

A new restaurant in New York City, is it a good idea?

Introduction.

Nowadays catering is one of the activities that offers the highest return. It is a complex activity that involves many people, and many companies of different types: suppliers of raw materials, transporters, certifiers, room staff in restaurants, chefs, deliverymen. A large French restaurant chain wants to differentiate its business and open a new restaurant in the United States. The ceo of the company hired us to check in the city of New York what the presence of restaurants is, what type of restaurant is most widespread to have a first preliminary idea to decide in which type of restaurant to invest in. He also commissioned us to study restaurants divided by neighborhood. The company believes, in particular, that the greatest profit comes from Asian cuisine, which has been booming in recent years; he therefore wants to know the number of restaurants that offer Japanese cuisine in the city of NY and how many restaurants are present for each neighborhood, so as to have a preliminary estimate to use in future analysis to determine which is the best area in which to build the new restaurant.

Data

As for the data for a preliminary analysis, the government dataset was downloaded containing the geographical data and locations of the 5 boroughs that make up the city of New York.

Then through Foursquare you downloaded the list of restaurants in the city of NY and their coordinates, especially the restaurants that offer Japanese cuisine.

Then the number of restaurants for each neighborhood was analyzed and the ranking of the most common restaurants for each neighborhood was drawn up.

Methodology

In the analysis, as a first approach, after downloading the government database with geographical data, a list was made of all 5 neighborhoods that make up the city of NY;

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neighborhoods.head()
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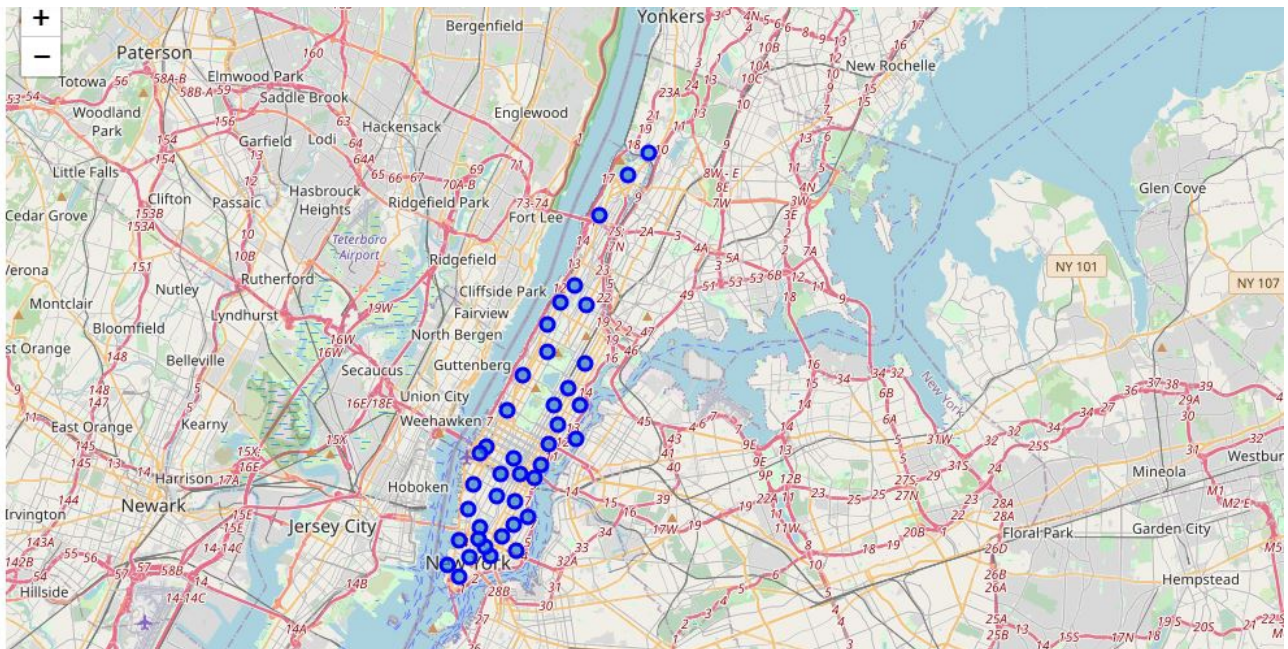
	Borough	Neighborhood	Latitude	Longitude
0	Bronx	Wakefield	40.894705	-73.847201
1	Bronx	Co-op City	40.874294	-73.829939
2	Bronx	Eastchester	40.887556	-73.827806
3	Bronx	Fieldston	40.895437	-73.905643
4	Bronx	Riverdale	40.890834	-73.912585

we then focused our attention on the manhattan neighbourhood to provide a preliminary analysis, as it is the neighbourhood that is most of interest to the client.

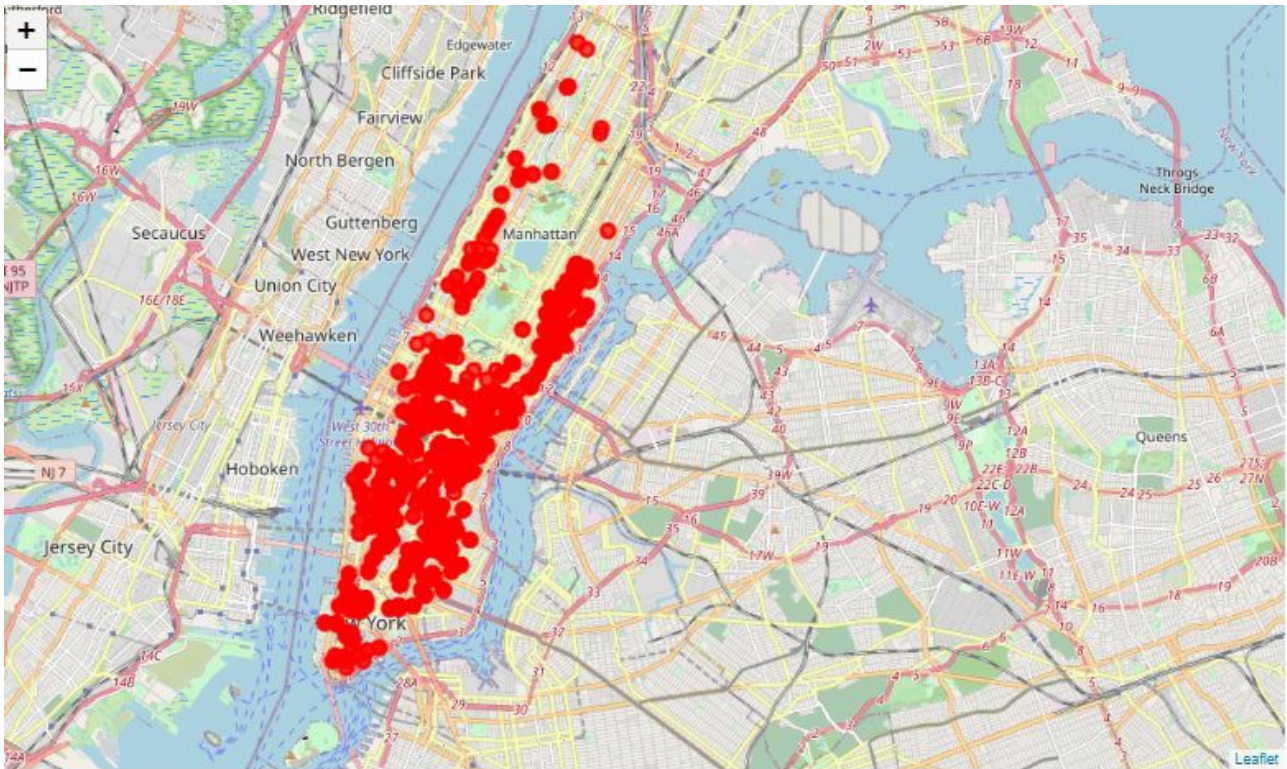
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manhattan_data.head()
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	Borough	Neighborhood	Latitude	Longitude
0	Manhattan	Marble Hill	40.876551	-73.910660
1	Manhattan	Chinatown	40.715618	-73.994279
2	Manhattan	Washington Heights	40.851903	-73.936900
3	Manhattan	Inwood	40.867684	-73.921210
4	Manhattan	Hamilton Heights	40.823604	-73.949688

After extracting the geographical coordinates of Manhattan, a map was created highlighting the potentially most interesting manhattan neighborhoods.

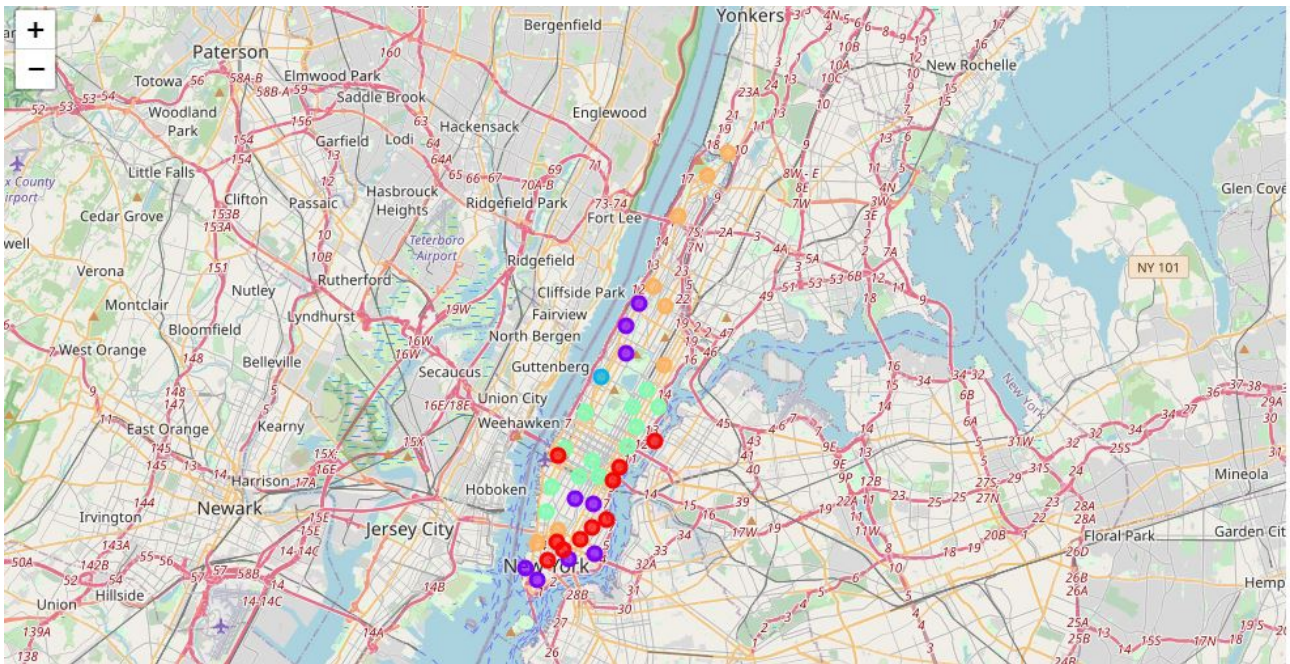


Later using the Foursquare API a search was carried out for all the restaurants or clubs that offer Asian cuisine.



After scaling using the one hot encoding technique to highlight asitic cuisine restaurants according to neighborhoods, a list of the 10 most popular restaurants was compiled.

Subsequently, using the machine learning technique of clustering, the ranking of the 10 most common types of restaurants was drawn up, for each neighborhood.



Results – discussion

The classifications of the 10 most popular restaurants have been delivered to the customer and it appears that Asian cuisine restaurants are always at the top of the ranking not only as "classic" sushi restaurants but also as tavernas, small clubs or noodle bars, but always united by the Asian cuisine.

Conclusions.

From the analysis, it is clear that Asian cuisine is widespread and that it is an expanding sector. With numerous sushi/asian cuisine venues, competition is strong, especially in a city like Manhattan, and the offer must be able to stand out. However, competition, even strong, in a dynamic environment such as Manhattan can be a stimulus for the business