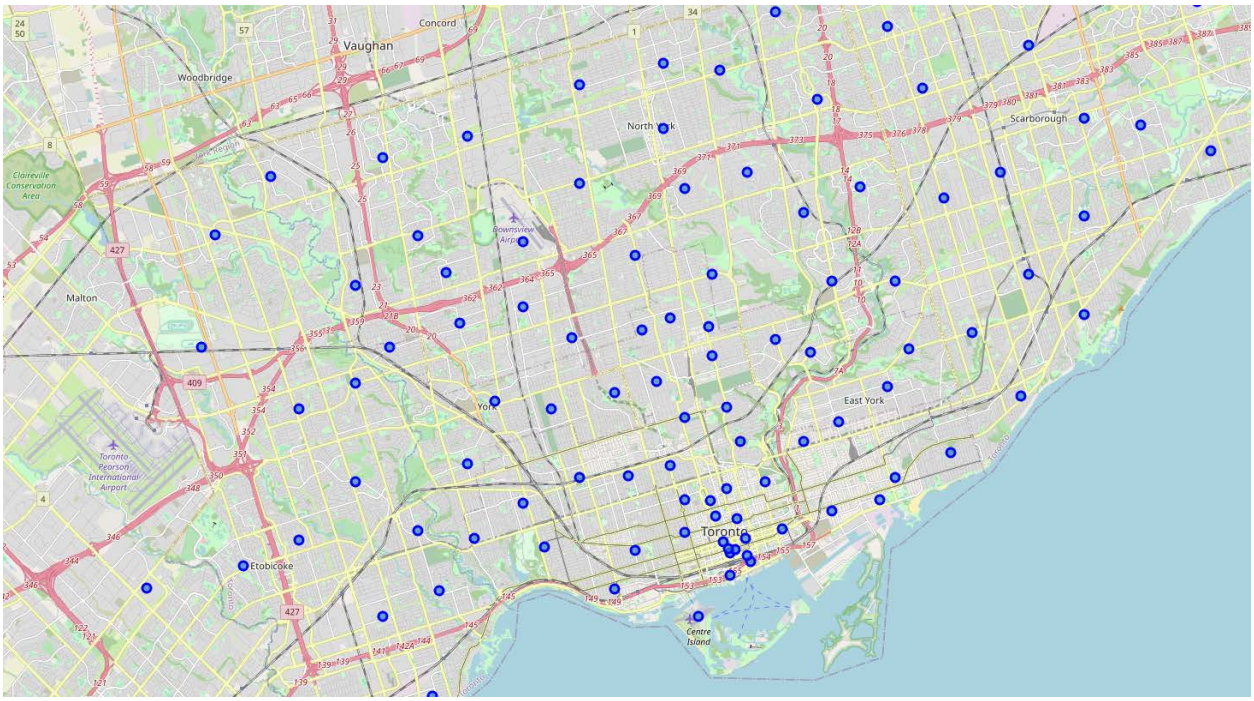
- Location based data from foursquare on italian restaurants in specific areas (Toronto city center & Manhatten)
- Population data for the areas in question

Approach will be to:

- Determine the current landscape of italian restaurants
- Determine population data (number of inhabitants per area) and calculate the mean number of persons per area per existing italian restaurant assuming that italian kitchen is attractive to anybody and there is not specific subpopulation attracted by this type of cusine
- Generate recommendation on most attractive markets – which is typically the market with the highest unmet need

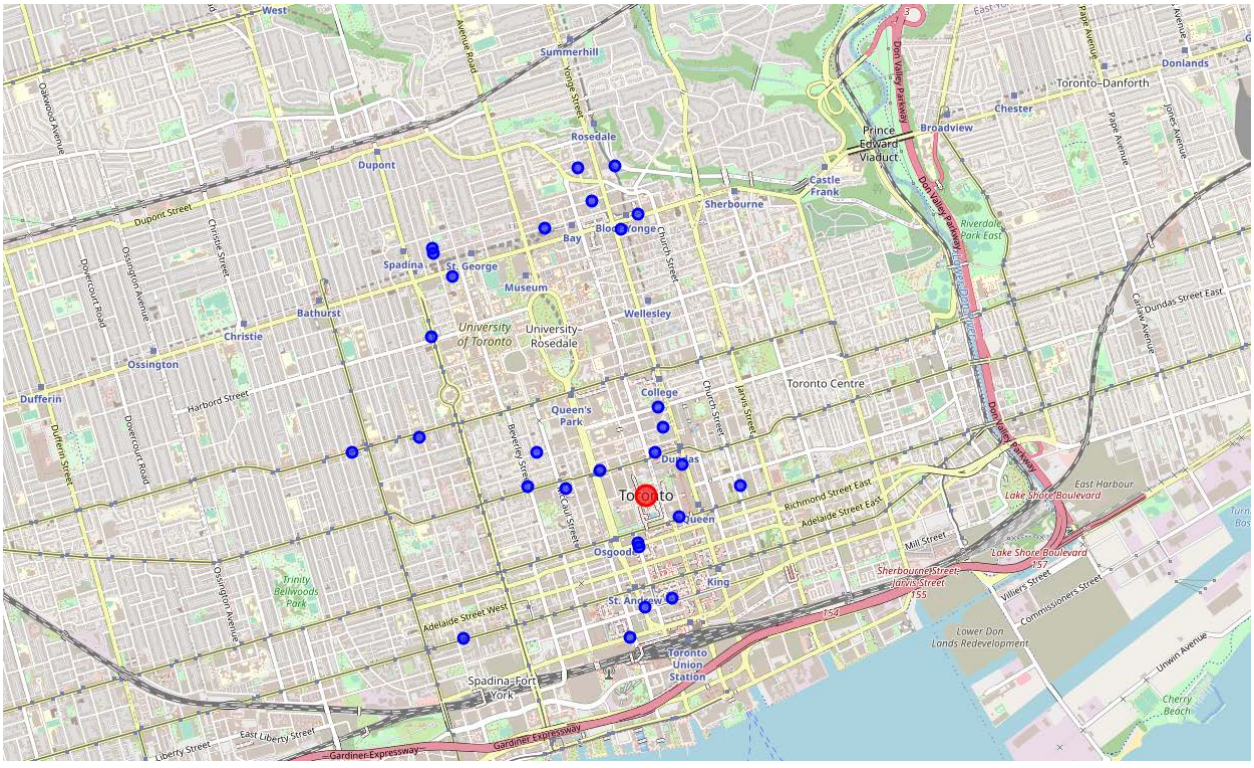
Data Analysis Toronto

A map of Toronto shows various neighborhood to be covered.



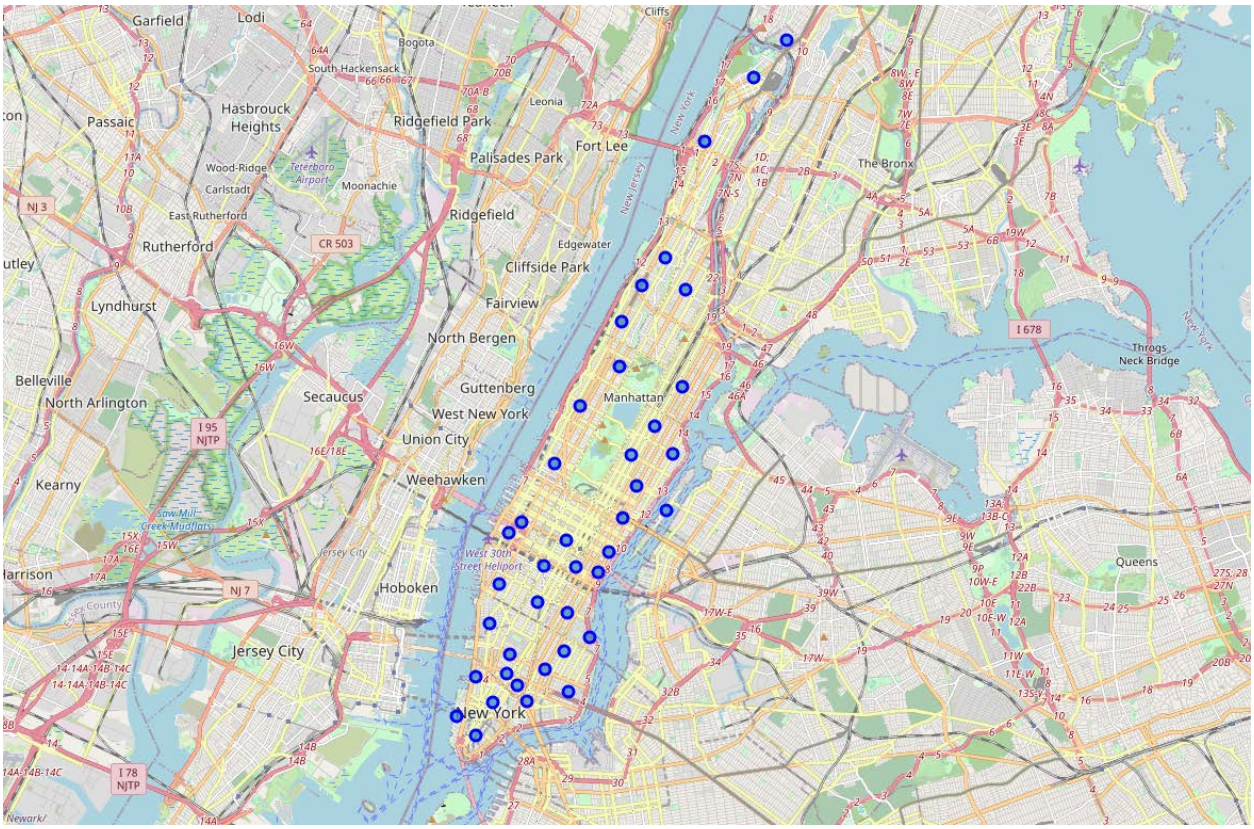
The analysis will focus now on the Central Toronto district.

Data is being extracted from Foursquare to get all Italian Restaurant for the central district with a diameter of 2.000m. This reveals 28 restaurants which a spread quite evenly through the area:

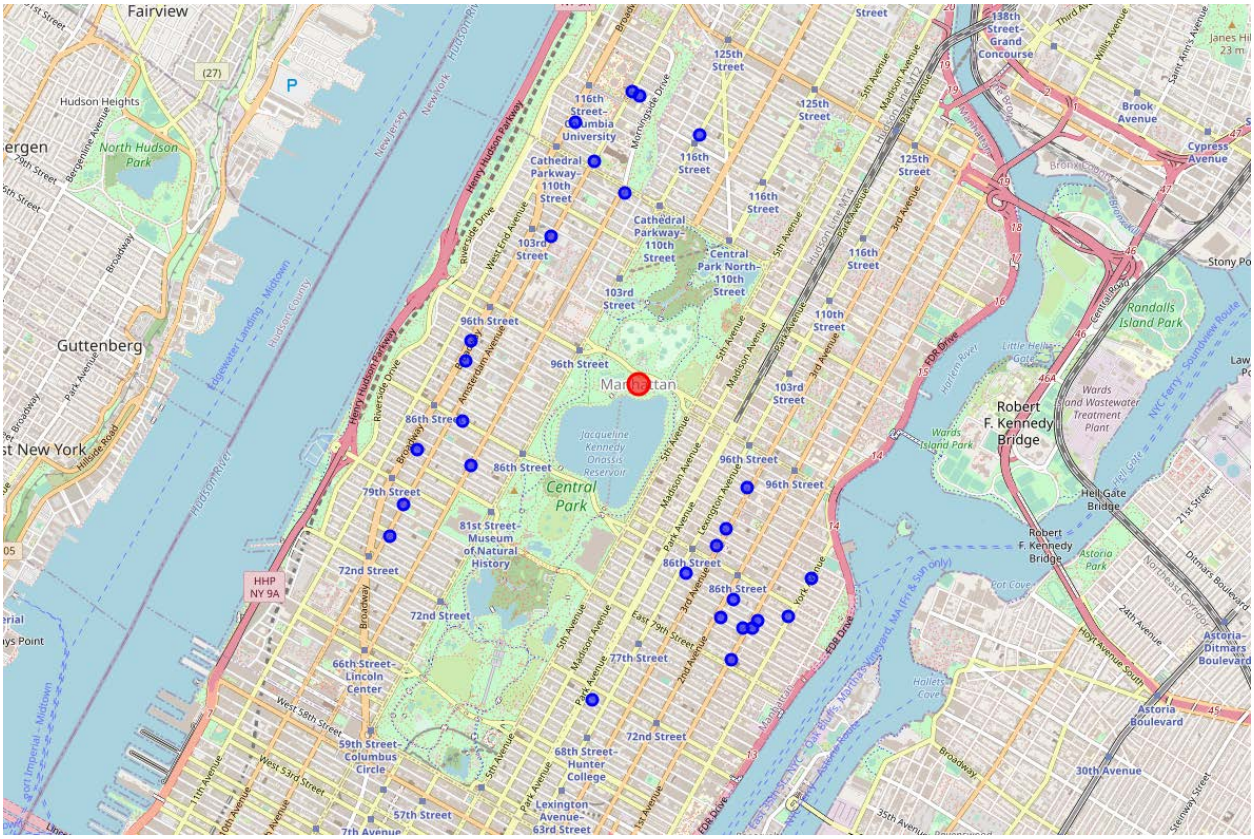


Data Analysis New York

The same analysis is executed for New York showing also various neighborhoods to be covered



Since there is no official Center District in Manhattan, Central Park is assumed as center and the same analysis is applied using Foursquare data to get all Italian Restaurants within 2.000m. Applying this logic e.g. to Downtown only would skew the analysis since it would covered watered areas.



The data reveals only 27 Italian restaurants within the same area which is one less than in Toronto.

To come to a clear result of the analysis, some normalization needs to happen to be able to compare the numbers.

Toronto and New York have a quite different population density which needs to be factored in.

- population density for Toronto: 4.335 people per sqkm - Wikipedia, 20th of Nov 2020
- population density for NYC: 10.639 people per sqkm - Wikipedia, 20th of Nov 2020

The search area for both cities was the same with a covered surface of 2km diameter giving us a covered area of 3.14sqkm

With this we get for NYC:

-> 3.14km^2*10.639 people in the covered area / 27 restaurants -> 1.237 people/ restaurant

And we get for Toronto:

-> 3.14km^2*4.335 people in the covered area / 28 restaurants -> 486 people/ restaurant

Conclusion

Assuming a similar demand for Italian food, the Toronto market shows already a much higher density of Italian restaurants compared to the population size as the market in New York. There is a factor of 2.5 more potential customers on average per restaurant in New York as in Toronto.

Looking at this key indicator, New York is a much more attractive market to open new Italian restaurants as Toronto