Choosing a Location for a New Chinese Restaurant in New York City

Sam Thompson

May 11th, 2020

INTRODUCTION

- New York City has a total population of over 8.3 million people, 13.9% of whom are Asian.
- This demographic forms an attractive base for establishing a Chinese restaurant.
- In a diverse and big city like New York, utilizing location-based characteristics could help determine an ideal location for a new Chinese restaurant.

DATA ACQUISITION

- New York geospatial data was accessed from https://cocl.us/new_york_dataset
- New York City population data was accessed from the New York City Planning Department https://www1.nyc.gov/assets/planning/download/pdf/data-maps/nyc-population/census2010/t_pl_p3a_nta.pdf
- For a given neighborhood in the New York geospatial dataset, nearby venues were segmented and explored based on Foursquare location-based data and radius. Attributes such as venue name, category, latitude, and longitude were explored.

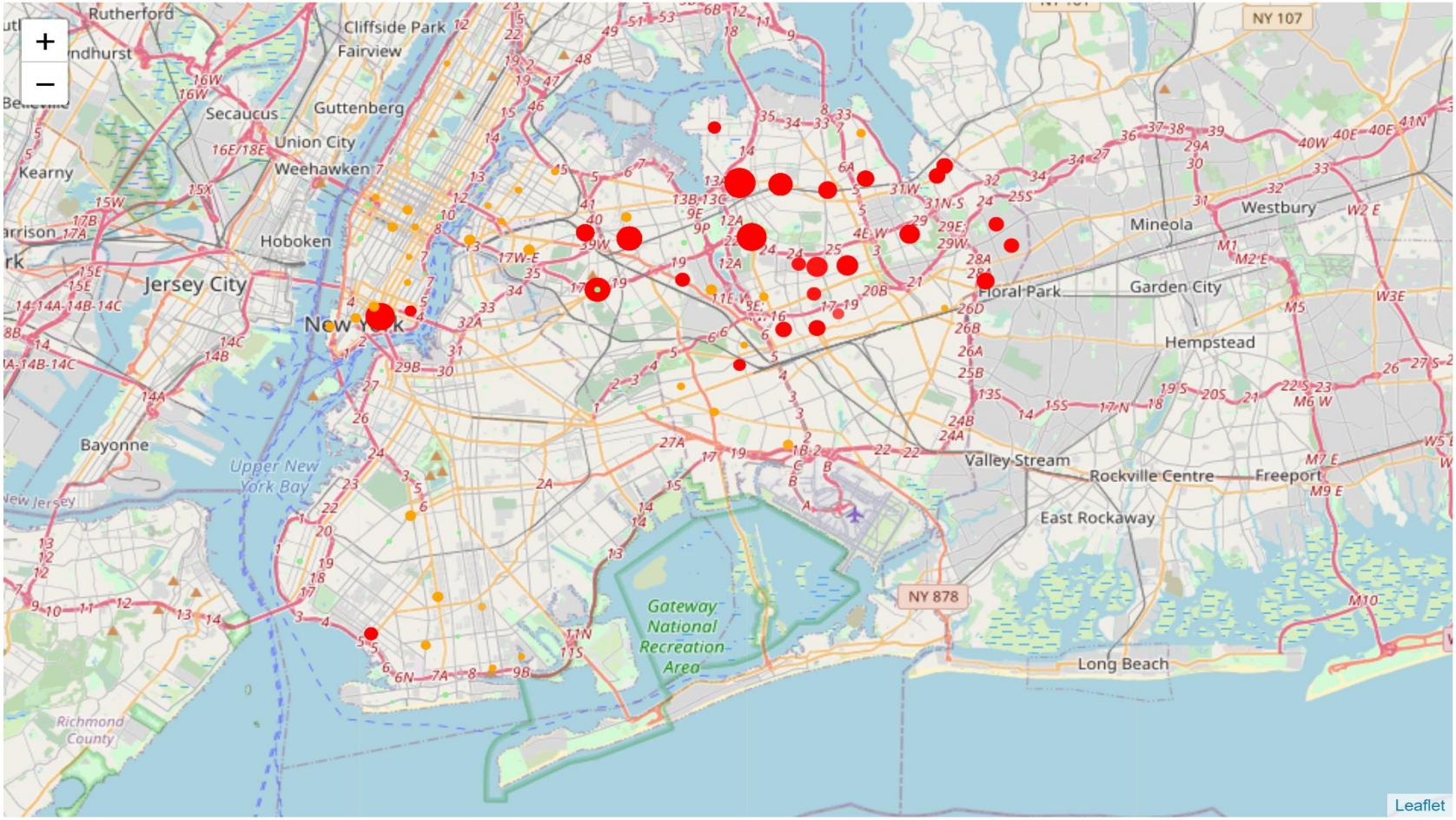
METHODOLOGY

- This project focused on utilizing New York geospatial, population, and Foursquare venue data to determine an ideal location for opening a new Chinese restaurant in New York City. The main steps were as follows:
  1. Identify New York neighborhoods with higher Asian population densities
  2. Identify Foursquare venue categories that are deemed to be Asian restaurants
  3. Identify Foursquare neighborhoods and their counts of Asian restaurants
  4. Join New York Asian population and restaurant data
  5. For each neighborhood in the unified dataset, determine the Asian restaurant-to-population ratio
  6. Identify the neighborhood with the lowest Asian restaurant-to-population ratio as the ideal location for a new Chinese restaurant.

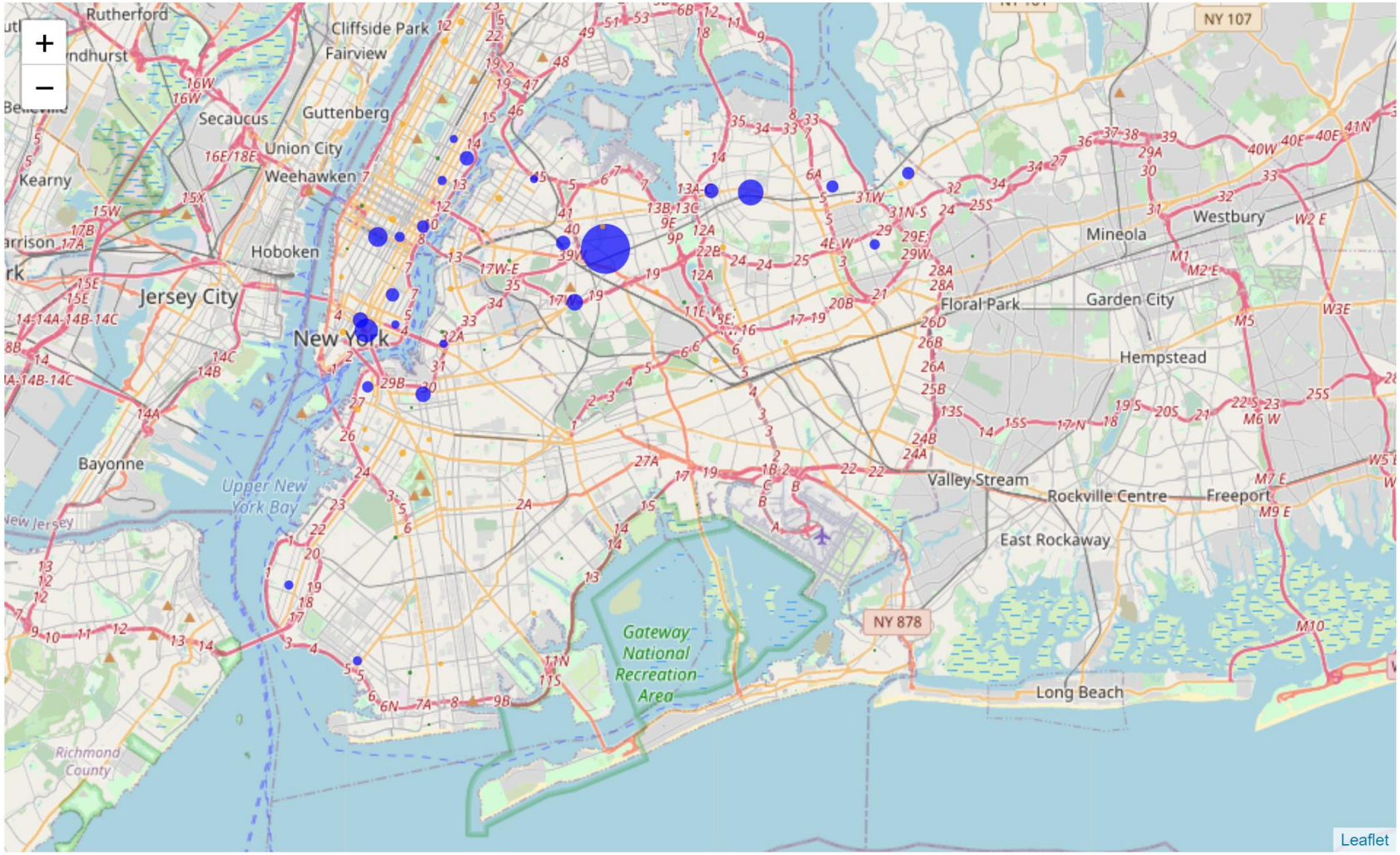
DATA SCIENCE / MACHINE LEARNING TOOLS

- The following tools were utilized in this project:
  1. Scraping data from web pages
  2. Extracting data from location data providers
  3. Creating Pandas dataframes and manipulating data
  4. Geospatial mapping using folium
  5. Graphing using Matplotlib

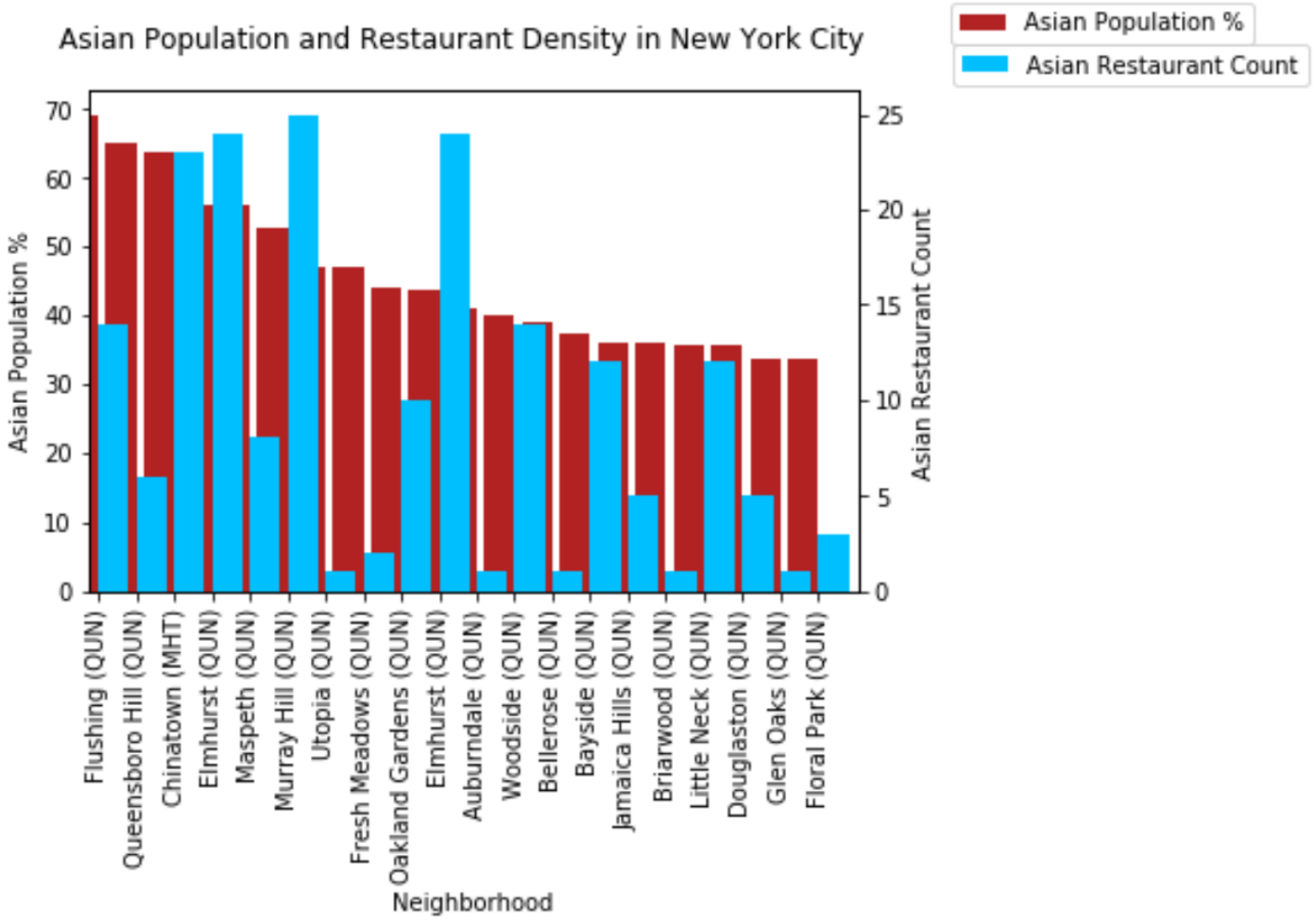
MAPPING OF ASIAN POPULATION DENSITY



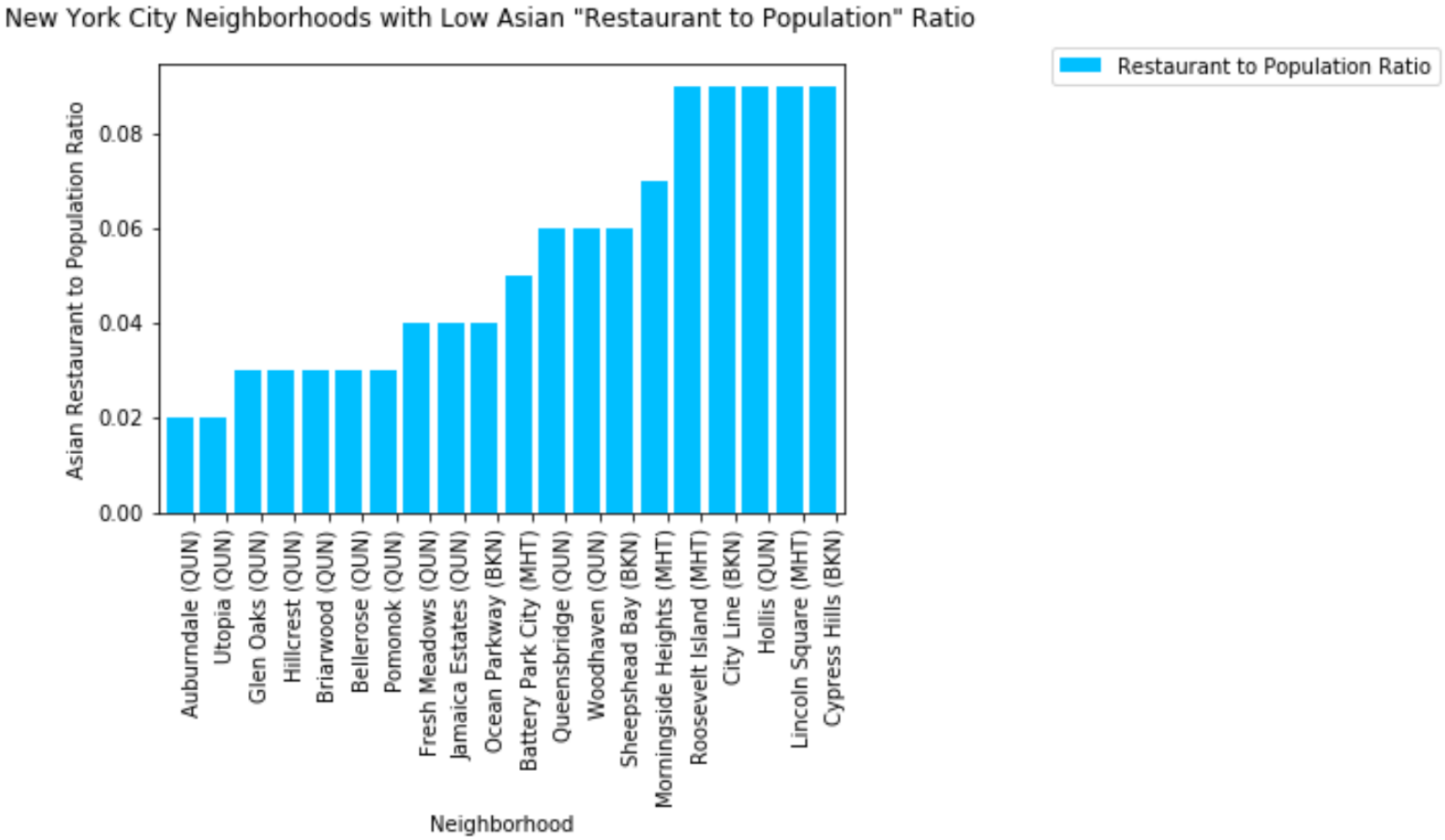
MAPPING OF ASIAN RESTAURANT DENSITY



GRAPH OF POPULATION & RESTAURANT DENSITY



GRAPH OF RESTAURANT-TO-POPULATION-RATIO



DISCUSSION OF RESULTS

- Based on lowest restaurant-to-population-ratio, the best neighborhood for the next Chinese restaurant in New York City is Auburndale (located in the Borough of Queens). The top 10 neighborhoods for opening a Chinese restaurant in New York City are as follows:
  1. Auburndale (Queens)
  2. Utopia (Queens)
  3. Glen Oaks (Queens)
  4. Hillcrest (Queens)
  5. Briarwood (Queens)
  6. Bellerose (Queens)
  7. Pomonok (Queens)
  8. Fresh Meadows (Queens)
  9. Jamaica Estates (Queens)
  10. Ocean Parkway (Brooklyn)
- Besides low restaurant-to-population-ratio, however, investors should consider other factors such as neighborhood security, infrastructure, business model (such as eat-in vs. delivery), and neighborhood income which are not accounted for in this project. Opportunities for further research are presented in the next section.

CONCLUSION AND RESEARCH OPPORTUNITIES

- This project focused on utilizing New York geospatial, population, and Foursquare venue data to determine an ideal location for opening a new Chinese restaurant in New York City. In the end, the neighborhood of Auburndale (Queens) was identified as the most ideal based on its lowest restaurant-to-population ratio.
- This project demonstrates the power of data science in driving business decision-making such as choosing a location for a business enterprise. Opportunities for further research include the following:
    1. It is possible that not all Chinese restaurants are listed on Foursquare. This was evident in Manhattan's Chinatown which has a very high Asian population but no fewer Asian restaurants on Foursquare. The research could be improved by reviewing other location-based service providers.
    2. It was not easy to distinguish among Asian and Chinese restaurant categories, thereby making the assumption that higher Asian populations include Chinese people. Moreover, it was assumed that non-Chinese Asian people will dine at Chinese restaurants if there is no other Asian restaurant in the neighborhood. The results could be improved by researching the dining tendencies of Chinese people and Asians in general in New York City.