

Capstone project

Battle of Neighbourhoods

Chinese restaurants in New York

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1 Introduction

During recent decades China has experienced fast economic growth. This resulted in the expansion of Chinese cuisine worldwide. The development of Chinese restaurants and food chains can be stimulated by the two factors. First, there the number of tourists and immigrants from China is apparently increasing in Western Europe and US. Second, Chinese cuisine becomes more and more popular among people of non-Chinese origin. Therefore, opening the Chinese restaurant in one of the major cities seems to be a plausible business project. The choice of New York City is motivated by the fact that it hosts the largest Chinese-American population of any city proper, with over half a million (Wikipedia). To figure out which location for such a restaurant would be more profitable we will analyze the available data on existing restaurants of the same type in different New York neighborhoods and boroughs.

1.1 Target audience and importance

Suggested analysis will be interesting for the two groups of target audience. First, they are NY locals and visitors who like Chinese cuisine. Second, they are potential investors who think of starting the restaurant business in NY.

1.2 Data

- Data on New York City neighborhoods, boroughs to include boundaries, latitude, longitude, restaurants, and restaurant ratings and tips are required.
- New York City data containing the neighborhoods and boroughs, latitudes, and longitudes will be obtained from the data source: https://cocl.us/new_york_dataset
- New York City data containing neighborhood boundaries will be obtained from the data source: <https://data.cityofnewyork.us/City-Government/Borough-Boundaries/tqmj-j8zm>
- All data related to locations and quality of Italian restaurants will be obtained via the FourSquare API utilized via the Request library in Python.

1.3 Methodology

- We will download the data from https://cocl.us/new_york_dataset and cleaned transform it into a dataframe.

- We will use FourSquare to find Chinese restaurants and get their ratings, tips, and likes. This information will be added to the dataframe.
- Data will be presented using different visualisation tools available in Python.

1.4 Problem Statement

- Where are the most popular Chinese cuisine restaurant are located in New York City?
- Which location is optimal for opening the new Chinese restaurant in New York City ?

1.5 Example of what features can be extracted from the data

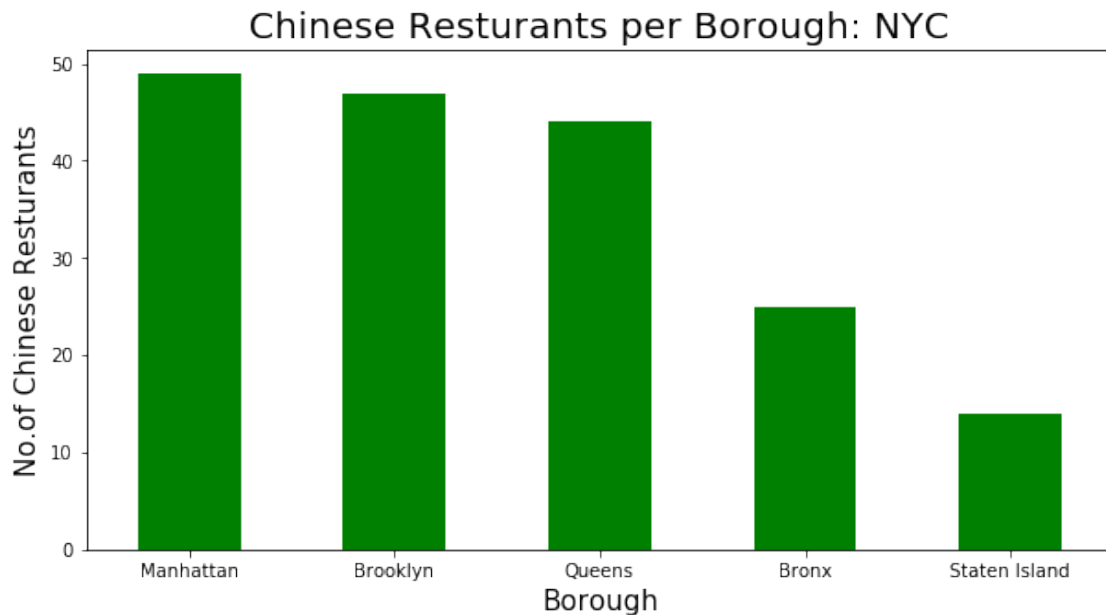
Neighborhoods in NY and their coordinates

	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

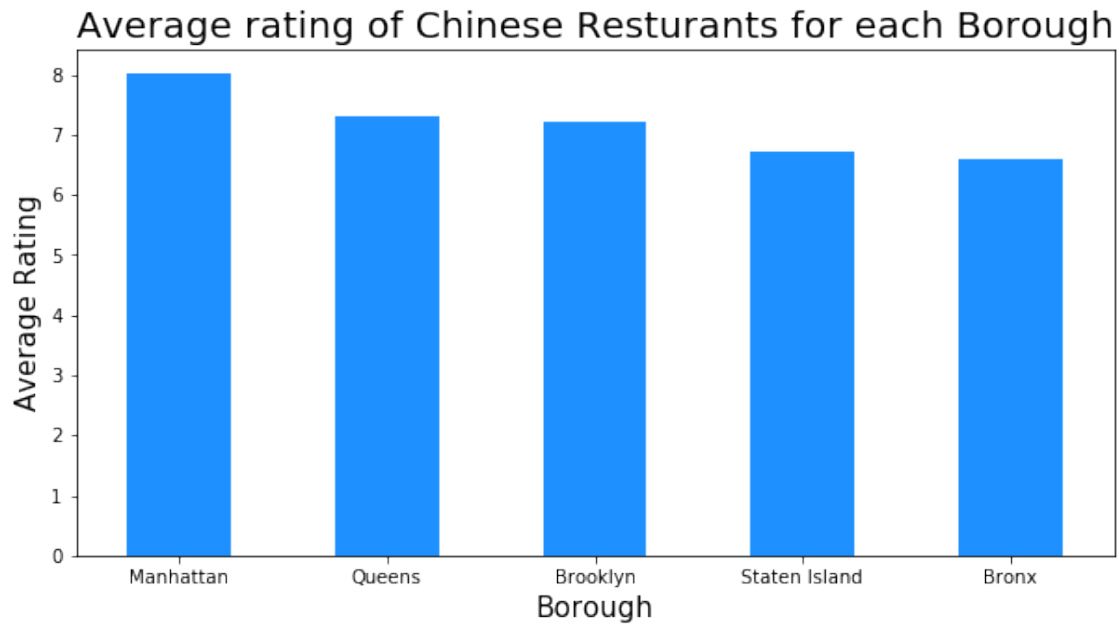
2 Results

2.1 Characteristics of the boroughs

Number of Chinese restaurants per borough

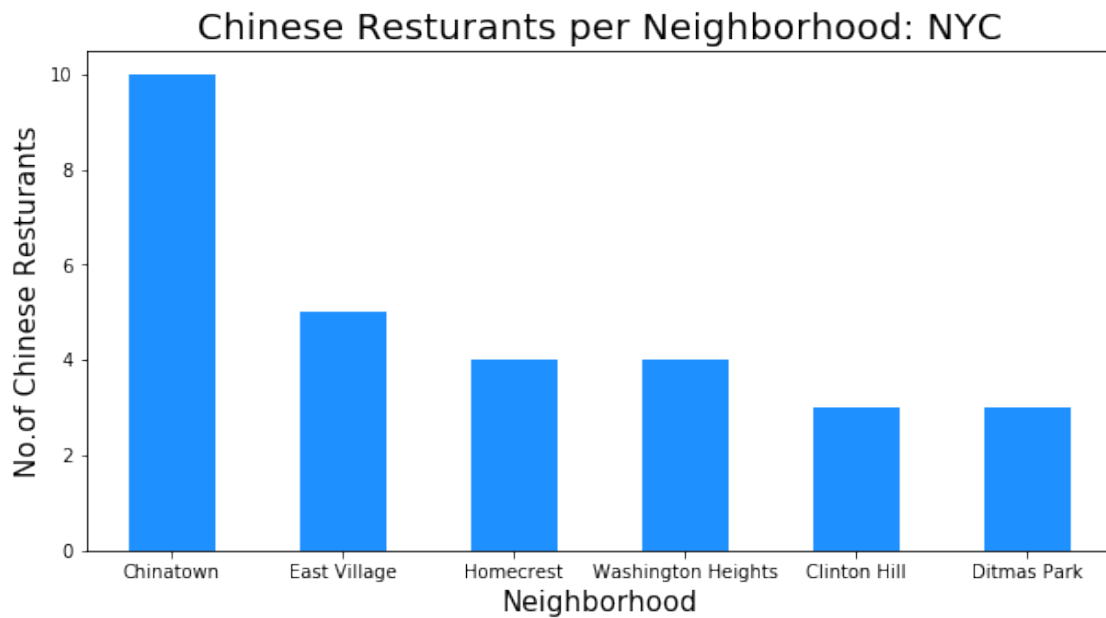


Average rating of Chinese restaurants for each Borough

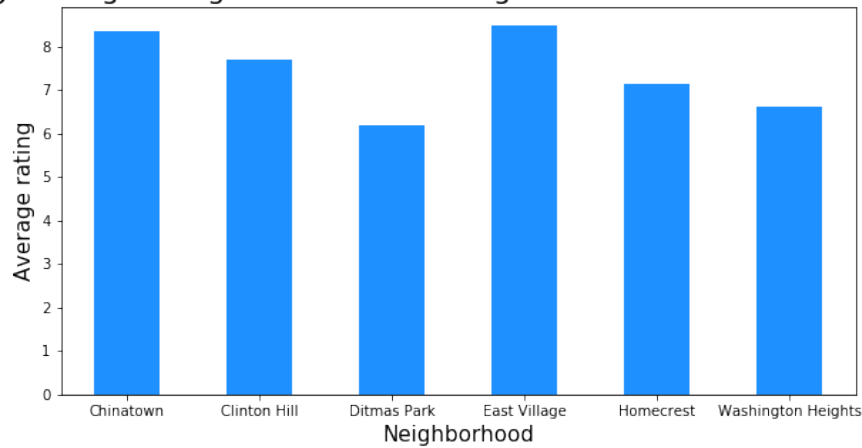


2.2 Examine neighborhoods with highest rating or largest numbers of Chinese restaurants

Neighborhoods with largest numbers of Chinese restaurants per

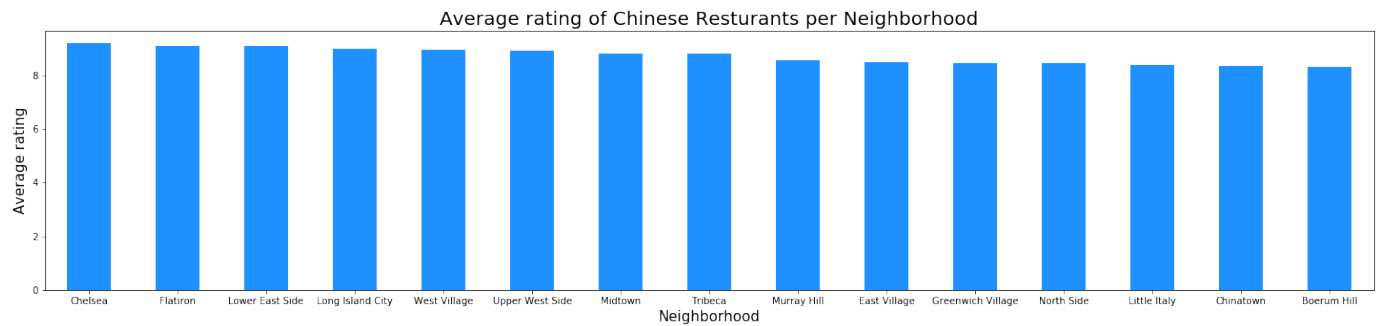


Average rating in neighborhoods with largest number of Chinese restaurants

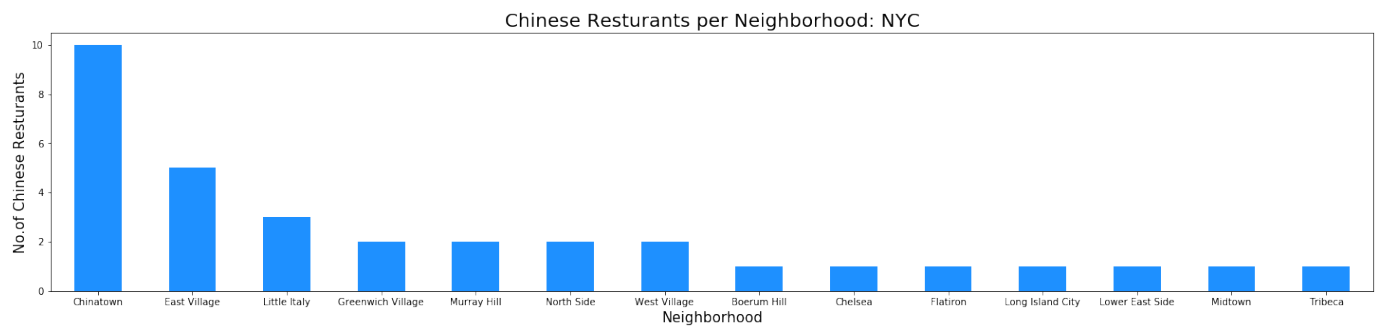


2.3 Neighborhoods with highest ratings of Chinese restaurants

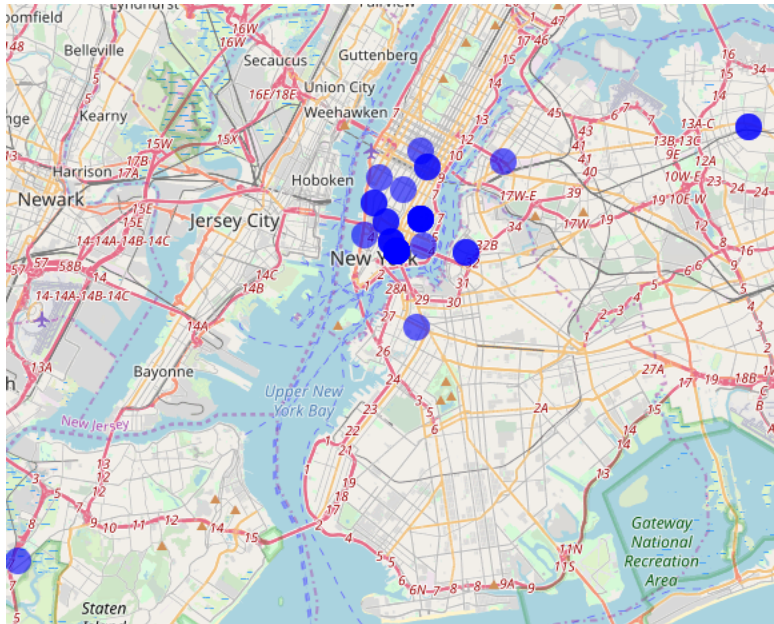
Find 15 neighbourhoods with largest ratings



Examine the number of restaurants in each neighborhood with high rating



Show neighborhoods with highest rating of Chinese restaurants on the map



2.4 Find the restaurants with maximum rating, likes and tips

Borough	Manhattan
Neighborhood	Chelsea
ID	44e9b421f964a520a5371fe3
Name	Buddakan
Likes	1473
Rating	9.2
Tips	519

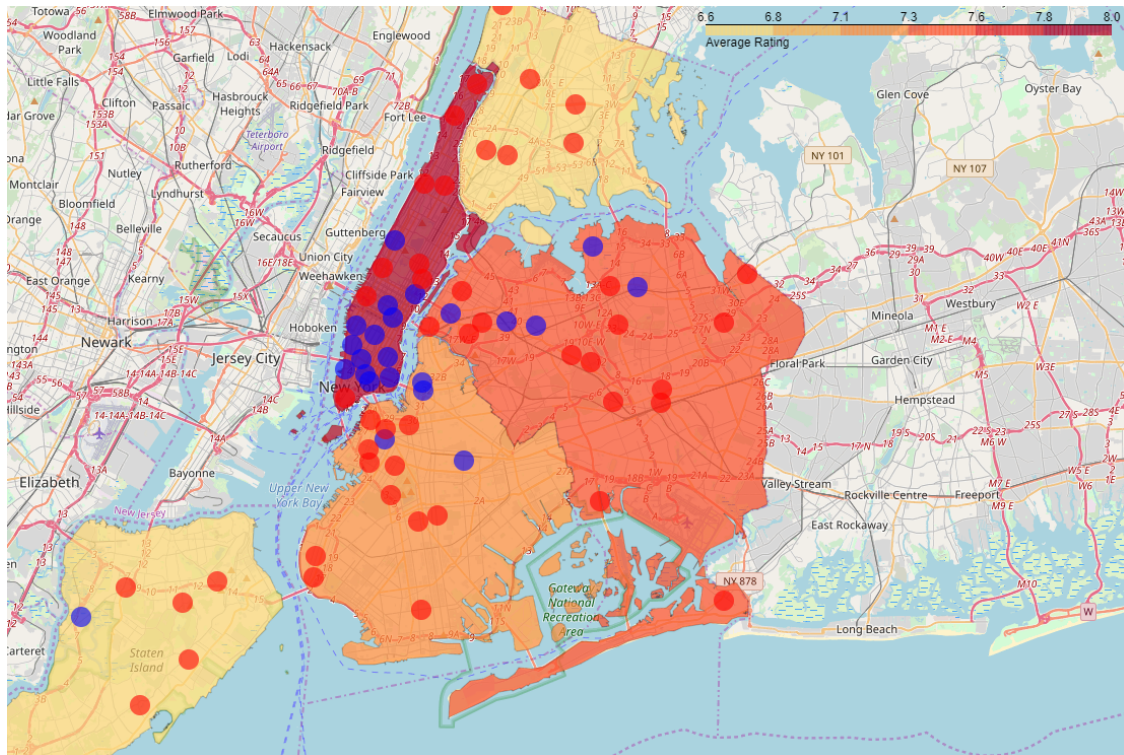
Borough	Manhattan
Neighborhood	Chelsea
ID	44e9b421f964a520a5371fe3
Name	Buddakan
Likes	1473
Rating	9.2
Tips	519

Borough	Manhattan
Neighborhood	Chinatown
ID	3fd66200f964a52067e61ee3
Name	Joe's Shanghai
Likes	1302
Rating	8.5
Tips	567

2.5 Quality of Chinese restaurants in different neighbourhoods

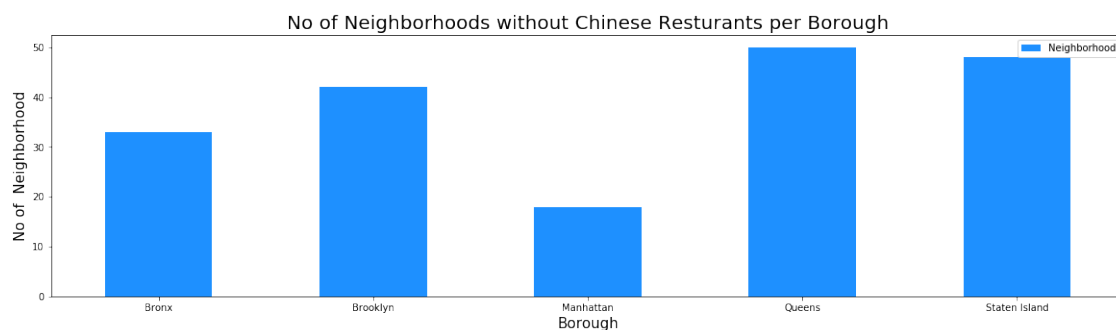
Colour NY boroughs and neighborhoods according to the average rating of Chinese restaurants.

Blue, red markers show neighborhoods with rating >8 , between 5 and 8, respectively. There are no restaurants with rating smaller than 5. Area coloring shows average rating of Chinese restaurants in boroughs.

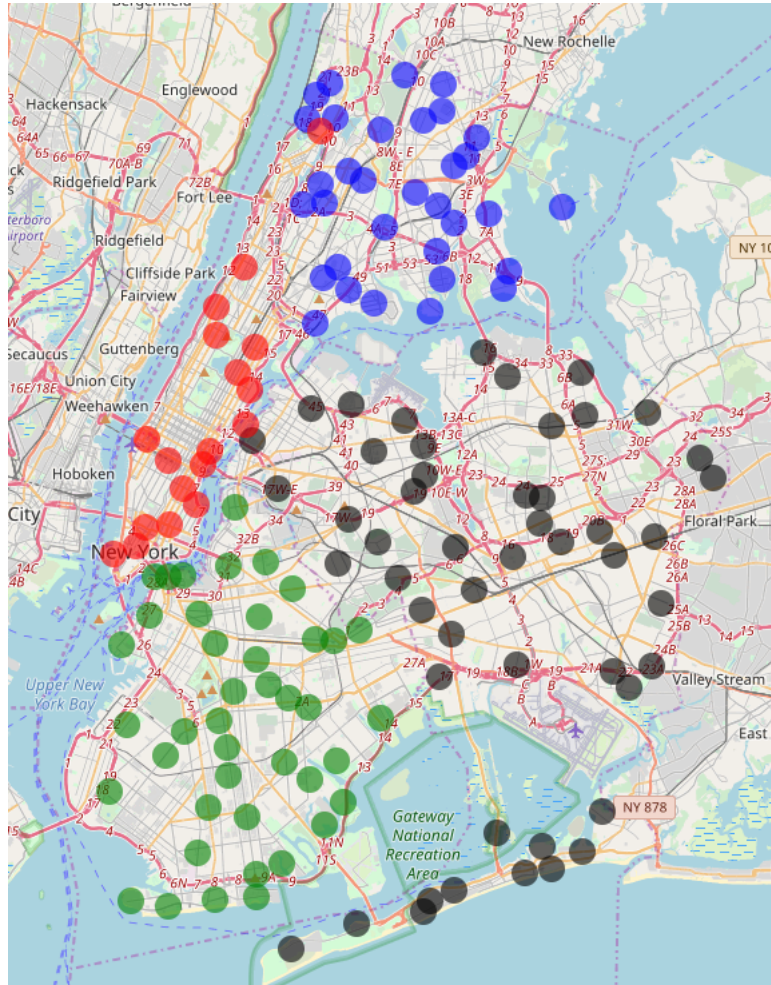


2.6 Neighborhoods with no Chinese restaurants

Find neighborhoods with no Chinese restaurants.



Show the map of neighborhoods with no Chinese restaurants. Red, blue, black and green markers correspond to Manhattan, Bronx, Queens and Brooklyn, respectively



3 Discussion

One can see that Brooklyn, Manhattan and Queens have almost the same overall number of Chinese restaurants. Interestingly, the average rating is also the same for these districts. However, these boroughs have qualitatively different distribution of neighborhoods according to the rating of Chinese restaurants. This is evident from the map which shows restaurants with ratings in range above 8 and between 5 and 8 with blue and red markers, respectively. Manhattan in particular its southern part has many Chinese restaurants with rating larger than 8 (blue markers). The neighborhood with largest average rating, Chelsea is located in there, in Manhattan. However, there is only one restaurant named Buddakan in Chelsea. This restaurant however has largest rating and the largest number of likes. Similarly, among 5 best rated neighborhood only one (West Village) has two restaurants and others, 'Chelsea', 'Flatiron', 'Lower East Side', 'Long Island City', 'West Village' have only one Chinese restaurant each.

On the other hand, neighborhoods with large number of restaurants have typically lower average rating. The only exception is Chinatown and East Village having 10 and 5 restaurants, respectively with average ratings above 8. Other neighborhoods with large number of Chinese restaurants Homecrest (Brooklyn, 4 restaurants), Clinton Hill (Brooklyn, 3 restaurants), Ditmas Park (Brooklyn, 3 restaurants), Washington height (Manhattan, 4 restaurants) have average ratings significantly below 8.

Regarding other boroughs, Queens has significantly smaller number of neighborhoods with ratings >8 than Manhattan. Similarly Bronx has even less, that is only 4 neighborhoods with rating >8 . At the same time in Brooklyn and Bronx the quality of restaurants is more homogeneously distributed among different neighborhoods. Indeed, as one can notice examining the map, Manhattan has large disproportion of restaurant quality between south and north parts. This large difference gives an opportunity for development in two different ways. First, one can try to open good restaurant with relatively high standards and prices in the northern part of Manhattan. This will compensate the lack of good restaurants there. Second, one can try starting the Chinese restaurant in the neighborhoods without such restaurants. The bar plot shows that the smallest number of such neighborhoods (18) is in Manhattan and the largest one is in Queens and Staten Island. Therefore, one have larger choice of potential locations in these borough where there will be no competition with already running busyness. The neighborhoods without Chinese restaurants are shown on the map.

4 Conclusion

To conclude, let us answer the question we formulated in the introduction. First, the best Chinese restaurant is located in Chelsea neighborhood of Manhattan borough. Other five neighborhoods with high-rated restaurants are also located there. However, Manhattan neighborhoods are obviously quite small and many of them have either 1 or 0 number Chinese restaurants or Chinese restaurants. The restaurant with maximal rating and the number of likes is Buddakan and it is only one Chinese restaurant located in Chelsea. The top-ranked neighborhood with several Chinese restaurants is East Village and Little Italy which have 5 and 3 such restaurants, respectively. Both these neighborhoods are in Manhattan. Therefore, in order to try variety of good Chinese dishes it is recommended to visit these neighborhoods.

Second, to start a new Chinese restaurant one can try the northern part of Manhattan where there is a lack of restaurants with high ratings. Alternatively, one can consider neighborhoods without Chinese restaurants that we have found during this study. In this case, to decide on the particular location one should use also demographic, economical, crimes incidents and other data to decide on the particular location.