

IBM

Applied Data Science Capstone

# **Searching a Location in New York City for a Chinese Restaurant**

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# Introduction



Restaurants have always played an essential role in the business, social, intellectual and artistic life of a thriving society.

Chinese-style restaurant is more and more popular with the people living in U.S. especially with the Asian people.



# Open a Chinese restaurant in NYC ?



New York City (NYC), often simply called New York, is the most populous city in the United States. NYC is also the most densely populated major city in the United States.

## Problems

- Prices and housing prices are very high.
- How to choose a suitable location?
- Competition from existing Chinese restaurants.

# Data acquisition and cleaning

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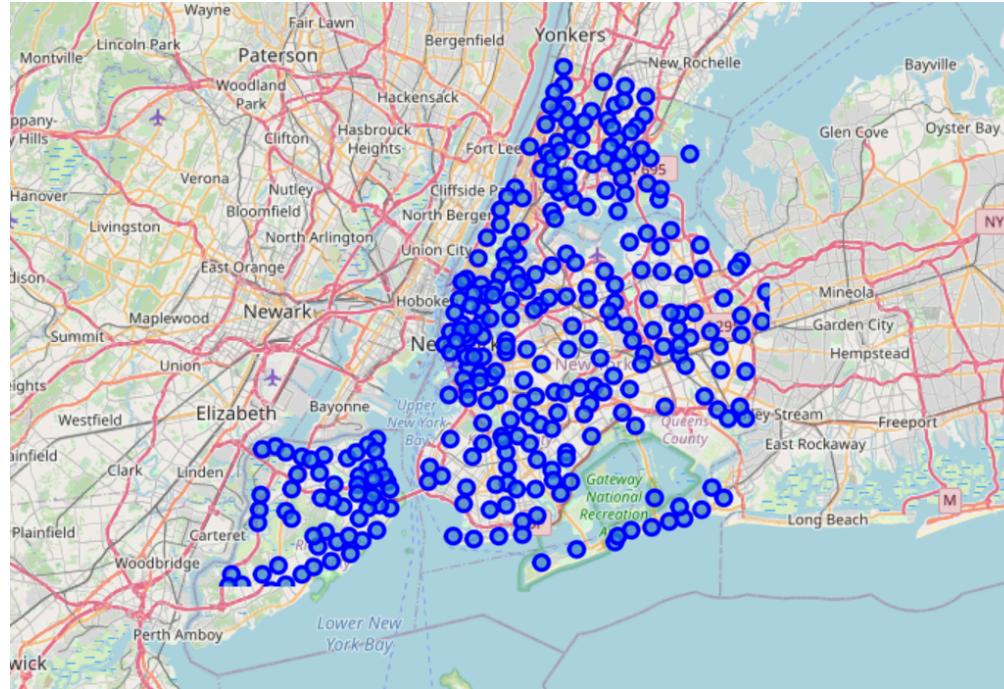
## Data sources

- Geographic data of NYC: IBM Developer Skills Network
- Demographic data of NYC: Wikipedia
- Housing price in NYC: Kaggle datasets

## Data cleaning

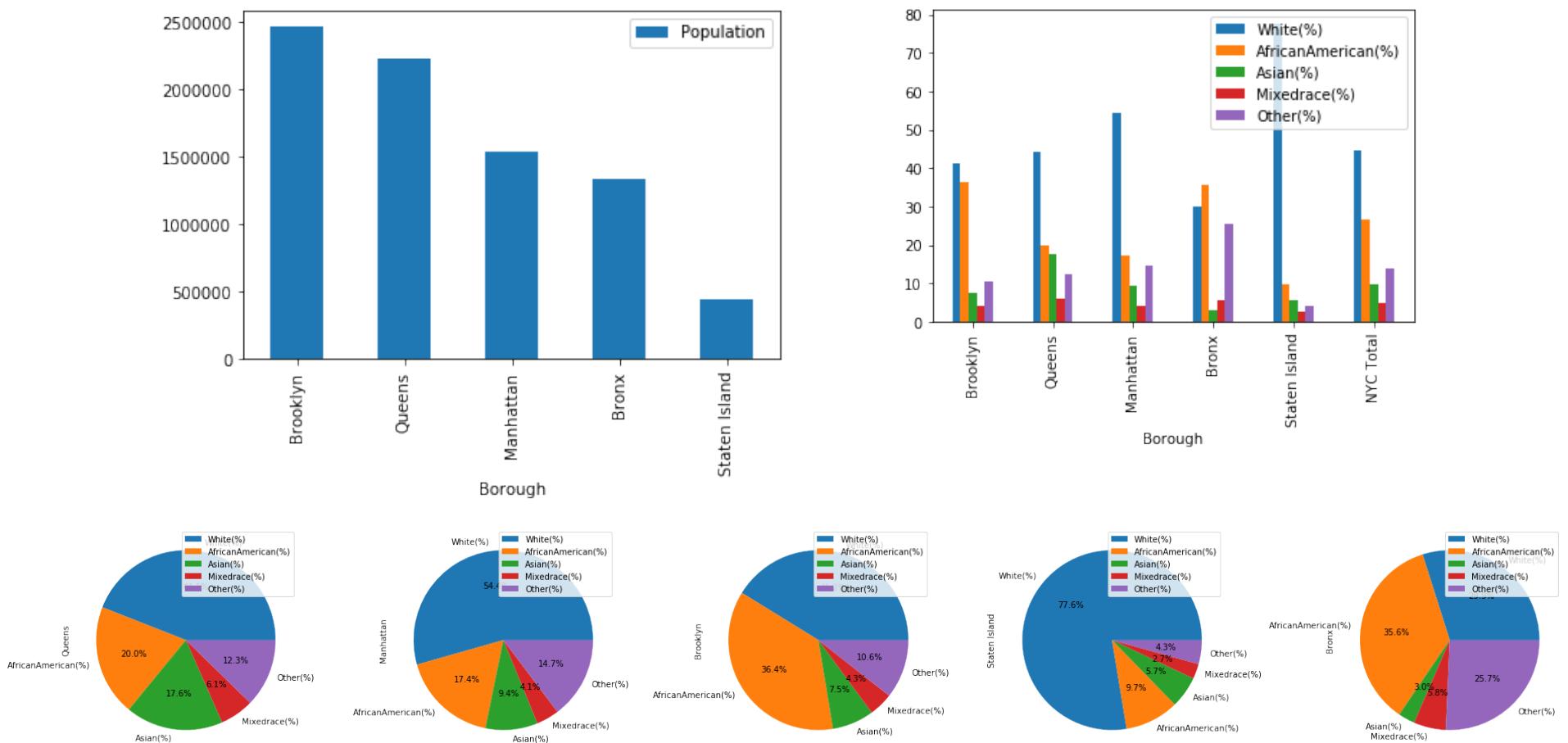
For the housing price dataset, a housing price smaller than \$ 10000 or greater than \$ 10000000 is viewed as weird data point and will be dropped.

# Map of NYC neighborhoods



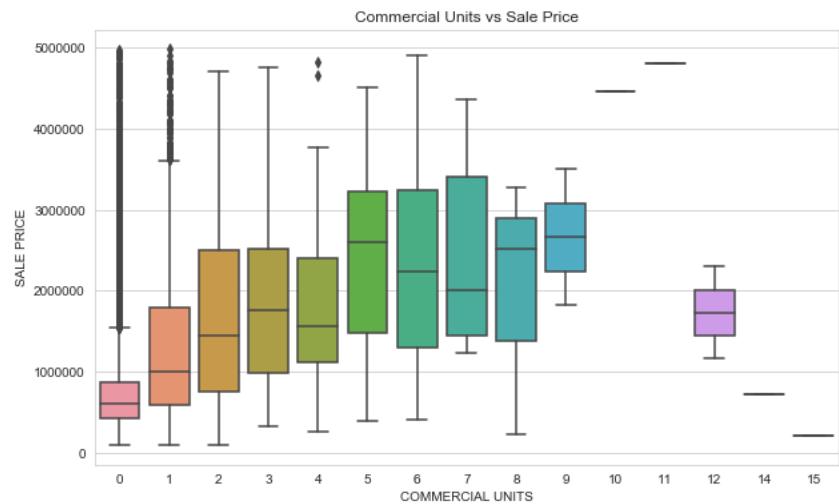
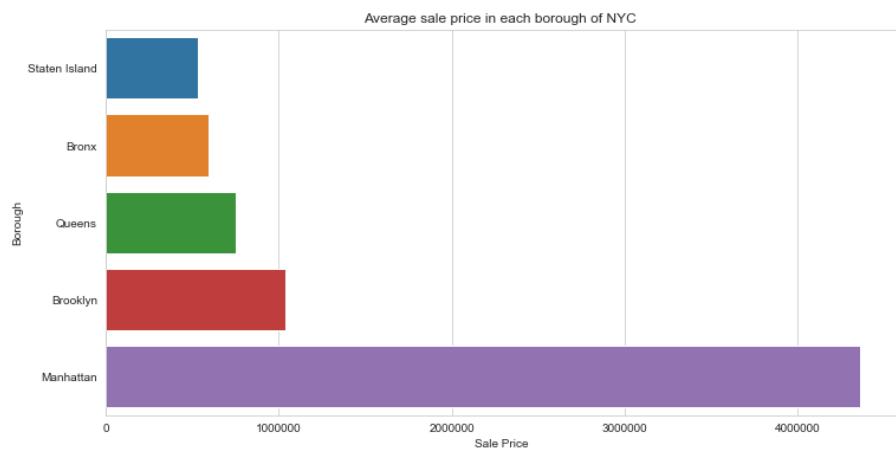
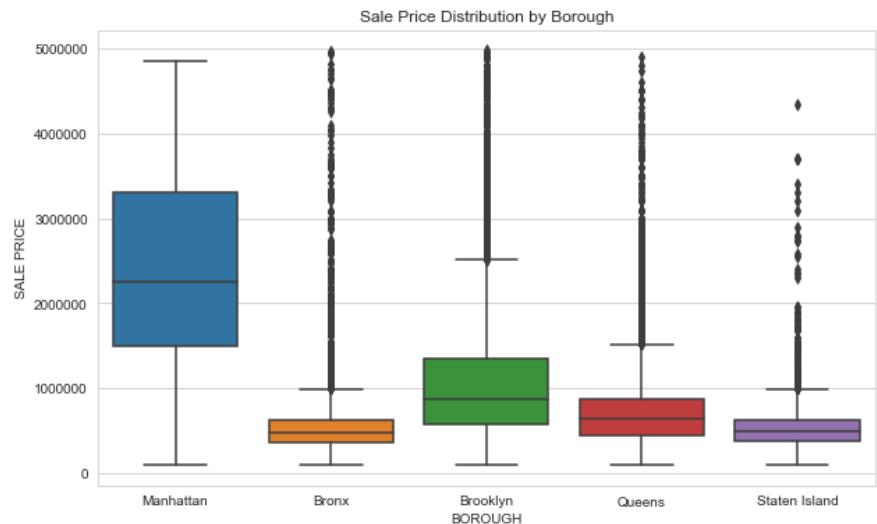
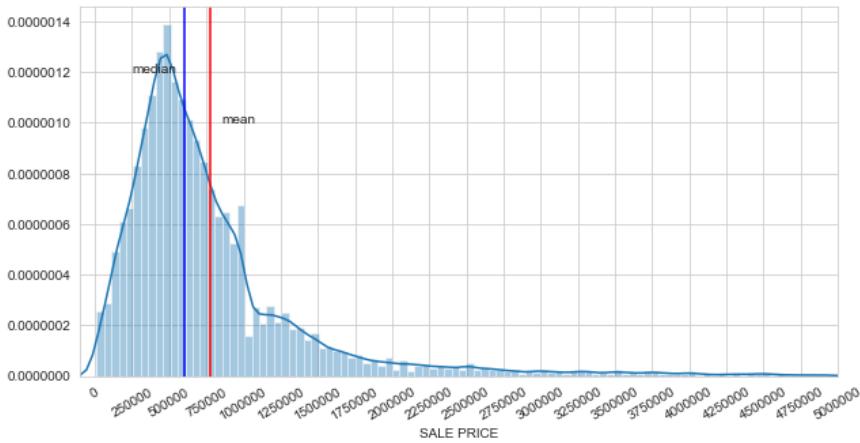
306 neighborhoods are shown in this map, distributed in five boroughs (Brooklyn, Queens, Manhattan, Bronx, and Staten Island) of NYC.

# Population compositions in NYC



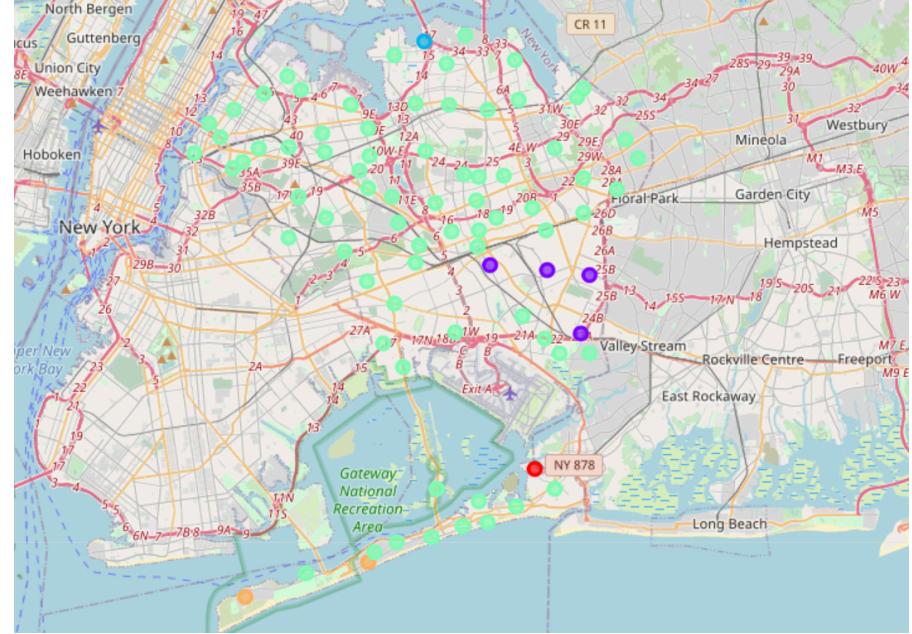
Queens has the second largest population and has the highest Asian ratio.

# Housing price in NYC



Housing price in Queens is relatively low.

# Preliminary result and its neighborhoods



- There are 81 neighborhoods in Queens and are evenly distributed, except the airport area with very sparse neighborhoods.
- With K-means clustering algorithm, the neighborhoods in Queens are assigned into five different clusters

# Common venues around the neighborhoods

	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
0	Astoria	Middle Eastern Restaurant	Bar	Greek Restaurant	Café	Hookah Bar	Seafood Restaurant	Bakery	Indian Restaurant	Mediterranean Restaurant	Deli / Bodega
1	Woodside	Grocery Store	Bakery	Thai Restaurant	Latin American Restaurant	Filipino Restaurant	American Restaurant	Donut Shop	Bar	Pub	Café
2	Jackson Heights	Latin American Restaurant	Peruvian Restaurant	South American Restaurant	Bakery	Mobile Phone Shop	Supermarket	Thai Restaurant	Diner	Empanada Restaurant	Spanish Restaurant

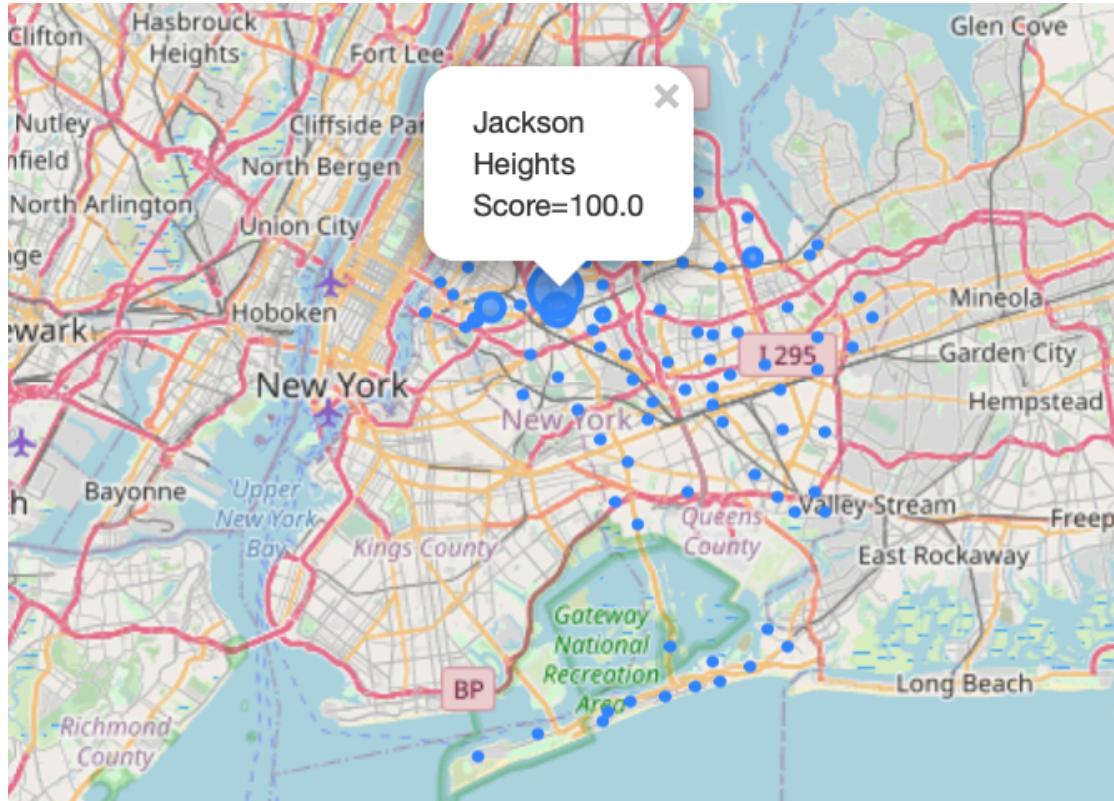
**Top 5 best places for opening a Chinese restaurant**

	Neighborhood	normalized_score	Latitude	Longitude
0	Jackson Heights	100.00	40.751981	-73.882821
1	Elmhurst	89.30	40.744049	-73.881656
2	Sunnyside Gardens	87.55	40.745652	-73.918193
3	Bayside	77.02	40.766041	-73.774274
4	Corona	75.63	40.742382	-73.856825

**Top 5 worst places for opening a Chinese restaurant**

	Neighborhood	normalized_score	Latitude	Longitude
76	Jamaica Center	11.63	40.704657	-73.796902
77	Blissville	10.53	40.737251	-73.932442
78	Rosedale	10.41	40.659816	-73.735261
79	Arverne	10.30	40.589144	-73.791992
80	Forest Hills	0.00	40.725264	-73.844475

# Score map showing the best place



The best place is Jackson Heights with fitness score as high as 100, followed by Elmhurst (89.3), Sunnyside Gardens (87.55), Bayside (77.02), and Corona (75.63).

# Conclusions

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- The top 5 best places in NYC for opening a Chinese restaurant are Jackson Heights, Elmhurst, Sunnyside Gardens, Bayside, and Corona and the fitness scores are 100, 89.3, 87.55, 77.02, and 75.63, respectively.
- The top 5 worst places in NYC for opening a Chinese restaurant are Forest Hills, Arverne, Rosedale, Blissville, and Jamaica Center with fitness scores below 20.
- Buying or renting a commercial housing with 4 units at Jackson Heights is the best choice to open the Chinese restaurant.

# THANKS

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