

Airbnb Host Listings of New York: Analysis and Recommendations

Capstone Project
Applied Data Capstone

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Introduction

The City of New York comprises of 5 boroughs and is one of the most populous cities of the world.

Airbnb offers lodging, homestays, or tourism experiences. It does not own any listing. It merely acts as a broker receiving commissions from each booking.

OBJECTIVES:

Objective 1: The project will see the business reach of Airbnb in the city.

Objective 2: Add more features to the filtering system of Airbnb.

Dataset

- Airbnb Host Listings Dataset: The dataset (CSV form) contains summary information and metrics for listings in New York City. This open data was available on '**Inside Airbnb: Adding data to the debate**', the official site of Airbnb.
- Foursquare API: The proximities of various amenities were determined on the basis of the client's requirements. The data was extracted through API calls using a separate Python code into a JSON file. Account on FourSquare had already been made before and the username and password were used for requesting API calls.

Methodology

- Dataset: The data was transferred into DataFrames for further work.
- Objective 1:
 - All the neighborhoods that have Airbnb hosts were listed first and then, the neighborhoods that did not have hosts were found out.
 - All this data was stored in two separate data frames which were then used to visualize on the map.
 - The **percentage of neighborhoods** that do not have Airbnb hosts in each borough was thus calculated.

Methodology

- **Objective 2:** The following example contains preferences that can be used to create filters for any client. The first 9 filters were created through Basic Exploratory Analysis techniques.
 - Location: Midtown Manhattan of New York
 - Availability: Any time of the year
 - Reviews: ≥ 1
 - Reviews: Not reviewed pre-2018
 - Minimum Nights: 10 days
 - Visualization: Unique room types available
 - Room Type: Room that occurs at the highest frequency
 - Prices: Visualize the distribution of prices
 - Prices: \leq \$ 200
 - Venues/Utilities: Most common utilities around the listings

Results

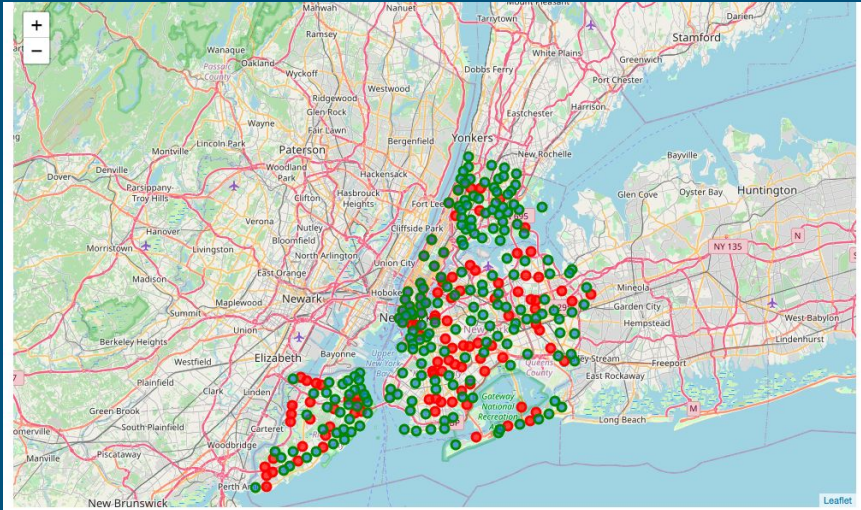
1. New York has 5 boroughs and 306 neighborhoods.
2. The count of neighborhoods in each borough of New York:

	Neighborhood	Latitude	Longitude
Borough			
Bronx	52	52	52
Brooklyn	70	70	70
Manhattan	40	40	40
Queens	81	81	81
Staten Island	63	63	63

3. New York City has 50796 Airbnb listings spread all over 5 boroughs.

Results

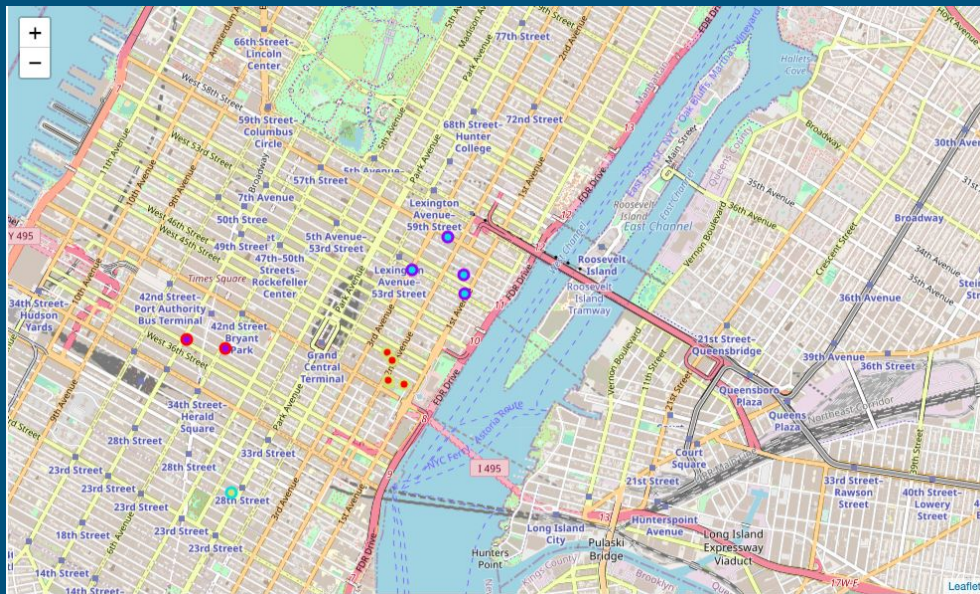
4. 108 neighborhoods out of 306 neighborhoods in New York City do not have Airbnb hosts.



The red markers are the neighborhoods that do not have Airbnb hosts and the green markers are the neighborhoods that have Airbnb hosts.

Results

5. Host listings available for rent after all the applied filters: 12



Results

6. The host listings were clustered into 4 clusters that have been described as follows:
- a. **Cluster 1:** The most common venues available around the host listings include Coffee Shops, Japanese Restaurants, and American Restaurants.
 - b. **Cluster 2:** The most common venues available around the host listings include Theaters, Korean Restaurants, and Burger Joints.
 - c. **Cluster 3:** The most common venues available around the host listings include Coffee Shops, Gym/Fitness Centres, and American Restaurants.
 - d. **Cluster 4:** The most common venues available around the host listings include Korean Restaurants, Gym/Fitness Centres, and Indian Restaurants.

Discussions

- There are 108 neighborhoods of New York City that do not have Airbnb hosts. Given that the tourism of this city has been booming, it will be beneficial for the company if it can attract hosts to rent their houses/apartments in the other neighborhoods as well.
- The Filtering System for Airbnb has been made better by adding another facility to it by presenting a list of venues that are available around each of the listings. This can add to customer experience as the customer can make a better pick out of his available options.

Conclusion

Further work on the expansion of the Airbnb network will include finding out the locations in New York that see the most traction from the tourists. If these locations do not yet have Airbnb hosts, the company will have to take a targeted approach to get new hosts.