Where to open a Chinese Restaurant in New York City

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1. Introduction

Pick a location in New York City to open a new Chinese Restaurant. For the people who is planning to open a new Chinese Restaurant will be interested in this research.

We will consider following aspects to pick the best location:

1.1 Demographic information of New York City's 5 Borough.

1.2 Detailed information of each neighborhood within the Borough. Because in NY, every neighborhood has its main function, like living, dining, shopping, etc. Will pick a neighborhood for dining.

1.3 Competition Analysis. In the top dining neighborhoods, will consider:

- If the diverse restaurants are acceptable?
- If the competition of Chinese Restaurant was already very stiff.

2. Data Will be Used

- "New York_zip to borough mapping file"
  from:https://www.kaggle.com/kimjinyoung/nyc-borough-zip
- "New York zip code level Demographic Information"
  from: https://data.cityofnewyork.us/City-Government/Demographic-Statistics-By-Zip-Code/kku6-nxdu
- "a dataset that contains the 5 boroughs and the neighborhoods that exist in each borough as well as the latitude and longitude coordinates of each neighborhood."
  from:https://cocl.us/new_york_dataset
- "FourSquare API data to know the specific venues in each Neighborhood"

3. Methodology section

3.1 Clean Data: Calculate target level information:

The raw data are all at zip code level, will roll-up and calculate the demographic information at the Borough Level.

3.2 Analyze venues information

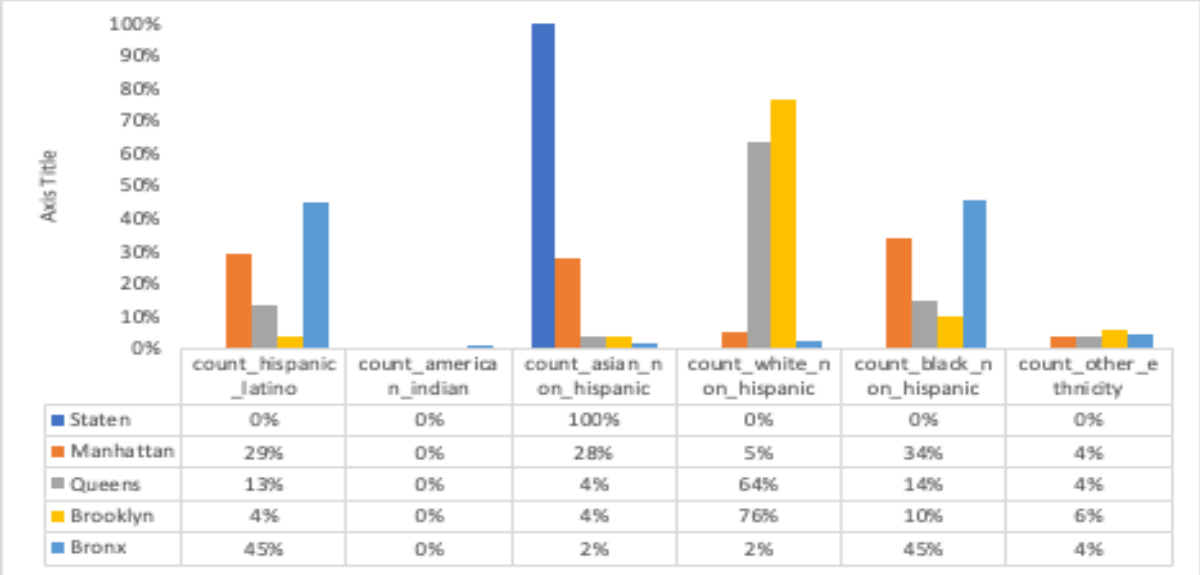
In for each Neighborhood in the Borough Picked: Will use FourSquare API data, to find a neighborhood likely to Chinatown; The neighborhoods' function is mainly for dining.

3.3 K-Means clustering

Will use K-Means Algorithm to cluster neighborhoods to 5 groups. Find the Neighborhoods are similar as Chinatown for further analysis.

4. Results

4.1 Demographic Information Analysis



	count_hispanic_latino	count_american_indian	count_asian_non_hispanic	count_white_non_hispanic	count_black_non_hispanic	count_other_ethnicity
Staten	0%	0%	100%	0%	0%	0%
Manhattan	29%	0%	28%	5%	34%	4%
Queens	13%	0%	4%	64%	14%	4%
Brooklyn	4%	0%	4%	76%	10%	6%
Bronx	45%	0%	2%	2%	45%	4%

We would like to pick a high-Asian area as target. Because Asian clients are easier to be loyalty customer. We have 2 choices:

- Staten Island: Asian Percentage is 100%
- Manhattan: Asian Percentage is 28%

After double checking the #of Samples, I realized Staten Island has very limited sample number, so the demographic distribution is not very correct. I will pick Manhattan as targeted Borough.

4.2 K-Means Clustering Results

In Manhattan, there are 40 Neighborhoods.

- Used top 15th venues to find similar Neighborhoods
- Set 5 as number of clusters
- the 40 neighborhoods were clustered into 5 groups. Based on the similarity of the top 15th venues in each Neighborhood.

Because Chinatown is a great place for Chinese Restaurant, so I would like to pick the cluster with Chinatown as the neighborhoods. We got 10 Neighborhood as options.

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue	11th Most Common Venue	12th Most Common Venue	13th Most Common Venue	14th Most Common Venue	15th Most Common Venue
1	Chinatown	Chinese Restaurant	Bakery	Cocktail Bar	Bubble Tea Shop	Spa	Bar	Ice Cream Shop	Coffee Shop	American Restaurant	Optical Shop	Malay Restaurant	Mexican Restaurant	Salon / Barbershop	Sandwich Place	Noodle House
6	Central Harlem	African Restaurant	Chinese Restaurant	Seafood Restaurant	Bar	French Restaurant	Gym / Fitness Center	American Restaurant	Park	Cafeteria	Library	Bookstore	Boutique	Market	Cycle Studio	Spa
9	Yorkville	Coffee Shop	Italian Restaurant	Gym	Bar	Deli / Bodega	Sushi Restaurant	Pizza Place	Wine Shop	Mexican Restaurant	Japanese Restaurant	Ice Cream Shop	Bakery	Sandwich Place	Chinese Restaurant	Park
12	Upper West Side	Italian Restaurant	Bar	Indian Restaurant	Wine Bar	Dessert Shop	Vegetarian / Vegan Restaurant	Mediterranean Restaurant	Mexican Restaurant	Middle Eastern Restaurant	Pizza Place	Pub	Ice Cream Shop	Coffee Shop	Seafood Restaurant	Café
17	Chelsea	Coffee Shop	Art Gallery	Ice Cream Shop	Café	Bakery	American Restaurant	Cocktail Bar	Theater	Italian Restaurant	Bar	Market	Pizza Place	Nightclub	Cycle Studio	Cupcake Shop
19	East Village	Bar	Mexican Restaurant	Cocktail Bar	Coffee Shop	Pizza Place	Speakeasy	Wine Bar	Juice Bar	Ice Cream Shop	Seafood Restaurant	Italian Restaurant	Bakery	Bagel Shop	Gourmet Shop	Greek Restaurant
20	Lower East Side	Chinese Restaurant	Cocktail Bar	Bakery	Café	Ramen Restaurant	Art Gallery	Coffee Shop	Yoga Studio	French Restaurant	Mediterranean Restaurant	Bubble Tea Shop	Flower Shop	Filipino Restaurant	Sandwich Place	Clothing Store
25	Manhattan Valley	Coffee Shop	Yoga Studio	Pizza Place	Mexican Restaurant	Bar	Park	Spa	Bubble Tea Shop	Café	Caribbean Restaurant	Chinese Restaurant	Clothing Store	Playground	Peruvian Restaurant	Ethiopian Restaurant
27	Gramercy	Bar	Pizza Place	Coffee Shop	Bagel Shop	Mexican Restaurant	Cocktail Bar	American Restaurant	Italian Restaurant	Grocery Store	Playground	Sandwich Place	Taco Place	Comedy Club	Spa	Diner
31	Noho	Pizza Place	Coffee Shop	Grocery Store	Japanese Restaurant	Italian Restaurant	Sushi Restaurant	Mexican Restaurant	Wine Bar	Wine Shop	Hotel	Candy Store	Rock Club	Sandwich Place	Southern / Soul Food Restaurant	Café
34	Sutton Place	Coffee Shop	Gym / Fitness Center	Italian Restaurant	Park	Furniture / Home Store	Bagel Shop	Gym	Hotel	Beer Garden	Beer Bar	Grocery Store	Bar	Spa	Mexican Restaurant	Indian Restaurant

4.3 Neighborhoods functions analysis

4.3.1 Number of Venues:

Will pick the neighborhoods with more Venues, that means more people will visit those area.

4.3.2 Number of Restaurant Venues:

To clustering if the big Neighborhoods is for Dining, Shopping or other.

Neighborhood	
Chelsea	17
Chinatown	36
East Village	35
Noho	32
Yorkville	29

4.3.3 The diversity and Competition of Big Dining Neighborhood:

We want to choose a location with more diversified restaurants and the competition for Chinese Restaurants is not fierce.

	Neighborhood	American Restaurant	Arepa Restaurant	Argentinian Restaurant	Asian Restaurant	Austrian Restaurant	Cantonese Restaurant	Caribbean Restaurant	Chinese Restaurant	Dim Sum Restaurant	Dumpling Restaurant	English Restaurant	Filipino Restaurant	French Restaurant
0	Chelsea	3	0	0	0	0	0	0	1	0	0	0	0	1
1	Chinatown	3	0	0	2	1	1	0	7	2	1	1	0	0
2	East Village	1	1	1	0	0	0	1	1	0	1	0	2	0
3	Noho	1	0	1	2	0	0	0	0	1	0	0	0	1
4	Yorkville	0	0	0	1	0	0	0	2	0	0	0	0	1

5. Conclusion

Will Pick Noho as target Neighborhood. For the following reasons:

- It is in a similar group as Chinatown
- More than 30% of Venues are Restaurants
- Almost no competition for Chinese Restaurant