

Finding an optimal location for a Chinese restaurant

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Background



- ✓ New York City, the most populous city in the United States,
- ✓ is a dream place for gourmet to seek delicious cuisine.

Problem Description



- ✓ In this project, we will try to find an optimal restaurant location.
- ✓ The strengths of each region will then be clearly expressed, so that stakeholders can choose the best final location.

method



- ✓ try to find places that aren't already full of restaurants.
- ✓ interested in areas where there are no Chinese restaurants nearby.
- ✓ be as close to the city centre as possible

Data Preparation

Getting the location data provided by IBM Watson Studio.

1

Using Foursquare API to get the coordinate of the center of New York City (Manhattan) .

2

Using Foursquare API to get the number of restaurants and their type and location in every neighborhood.

3

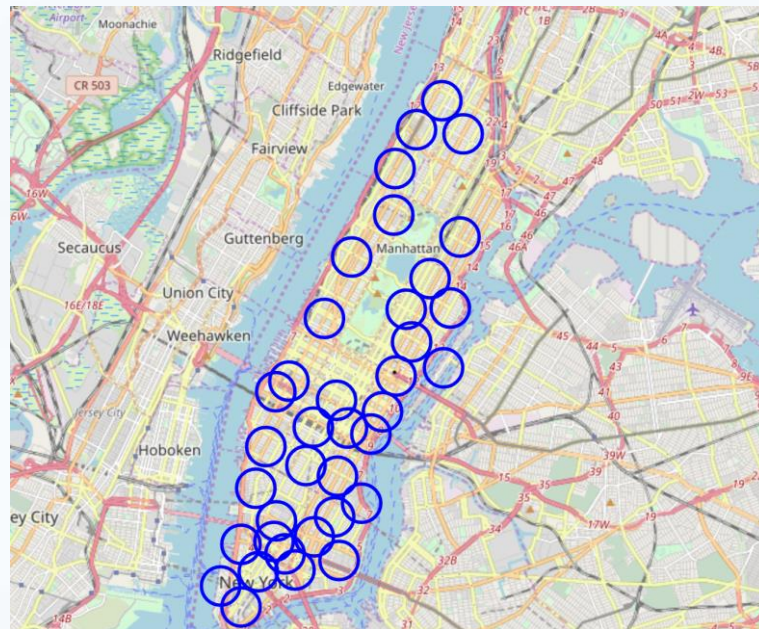
cleaning the data and reducing it to boroughs of NYC so that I can use it to find geological locations for further venue analysis.

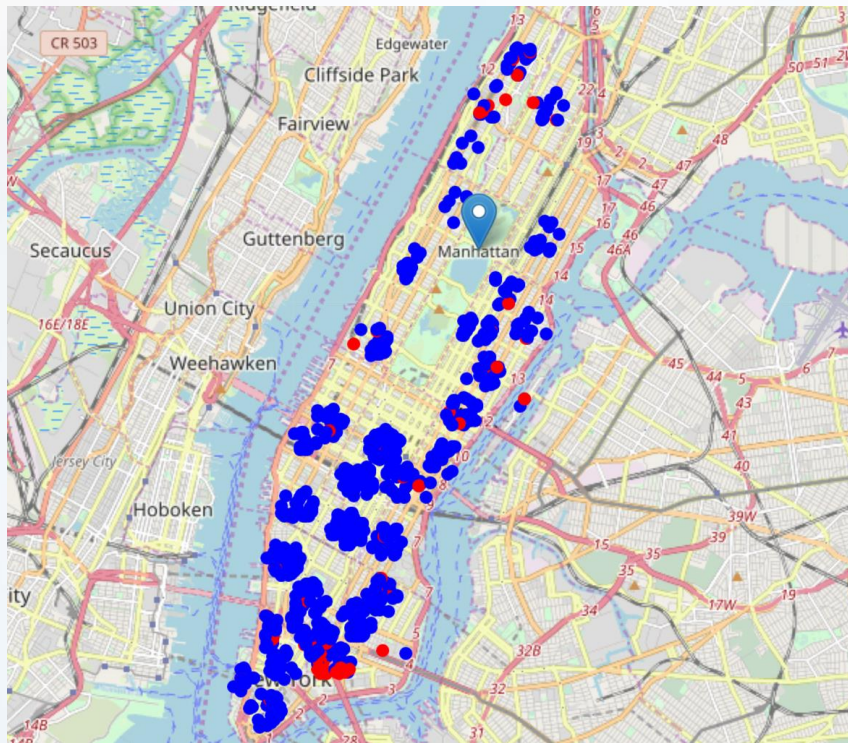
4

Data Preparation

- ✓ we chose Manhattan as the analysis area of interest.
- ✓ let's visualize Manhattan the neighborhoods in it.

	Borough	Neighborhood	Latitude	Longitude	X	Y	Distance from center
0	Manhattan	Marble Hill	40.876551	-73.910660	-5.794205e+06	9.858099e+06	16020.661541
1	Manhattan	Chinatown	40.715618	-73.994279	-5.821760e+06	9.868103e+06	13309.592195
2	Manhattan	Washington Heights	40.851903	-73.936900	-5.798470e+06	9.861349e+06	10953.332666
3	Manhattan	Inwood	40.867684	-73.921210	-5.795743e+06	9.859410e+06	14122.055880
4	Manhattan	Hamilton Heights	40.823604	-73.949688	-5.803305e+06	9.862859e+06	5903.904961
5	Manhattan	Manhattanville	40.816934	-73.957385	-5.804461e+06	9.863817e+06	4637.678850
6	Manhattan	Central Harlem	40.815976	-73.943211	-5.804573e+06	9.861989e+06	4953.789819
7	Manhattan	East Harlem	40.792249	-73.944182	-5.808594e+06	9.862002e+06	2071.673110
8	Manhattan	Upper East Side	40.775639	-73.960508	-5.811466e+06	9.864025e+06	2371.412055
9	Manhattan	Yorkville	40.775930	-73.947118	-5.811369e+06	9.862302e+06	2845.043858





✓ Using Foursquare API to get info on restaurants in each neighborhood.

- Total number of restaurants: 1128
- Total number of chinese restaurants: 93
- Percentage of chinese restaurants: 8.24%



20%

First, we collected the data we needed: the location and type (category) of each restaurant in Manhattan. We found all the Chinese restaurants (according to Foursquare).



30%

The second step is to calculate the density of restaurants in different parts of Manhattan. We will use the "heat map" to identify some promising areas near downtown with few restaurants and no Chinese restaurants nearby.



50%

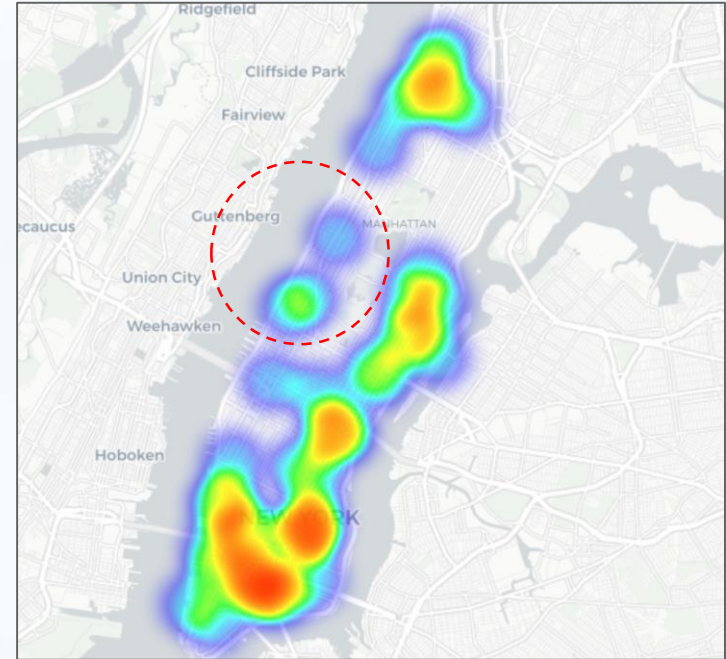
Third, we will consider sites with a radius of no more than two restaurants within a radius of 250 meters, and no Chinese restaurants within a radius of 400 meters is best.

Analysis

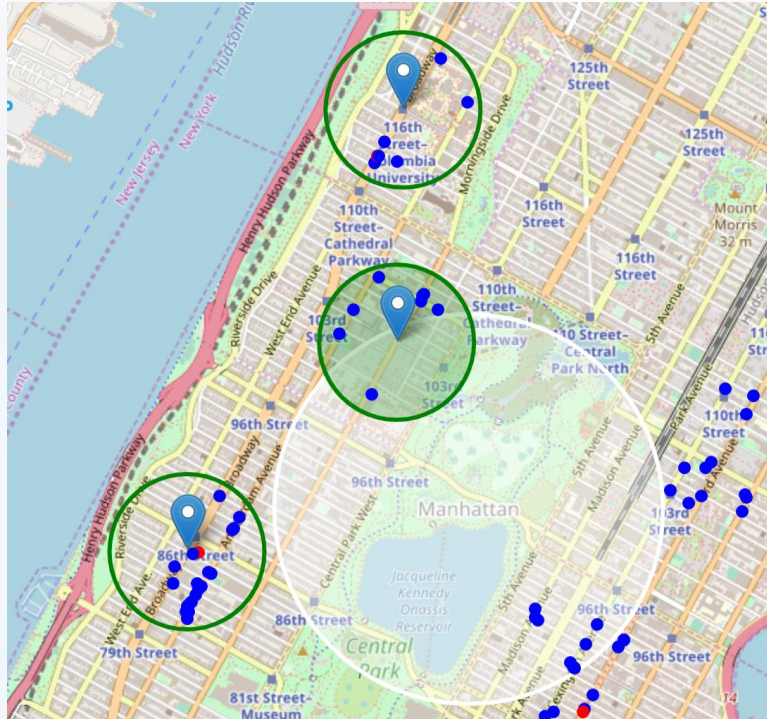
The heatmap showing density of all restaurants



The heatmap showing density of Chinese restaurants



- On the west side of Manhattan's central park, it seems possible to find places with a low density of restaurants.
- As can be seen in the figure on the right, the density of Chinese restaurants in the western part of Manhattan's central park is lower.



- ✓ We choose the streets called Upper West Side, Manhattan Valley and Morningside Heights as the focused object.
- ✓ Manhattan Valley is the closest to the city center, and there's no Chinese restaurant within 400 metres.

Results and Discussion

The analysis shows that while Manhattan has a large number of restaurants (about 1,200), there are also some low-density areas close to downtown. The south Manhattan area has the highest density of restaurants, so we focused on the lower density in the northwest, so we chose the Upper West Side , Manhattan Valley and Morningside Heights street areas, which are popular with tourists, close to downtown, and have a strong socioeconomic dynamic.

Through the visual images in this paper, it can be concluded that Manhattan Valley has the lowest density from the nearest area, and there are no Chinese restaurants within 400 meters. The optimal location can be found in this area. However, the proposed area should only be considered as a starting point for more detailed analysis, and the final site should take into account not only the competitive relationship but also other factors.

The objective of the project was to identify the number of restaurants and Chinese restaurants in the vicinity of midtown Manhattan to help stakeholders narrow down the number of Chinese restaurants in the best location. By calculating the restaurant density distribution from the Foursquare data, we first determined the distribution of all areas, then identified the target area, and finally found the location set that meets the basic requirements of existing nearby restaurants. The ultimate best restaurant location will be determined by stakeholders based on the characteristics and location of specific communities in each recommended area, taking into account additional factors.



THANKS