

Finding the Best Location for New Phở Restaurant in Manhattan

Capstone Project for IBM Data Science Professional Certificate

Joshua Wulf

June 2019

1. Introduction

1.1. Background

1.1.1. According to PhởFever.com, “Phở was born in Northern Vietnam during the mid-1880s.

The dish was heavily influenced by both Chinese and French cooking. In fact, it is believed that "phở" is derived from "pot au feu" a French soup. Vietnamese cooks blended the Chinese, French and native influences to make a dish that is uniquely Vietnamese... Refugees fleeing Vietnam in the Spring of 1975 brought with them their hopes and dreams of a better life. They also brought their cultures and cuisine, of which phở has become the most popular among Americans. Today there are almost 2,000 phở restaurants spread across the United States and Canada.”

1.1.2. Phở is a hearty soup consisting of a homemade broth made from stewing bones, oxtail, flank, or chicken bones and other spices over a long period of time. After straining that into a clear liquid, each bowl is prepared by adding rice noodles, green onions, the customer's meat of choice and served with a plate of sides (usually jalapeno, lime, basil, cilantro, bean sprouts) that can be added to the bowl based on their taste. The phở can then be further customized by adding sauces such as sriracha or hoisin.

1.2. Opportunity

1.2.1. Because this dish is still relatively new to the American palate (it didn't enter our mainstream until the 1990s), the proliferation of Vietnamese phở restaurants is still lower than for other dining establishments. The market is relatively untapped, and the growth is

undeniable. In the last 30 years, the national revenue for phở restaurants has been estimated at over \$500 million as recently as 2013.

1.2.2. The entry equipment expenses for phở restaurants is low compared to many other restaurants and is easily scalable to meet demands so opportunity for profitability is high.

1.2.3. The cost is in the same category as most other casual dining establishments. Lunch portions are generally sold for under \$10 and dinner for \$15. My focus when analyzing the data will be in finding a location where the pricing can fall in this range for accessibility while maintaining profitability.

1.3. Stakeholders

1.3.1. A private group of investors (Phở'in Good, LLC) is interested in opening one Vietnamese restaurant in Manhattan in 2020 and would like to open 4 more before 2026.

1.3.2. This analysis will allow them to prioritize and plan their ventures strategically based on the lowest current supply paired with future demographic and real estate studies.

2. Data

2.1. To find the best location, I will be using the Foursquare API to determine current locations of all Asian restaurants in Manhattan and then find the location of all current Vietnamese restaurants and correlating those to neighborhoods.

2.2. After determining the current location of those restaurants, I'll determine the saturation of each neighborhood and identify the neighborhoods where there is the greatest scarcity of Vietnamese options.

2.3. My goal is to find the top 10 neighborhoods for a new phở restaurant and deliver this report to a real estate agent who will help me find the best available location in the neighborhoods I've identified based on real estate cost and other factors.

3. Methodology

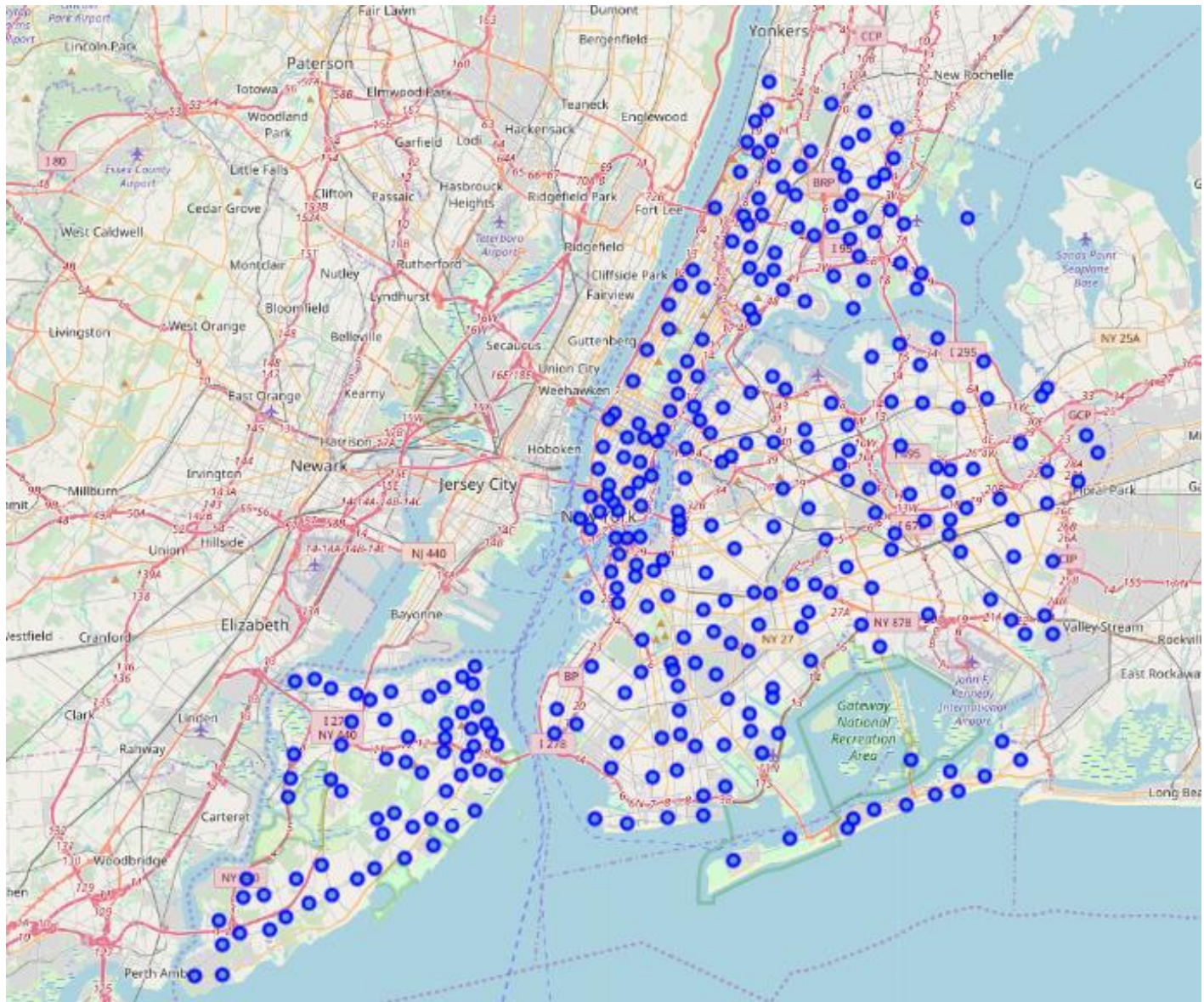
3.1. I used a Jupyter notebook on IBM's Skills Networks Labs to write code that would pull the data that would be needed for this analysis.

3.1.1. First, I had to import all dependencies that might be required (pandas for data analysis, json for opening NYC data, geopy for converting addresses to latitude and longitude, matplotlib for graphing, folium for mapping, etc.).

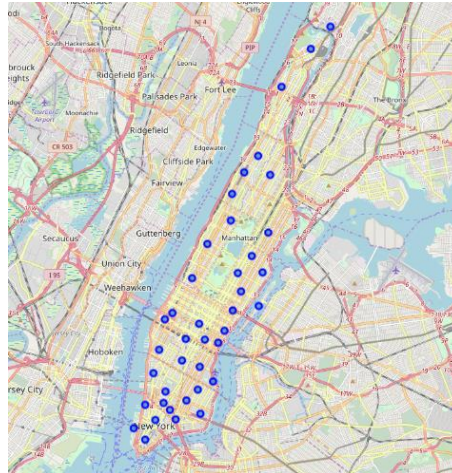
3.1.2. After the dependencies were imported, I was able to start retrieving data.

3.1.2.1. First, I needed 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.

3.1.2.2. After converting that to a dataframe, I created a map of NYC that showed each of the neighborhoods in that dataset to provide a greater context of the region.



3.1.2.3. Then I needed to narrow down the dataset to only include Manhattan since that was the focus of our stakeholders for the near future and create a map of only the neighborhoods that are in Manhattan.

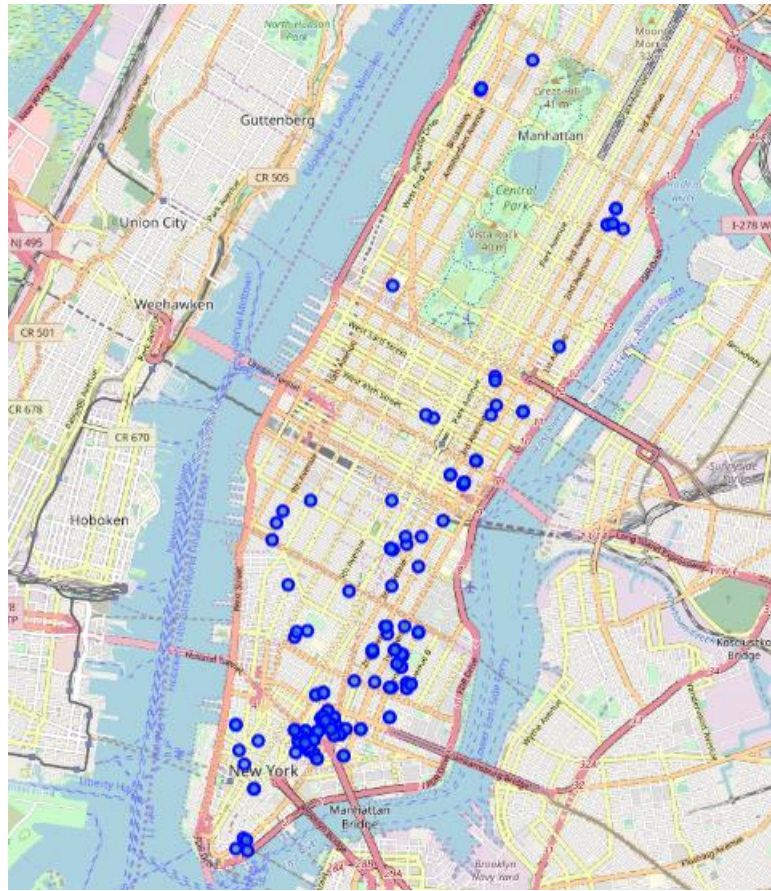


3.2. I then used Foursquare’s API to call in all venues that had a categoryId of “Vietnamese” and that were in the neighborhoods of Manhattan.

3.2.1. See below for an example of the data that was retrieved. The total dataset contained 191 Vietnamese venues in Manhattan.

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue Name	Venue Category	Venue Latitude	Venue Longitude	Venue City	Venue State
0	Chinatown	40.715618	-73.994279	Bếp Gà	Vietnamese Restaurant	40.717226	-73.993826	New York	NY
1	Chinatown	40.715618	-73.994279	Pho Vietnam	Vietnamese Restaurant	40.717530	-73.994128	New York	NY
2	Chinatown	40.715618	-73.994279	Saigon V-Bread Cafe LLC	Vietnamese Restaurant	40.714635	-73.993090	New York	NY
3	Chinatown	40.715618	-73.994279	Phobar	Vietnamese Restaurant	40.715215	-73.998826	New York	NY
4	Chinatown	40.715618	-73.994279	New Tu Do	Vietnamese Restaurant	40.717797	-73.995170	New York	NY
5	Chinatown	40.715618	-73.994279	Nam Son Vietnamese Restaurant	Vietnamese Restaurant	40.718215	-73.994345	New York	NY
6	Chinatown	40.715618	-73.994279	Banh Mi Saigon Bakery	Sandwich Place	40.719224	-73.996726	New York	NY
7	Chinatown	40.715618	-73.994279	Phở Grand	Vietnamese Restaurant	40.717824	-73.992801	New York	NY
8	Chinatown	40.715618	-73.994279	Vietnamese Sandwiches & Bubble Tea	Vietnamese Restaurant	40.714222	-73.997307	New York	NY
9	Chinatown	40.715618	-73.994279	Tofu Guy	Vietnamese Restaurant	40.718472	-73.995178	Manhattan	NY
10	Chinatown	40.715618	-73.994279	粥粉麵飯	Vietnamese Restaurant	40.716782	-73.999908	New York	NY
11	Chinatown	40.715618	-73.994279	Xie Lue	Vietnamese Restaurant	40.719351	-73.994617	N/A	New York
12	Chinatown	40.715618	-73.994279	nhà hàng	Vietnamese Restaurant	40.717566	-73.999258	New York	NY
13	Chinatown	40.715618	-73.994279	Bo Ky Restaurant 波記潮州小食	Chinese Restaurant	40.715696	-73.998667	New York	NY
14	Chinatown	40.715618	-73.994279	An Choi	Vietnamese Restaurant	40.717883	-73.990424	New York	NY
15	Chinatown	40.715618	-73.994279	Saigon Vietnamese Sandwich Deli	Sandwich Place	40.720085	-73.995748	New York	NY

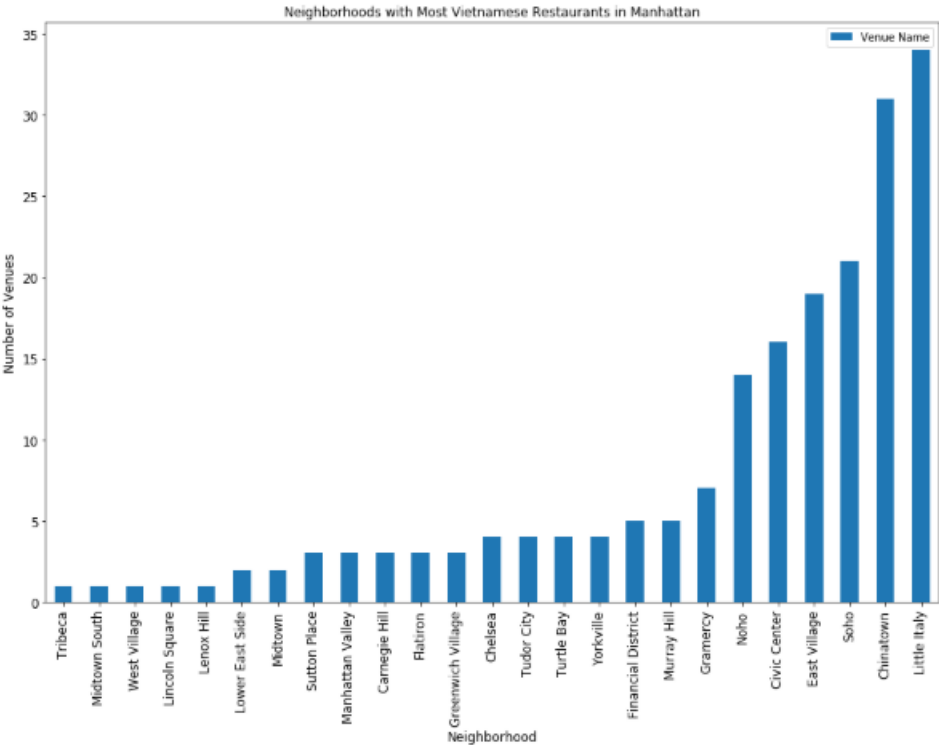
3.2.2. At this point, I had what I needed to display only Vietnamese restaurants in Manhattan on a map which should provide the stakeholders an instant idea of the density of existing phở joints.



3.2.3. Since the scope of this report is to just identify the neighborhoods where there aren't many phở restaurants, I grouped the filtered Foursquare dataset by Neighborhood.

Venue Name	
Neighborhood	
Carnegie Hill	3
Chelsea	4
Chinatown	31
Civic Center	16
East Village	19
Financial District	5
Flatiron	3
Gramercy	7
Greenwich Village	3
Lenox Hill	1
Lincoln Square	1
Little Italy	34
Lower East Side	2
Manhattan Valley	3
Midtown	2
Midtown South	1
Murray Hill	5
Noho	14
Soho	21
Sutton Place	3
Tribeca	1
Tudor City	4
Turtle Bay	4
West Village	1
Yorkville	4

3.2.4. This now gives us the ability to visualize the Vietnamese restaurant density by neighborhood using another method.



4. Results/Discussion

4.1. The 10 neighborhoods that were identified as having the lowest number of phở restaurants in Manhattan are below.

Venue Name	
Neighborhood	
Tribeca	1
Midtown South	1
West Village	1
Lincoln Square	1
Lenox Hill	1
Lower East Side	2
Midtown	2
Sutton Place	3
Manhattan Valley	3
Carnegie Hill	3

5. Conclusion

5.1. There is an urgent need for phở to be made available to the people of Tribeca, Midtown South,

West Village, Lincoln Square, Lenox Hill, Lower East Side, Midtown, Sutton Place, Manhattan

Valley, and Carnegie Hill.

5.2. My recommendation is for our stakeholders to focus on these neighborhoods who are currently

being most deprived of the excellence of phở.

5.3. Phở'ing Good, LLC should immediately task their real estate agent with pursuing every available

opportunity in those areas so that those people no longer have to live without this culinary delight.