Battle of the Neighborhoods

Introduction and Business Problem

Objective:

Grand Coffee Maniacs llc. is a multinational coffeehouse chain, offering premium service and organic products to its customers. The company is operating primarily in the European Union. Due to its success in Europe the company is looking to launch an expansion in the United States with the first house in Manhattan in New York City. The objective of this analysis is to recommend the best location to Coffee Mania management for them to launch their first shop.

Grand Coffee Maniacs llc. has appointed me to lead their Data Science team in order to locate and recommend to upped management and other stakeholders the best location in New York City to open their new coffee house and start their expansion in the country.

Problem Description:

Coffeehouses or Cafes are establishments which primarily serves coffee related drinks. The concept of Grand Coffee Maniacs takes the business a step further and in typical European fashion also includes food (light snacks such as sandwiches, muffins, pastries, burritos etc). With its modernistic and rustic vibe Grand Coffee Maniacs encourages meeting new people, spending quality time with friends, working, writing and entertaining.
New York City is a city with traditions and heritage and a multicultural population. The city's culture for food and coffee is highly influenced by the immigrant population. Below are a few examples of types of coffees in different cultures:

1. Italy Espresso Romano
2. Turkey - Turk Kahvesi
3. Greece - Frappe
4. Mexico - Cafe de Olla
5. Senegal Cafe Touba
6. Brazil Cafezinho
7. Spain Cafe Bombon
8. Ireland Irish Coffee
9. Austria Wiener Melange
10. Malaysia Yuanyang

In order for the business to be successful in a this highly lucrative and competitive market it needs a very precise and calculated strategic plan.

Background:

New York City is the most populous in the United States and is the financial capital of the country. The population of the city is approximately 8,398,748 as of 2018. If we include the metropolitan area population the estimated total would be 19,979,477. The population of Manhattan is estimated to be approximately 1.629 million as of 2017. New York is the most densely populated in the entire country. The city is one of the most popular tourist destinations in the world millions tourists annually. In 2017 the city set a record of 62.8 million visitors. In addition the city is also home and a major center for many technology, advertising, accounting, architect, retail, banking and finance companies. Due to the above it must be noted that New York is a highly competitive market and as one of the most developed cities in the world the costs for business would be substantial. New or expanding businesses need to take many factors into consideration and do a thorough analysis of the area in order to be able to succeed.

Research data and preparation:

Data 1 - Demographics and Population

For our research we will be analyzing one city in the face of New York and more specifically the Manhattan borough and its neighborhoods. Though this data we will be able to get a general understanding of the demographics and population in the city to help us determine our goal. We will need to determine the size of the city, population and density.

Data used for research:
https://en.wikipedia.org/wiki/New_York_City
https://en.wikipedia.org/wiki/List_of_Manhattan_neighborhoods
https://cocl.us/new_york_dataset

Data 2 - Most Popular Attractions in New York

In order for us to be able to determine an accurate locations which will benefit the business the most and maximize profits, we would need to explore and determine the places with highest concentration of tourists.

Data used for research:
https://www.theactivetimes.com/travel/most-popular-tourist-attractions-new-york-city/slide-13

Data 3 - Competitors

The data on competitors is gathered through the input of Foursquare API in order for us to be able to leverage and determine the positioning of competitor venues in each of Manhattan's neighborhoods.

1. We are going to load and explore data from newyork_data.json file.

2. The data will be used to obtain the geographical locations of the city and neighborhoods

3. In addition the data will be used in coherence with Foursquare to get the location of competitor venues

4. In the end several maps will be used formed from folium and geopy libraries for our research

Below you can find an image of part of the API data used from Foursquare.

Out[246]:

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Chinatown	40.715618	-73.994279	Matcha n' More	40.717955	-73.997334	Café
1	Washington Heights	40.851903	-73.936900	Green Juice Cafe	40.851898	-73.934827	Café
2	Washington Heights	40.851903	-73.936900	Le Chéile	40.851459	-73.939989	Café
3	Washington Heights	40.851903	-73.936900	Pick and Eat	40.847558	-73.938212	Café
4	Washington Heights	40.851903	-73.936900	Scoop Cafe	40.849988	-73.935396	Café

Data used for research:
https://cocl.us/new_york_dataset

Data 4 - Are there nearby market locations for fresh ingredients and produce

For our business concept to be successful it is important to have the opportunity for acquiring fresh ingredients and produce from facilities such as Farmer's Markets. A farmer's market is a physical retail marketplace in which the products are sold directly from the farmers. Typically these markets are made up of booths, tables and stands where the farmers are able to sell the homegrown produce they have made such as animal and plant based products.

Data used for research:
https://en.wikipedia.org/wiki/Farmers%27_market
https://data.cityofnewyork.us/dataset/DOHMH-Farmers-Markets/8vwk-6iz2

Methodology

Exploratory data analysis:

The goal of this research would be to determine the best location for the new venue of Grand Coffee Maniacs llc.

Data 1 - Demographics and Population

New York:

The city of New York is home to 5 main borough and 306 neighborhoods. New York's total area is 302.64 square miles.

Manhattan:

Manhattan consists of 53 neighborhoods with a total area is 22.83 square miles. Geographically Manhattan is the city's smallest and most densely populated borough with 72,033 people per square mile.

New York City's five boroughs								v · t · e
Jurisdiction		**Population**	**Gross Domestic Product**			**Land area**		**Density**	
Borough	County	Estimate (2017)[191]	billions (US$)[192]	per capita (US$)	square miles	square km	persons / sq. mi	persons / km²
The Bronx	Bronx	1,471,160	28.787	19,570	42.10	109.04	34,653	13,231
Brooklyn	Kings	2,648,771	63.303	23,900	70.82	183.42	37,137	14,649
Manhattan	New York	1,664,727	629.682	378,250	22.83	59.13	72,033	27,826
Queens	Queens	2,358,582	73.842	31,310	108.53	281.09	21,460	8,354
Staten Island	Richmond	479,458	11.249	23,460	58.37	151.18	8,112	3,132
City of New York		**8,622,698**	**806.863**	**93,574**	**302.64**	**783.83**	**28,188**	**10,947**
State of New York		19,849,399	1,547.116	78,354	47,214	122,284	416.4	159

## Data 2 - Most Popular Attractions in New York

Examining the most popular attractions in the city is going to help us to determine the positioning of the majority of tourists and high population flow.

1. Brooklyn Bridge
2. 9/11 Memorial
3. Central Park
4. Chrysler Building
5. Empire State Building
6. Grand Central Terminal
7. High Line Park
8. Metropolitan Museum of Art
9. New York Botanical Garden

10. Rockefeller Center
11. Statue of Liberty
12. Times Square

Below we can see an image with a placement of each of the above attractions, in order for us to be able to determine the spots with the most tourist flow.

Manhattan Attractions:
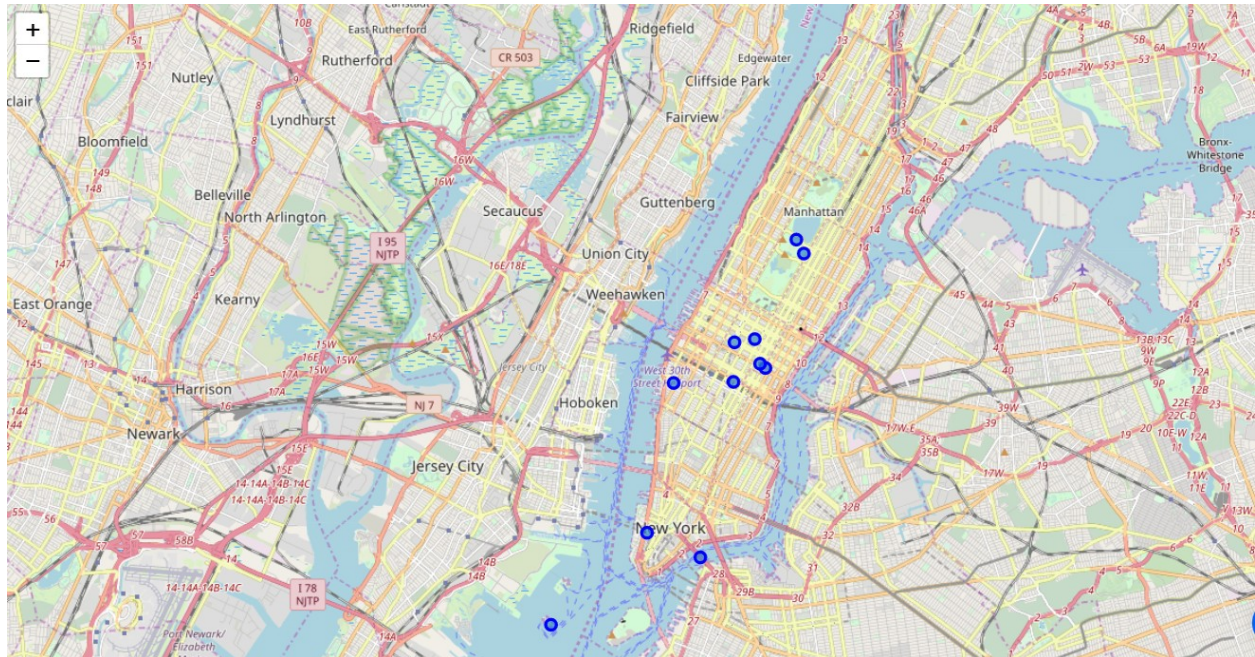
Through the visualization we can determine that 5 of the 12 most popular locations are located in Midtown Manhattan.

Data 3 – Competitors

Through the analysis of our data we determined that there are 3307 different venues in the Manhattan Borough.

After listing the top 5 most common venues, we can see in that list we can always find a type of Coffee shop and potential competitor.

Top 5 most common venues in each Neighborhood Manhattan:

In [228]: # We are searching for what are the 5 most common venues in each neighbourhood in Manhattan

neighborhood_coffee

Out[228]:

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
0	Battery Park City	Park	Coffee Shop	Hotel	Boat or Ferry	Gym
1	Carnegie Hill	Pizza Place	Coffee Shop	Café	Cosmetics Shop	Bookstore
2	Central Harlem	Chinese Restaurant	African Restaurant	Bar	American Restaurant	Cosmetics Shop
3	Chelsea	Coffee Shop	Italian Restaurant	Bakery	Ice Cream Shop	Nightclub
4	Chinatown	Chinese Restaurant	American Restaurant	Vietnamese Restaurant	Cocktail Bar	Spa
5	Civic Center	Italian Restaurant	Gym / Fitness Center	Coffee Shop	Hotel	French Restaurant
6	Clinton	Theater	Italian Restaurant	Gym / Fitness Center	Coffee Shop	American Restaurant
7	East Harlem	Mexican Restaurant	Bakery	Thai Restaurant	Latin American Restaurant	Deli / Bodega
8	East Village	Bar	Chinese Restaurant	Ice Cream Shop	Wine Bar	Mexican Restaurant
9	Financial District	Coffee Shop	American Restaurant	Pizza Place	Steakhouse	Wine Shop
10	Flatiron	Yoga Studio	American Restaurant	Clothing Store	Café	Gym / Fitness Center
11	Gramercy	Bar	Italian Restaurant	Pizza Place	Wine Shop	Bagel Shop
12	Greenwich Village	Italian Restaurant	Clothing Store	Sushi Restaurant	French Restaurant	Cosmetics Shop
13	Hamilton Heights	Café	Pizza Place	Deli / Bodega	Coffee Shop	Mexican Restaurant
14	Hudson Yards	American Restaurant	Italian Restaurant	Café	Gym / Fitness Center	Hotel
15	Inwood	Café	Lounge	Mexican Restaurant	Restaurant	Spanish Restaurant

From the examination of our data set, we can determine the total number of Coffee Shops and Cafe's to be 209 in Manhattan.

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Out[230]: Coffee Shop            131
          Italian Restaurant     123
          American Restaurant     79
          Café                    78
          Bakery                  74
          Pizza Place             73
          Park                    65
          Hotel                   62
          Cocktail Bar            62
          Gym                     59
```

With the highest numbers being in the Financial District, Carnegie Hill and Lenox Hill

Neighborhood	Coffee Shop	Café	Total
Financial District	11	2	13
Carnegie Hill	6	4	10
Lenox Hill	7	3	10
Yorkville	7	1	8
Hamilton Heights	3	4	7
Upper West Side	4	3	7
Tudor City	2	5	7
Tribeca	3	4	7
Lincoln Square	2	5	7
Hudson Yards	3	4	7
Battery Park City	7	0	7
Civic Center	5	2	7
Chelsea	6	1	7
Murray Hill	5	1	6
Flatiron	2	4	6
Inwood	1	5	6
Washington Heights	2	4	6
Turtle Bay	4	2	6
Midtown	4	2	6
Manhattan Valley	4	1	5
Clinton	4	1	5
Little Italy	1	4	5

With the integration of the Foursquare API we can utilize the geographical coordinates of Manhattan, in order for us to be able to get the location of each competitor per neighborhood, which can be examined in the below map visualized through the Folium Library.

Manhattan Coffee Shops visualization:
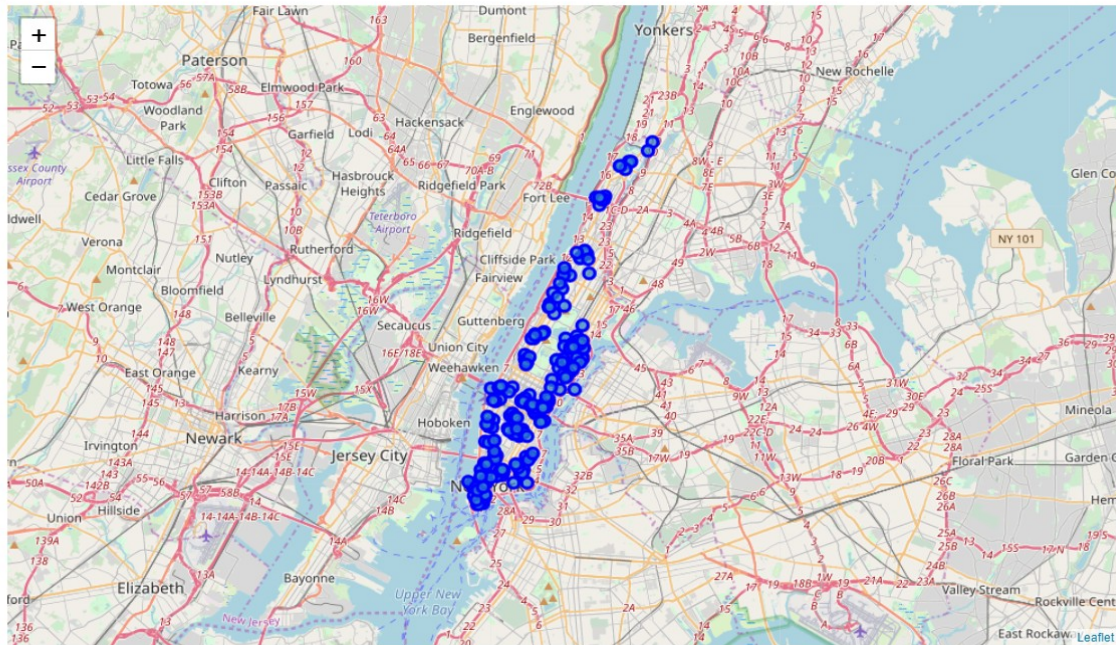
Data 4 - Are there nearby market locations for fresh ingredients and produce

Greenmarket is an organization of farmer's markets founded in 1976 with a two fold mission providing the opportunity to small family farms to sell their locally grown products directly to consumers as well as ensuring that the residents of New York also have access to the fresh and locally grown foods.

From our research we can determine that there are a total of 138 Farmer's Markets in the area of New York City, with the highest numbers being respectively in Manhattan and Brooklyn. Staten Island, Queens and Bronx also make an appearance, however in significantly smaller numbers as show in the graph below:

Below you can find a map with the positioning of the Farmer's Markets in New York City as well as the number of markets per neighbourhood:
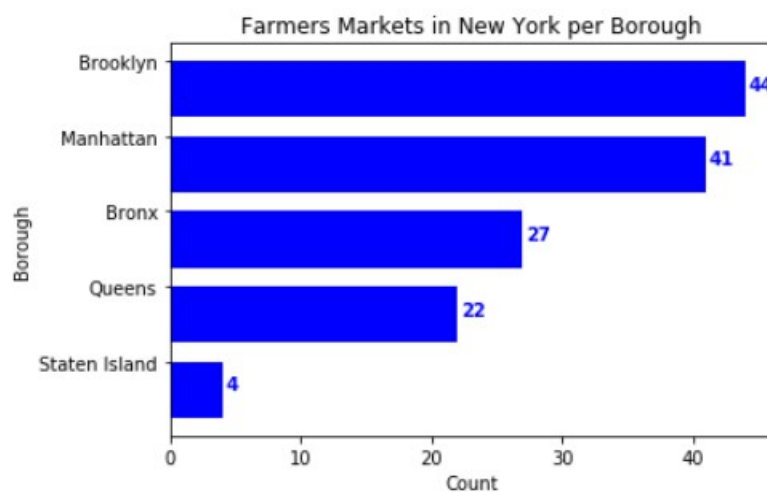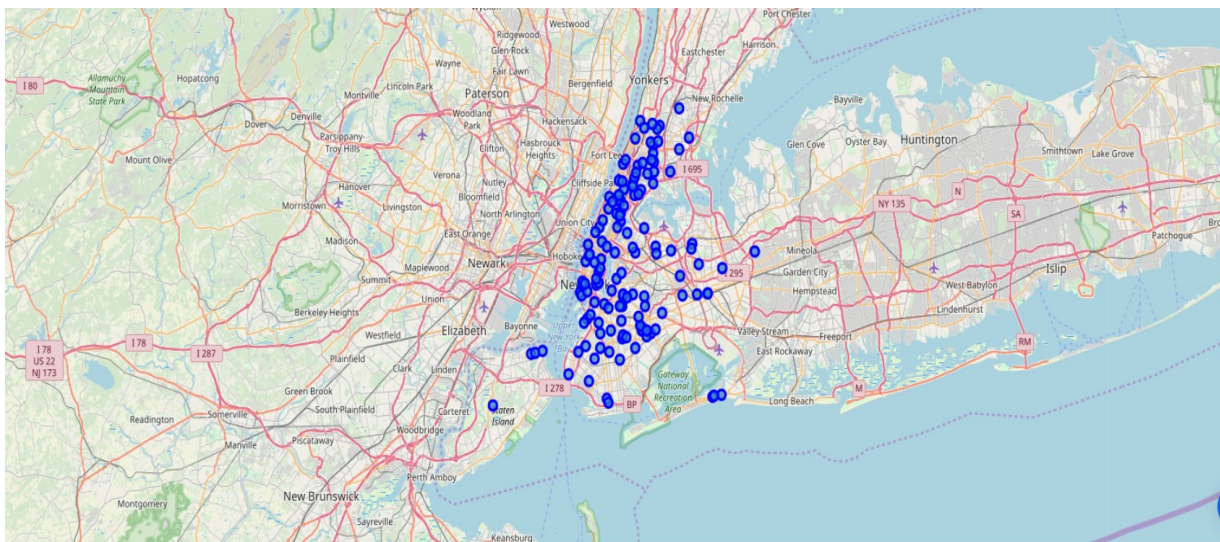
Results:

Through the examination of the different data types and research which was done throughout the report. We can determine the following results:

Manhattan is home to 306 potential neighborhoods for our project and is also one of the areas in the United States with the highest population concentration with the borough having 28,188 people per square mile. The city of New York has over 60 million visitors per year and through our analysis we determined the 12 most popular attractions, with 5 of them being in the Midtown Area. With high population comes high demand and thus there are a lot of potential competitors with the highest numbers being in the Financial District, Carnegie Hill and Lenox Hill.

We also examined the Farmer's markets in the area to make sure we will have a good base and close locations for fresh produce. In the New York area we found that there are a total of 138 farmer's markets spread through the city, with the highest numbers being in Brooklyn with 44 and Manhattan respectively with 41.

Discussion:

Based on our analysis we can make several recommendations and observations based on our results.

1. After the initial set up and opening of our Manhattan venue, there would be a lot of potential to explore also the Brooklyn area for further expansion.

2. Due to the high population and venues the finding of 3307 different venues in Manhattan indicates great potential for development.

3. Bronx, Queens and Staten Island would benefit from adding additional Farmer's markets for their further expansion and facilitating the needs of consumers for fresh produce.

4. Through the whole city we determined that there are many different cultures implementing their values, beliefs and traditions for coffee. This is showing that there is a very high demand for this type of service.

Conclusion:

In this study we analyzed the city of New York on focused more specifically on its Manhattan borough in order to find a potential new location for our business expansion and first venue in the United States. The population density in Manhattan is very high, guaranteeing us a high number of exposure. There is also enough Farmer's markets in the area which can be used for the Cafe's fresh food and ingredients. Manhattan has a high concentration of Coffee shops and other potential competitors showing the high market saturation. Through the analysis we can conclude and determine that the best location would be in the Midtown area, due to the high concentration of attractions bringing tourists and in combination of the city's population.
Based on our observations once the initial opening has been completed we can also recommend possibly exploring the area of Brooklyn for further expansion.