Introduction/Business Problem

Pizza is arguably one of the world's most popular foods today, especially in the United States where pizza restaurant sales topped $46 billion dollars in 2019.
[https://www.statista.com/statistics/291403/us-pizza-restaurant-sales/] About 1 in 8 Americans consume pizza on any given day.
[https://www.ars.usda.gov/ARSUserFiles/80400530/pdf/DBrief/11_consumption_of_pizza_0710.pdf]
This highly-craved food traces its roots back to antiquity, but was not introduced to the U.S. until the arrival of Italian immigrants in the 1800's, where it was popular with that population, in among other areas, New York City. However, it didn't gain the popularity it enjoys today until U.S. troops returned from Italy in World War II, craving the cuisine they were introduced to over there. Given its prevalence, there are more options for the pizza connoisseur than ever before. Despite the saturation, there are seemingly limitless opportunities to get in on the action yourself given its popularity. On your first trip to New York City you fell in love with Manhattan, and have always dreamed of opening your own Pizza Place there. With continuing growth in both business and leisure travel, [https://indd.adobe.com/view/fcc4cd9f-7386-4b52-a39b-c401266a137f] you feel now is the time to take action.

So where in Manhattan should you aim to open your pizza place, and are there any highly rated locations in the area you could emulate?

Data

To solve this dilemma, we'll need New York City neighborhood data including boroughs, longitude, latitude, and restaurant ratings.

https://cocl.us/new_york_dataset will provide us New York City data containing the neighborhoods and boroughs, latitudes, and longitudes.

All data related to locations and quality of pizza places will be obtained via the FourSquare API utilized via the Request library in Python.

Method

Data will be collected and processed into dataframes.

Folium will be utilized to visualize and map locations.

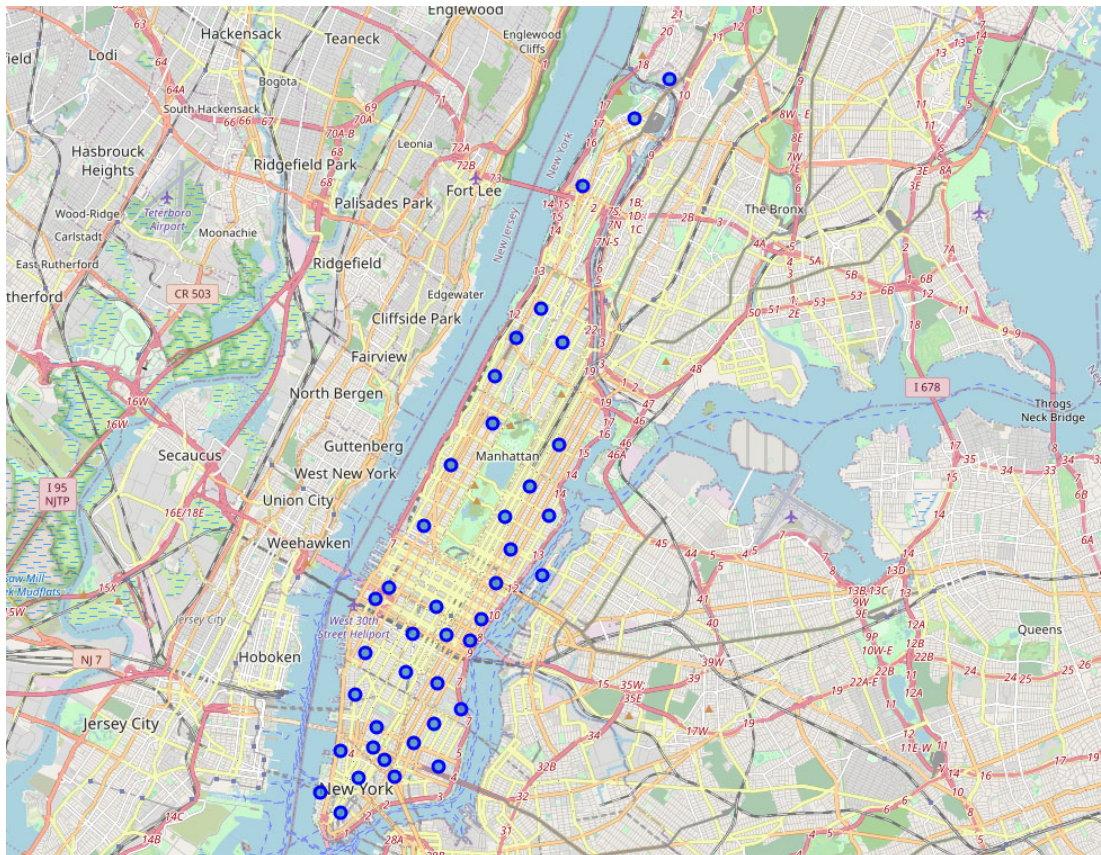FourSquare will be utilized to locate and explore venues.

One Hot encoding will determine the frequency of pizza places per neighborhood.

Now let's begin to explore Manhattan

	Borough	Neighborhood	Latitude	Longitude
0	Manhattan	Marble Hill	40.876551	-73.910660
1	Manhattan	Chinatown	40.715618	-73.994279
2	Manhattan	Washington Heights	40.851903	-73.936900
3	Manhattan	Inwood	40.867684	-73.921210
4	Manhattan	Hamilton Heights	40.823604	-73.949688

The geographical coordinates of Manhattan are 40.7896239, -73.9598939.

Map out the neighborhoods in Manhattan

Now we want to find the frequency of Pizza Places by neighborhood

```
----Pizza Place----
                 venue   freq
0      Hamilton Heights   0.08
1           Lenox Hill    0.07
2     Financial District  0.05
3         Sutton Place    0.05
4         East Village    0.05
5            Gramercy     0.05
6          West Village   0.04
7       Upper West Side   0.04
8         Carnegie Hill   0.04
9                 Noho    0.04
10         Little Italy   0.04
11          Murray Hill   0.04
12             Midtown    0.04
13     Battery Park City   0.03
14        Midtown South   0.03
15                Soho    0.03
16       Upper East Side   0.03
17       Lower East Side   0.03
18      Manhattan Valley   0.03
19            Yorkville   0.03
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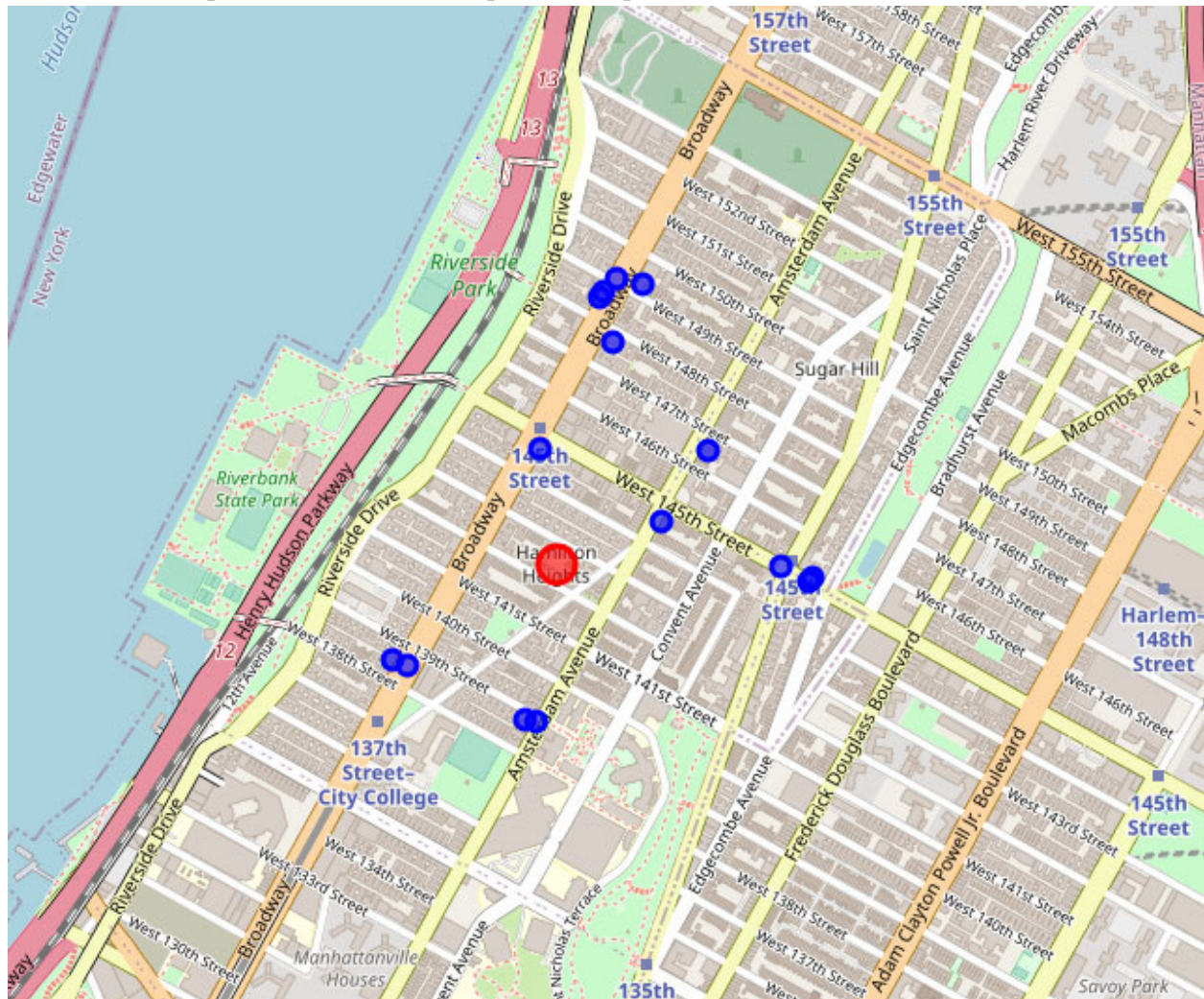
	Venue Category	1st Most Common Neighborhood	2nd Most Common Neighborhood	3rd Most Common Neighborhood	4th Most Common Neighborhood	5th Most Common Neighborhood
234	Pizza Place	Hamilton Heights	Lenox Hill	East Village	Financial District	Gramercy

Now let's look for pizza places in Hamilton Heights, the most common neighborhood

```
0          Uncle Tony's Pizza
1        Vittorio's Pizza Plus
2             Domino's Pizza
3                  P&M Pizza
4         New Millennium Pizza
5             Papa John's Pizza
6        Wholesome Garden Pizza
7             Domino's Pizza
8                 Pizza Ghor
9                 Pizza Guys
10               Paul's Pizza
11                Jumbo Pizza
12        Harlem Brothers Pizza
13               Olga's Pizza
14                       Fumo
```

Let's map out these pizza places

Chosen at random, let's dive deeper into Fumo, see how it rates and what they do well

Rating: 9.0
Review:

The funghi pizza is so delicious. Fresh ingredients, not overly spiced and NOT OILY. I loved the meatballs in marinara sauce. Wasn't crazy about the garlic bread. The pizza though 👌👌👌

Let's explore one more: Uncle Tony's

Rating: 8.2
Review: Order the white pie with mushrooms and ricotta cheese. The ingredients were super fresh!

That's also not bad! One more, how about their neighborhood about Papa Johns?

Rating: 6.5
No reviews available

Not good, and unfortunately we can't seem to retrieve their tips.

Out of curiosity let's check another local pizza place: P&M

Rating: 6.0
Review:

LOVE the food here, especially since there aren't that many options in the area. Delivery is always quick.

Now this is interesting. While P&M seems to be rated lower than Papa Johns, we did find a positive review.

We'll take a look at just one more pizza place: New Millennium Pizza

Rating: Not available
Review:
Pretty decent slice. $2.00 for plain

No ratings, unfortunately, but a review we can work with.

Results

Our results showed us that Hamilton Heights in Manhattan appears to be a popular neighborhood for pizza places, with over a dozen locations of varying ratings.

Fumo rated highest at 9.0, followed by Uncle Tony's at 8.2. Papa John's rated 6.5 and P&M rated 6.0. New Millennium did not return a rating.

Discussion

Exploring five locations, Fumo, Uncle Tony's, Papa Johns, P0&M, and New Millennium, we learned Fumo, has delicious, fresh pizza. Their funghi pizza might be a recipe worth looking into, however they did not have great garlic bread, so we should make ours better than their, knowing what not to do. We also discovered that reviews were positive for Uncle Tony's, specifically in their use a fresh ingredients (something noted in Fumo's review as well), which will definitely be something to keep in mind. The P&M reviewer noted quick delivery, and the New Millennium reviewer noted a reasonable price for a slice.

Reviewers generally seemed to prefer local pizza places to a chain pizza place like Papa Johns. Even a lower rated place like P&M had a positive review. Seemingly contradictorily, the reviewer for P&M implied there aren't many choices in the area, though they didn't specify if this meant food in general. Perhaps they would benefit from an analysis like this one.

Conclusions

For a chance at success at opening a pizza place in Manhattan, NY, you should focus your attention on the Hamilton Heights neighborhood and the locations found there. Getting the word out will be paramount so folks know that there are options available. Your menu should include unique recipes (mushrooms seem to be popular), and the pizza should be made with the freshest ingredients. You should ensure quick delivery, and your price per slice should be competitive.