

New York Food Truck Project

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Business Idea

Why food business?

- Demand for "Food" never decreases.
- One of the most profitable and expanding type of businesses in the world.

Food Trucks

- Food Trucks are one of the main attractions in Manhattan.
- To setup less assets and investments needed.

Parameters in placing food trucks

- Food Trucks must be placed near populated areas.
- Ideal: Close to Monuments, Parks, Fountains, Schools, Apartment buildings etc.

Problem: We have 6 food trucks and need to find best places to place them.

Approach

- There are 40 neighborhoods in Manhattan.
- Nighborhoods will be categorized into 6 clusters and in each cluster food truck will be placed on the best candidate neighborhood (ranking system).

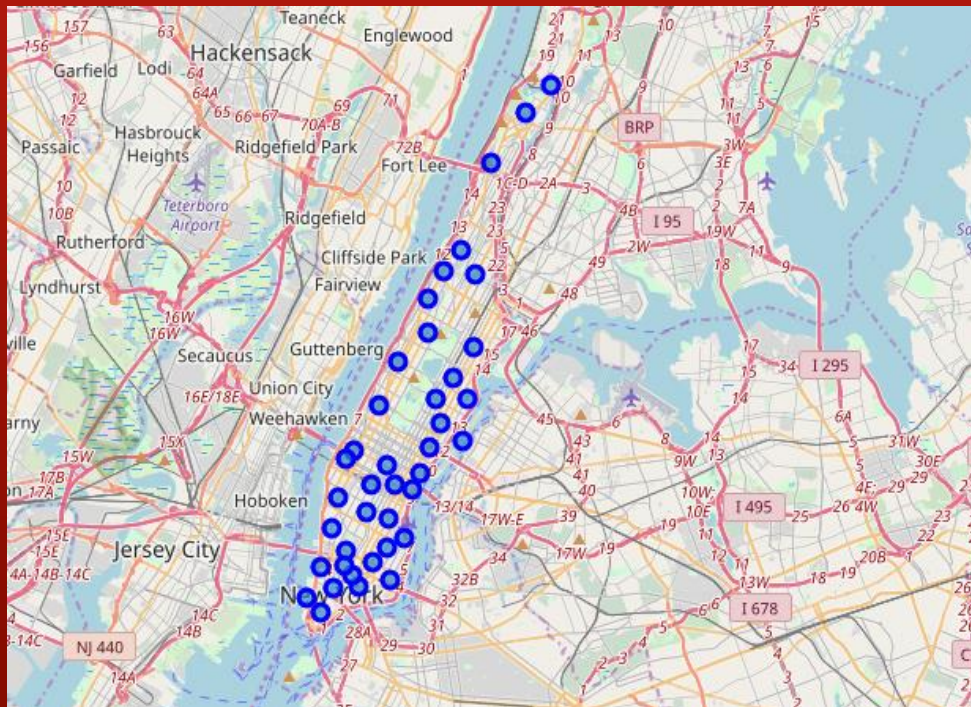


Figure 01:
Neighborhood
locations in the
Manhattan
borough, NY

1. Clustering

- We will cluster using k-means clustering (6 clusters)
- Parameter: Mean of the frequency of occurrence of each type of venue in the top 20 most visited venues within 500 meter radius.

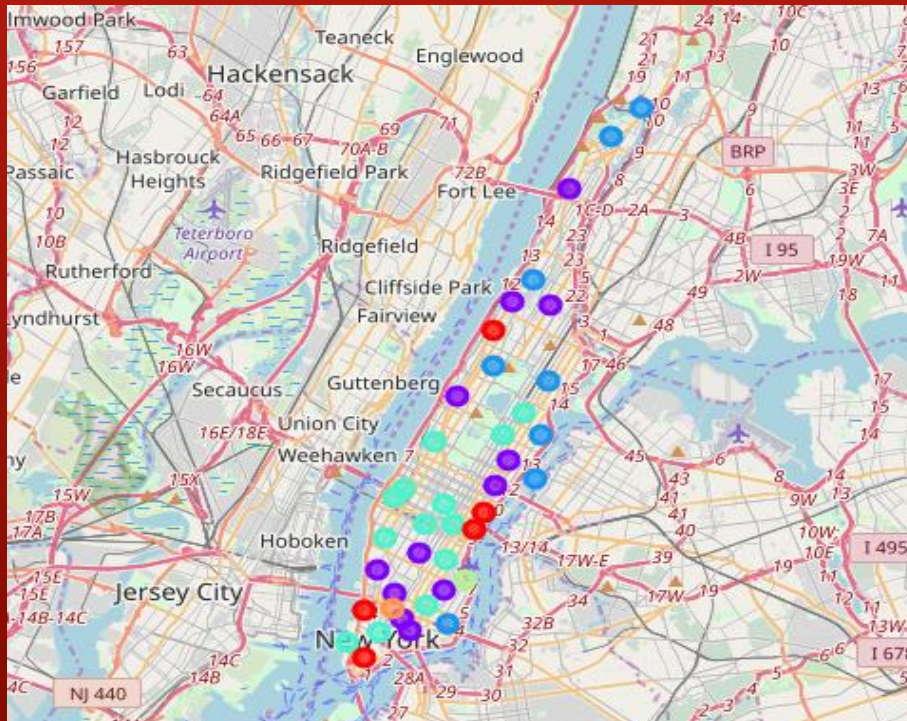


Figure 02: Six clusters of neighborhoods in Manhattan by their mean of the frequency of occurrence of each type of venue.

2. Ranking neighborhoods

- Neighborhoods in each cluster will be ranked according to the score:

Score = $2 \times \text{number of attractions} - \text{number of food places}$

- Neighborhoods with 0 attractions in top 20 most visited places will be discarded in the analysis.
- Neighborhoods with least negative score or largest positive score compared to other neighborhoods in the cluster are winners.

Results: Score and Cluster table

Table 01: Number of Attractions, number of food places and cluster number of neighborhood in the top 20 most visited places in each Manhattan neighborhood within 500 meter radius.(part)

Neighborhood	Number of Attractions	Number of Food Places	Cluster number
Battery Park City	5	9	3
Carnegie Hill	0	9	3
Central Harlem	1	8	1
Chelsea	0	13	3
Chinatown	1	11	1
Civic Center	2	11	3
Clinton	3	8	3
East Harlem	3	13	2
East Village	0	0	1
Financial District	2	11	0
Flatiron	0	8	1
Gramercy	0	10	3
Greenwich Village	0	13	1
Hamilton Heights	0	12	2

Results: Cluster-wise ranks

Table 02: Ranks of Cluster 0 neighborhoods.

Neighborhood	Number of Attractions	Number of Food Places	Cluster number	Score	Rank
Morningside Heights	2	8	0	-4	1
Turtle Bay	2	9	0	-5	2
Tribeca	1	8	0	-6	3
Financial District	2	11	0	-7	4
Tudor City	2	13	0	-9	5

Results: Cluster-wise ranks

Table 03: Ranks of Cluster 1 neighborhoods (Neighborhoods with 0 attractions are discarded).

Neighborhood	Number of Attractions	Number of Food Places	Cluster number	Score	Rank
East Village	0	0	1	0	*
<u>Manhattanville</u>	5	13	1	-3	1
Central Harlem	1	8	1	-6	2.5
West Village	1	8	1	-6	2.5
Flatiron	0	8	1	-8	*
Upper West Side	1	10	1	-8	3
Chinatown	1	11	1	-9	4
Lenox Hill	0	9	1	-9	*
Washington Heights	1	12	1	-10	5
Sutton Place	0	11	1	-11	*
Little Italy	0	12	1	-12	*
Greenwich Village	0	13	1	-13	*

Results: Cluster-wise ranks

Table 03: Ranks of Cluster 2 neighborhoods (Neighborhoods with 0 attractions are discarded).

Neighborhood	Number of Attractions	Number of Food Places	Cluster number	Score	Rank
Roosevelt Island	6	7	2	5	1
Marble Hill	1	6	2	-4	2
Yorkville	2	10	2	-6	3
East Harlem	3	13	2	-7	4
Lower East Side	2	12	2	-8	5.5
Manhattan Valley	2	12	2	-8	5.5
Inwood	1	12	2	-10	6
Hamilton Heights	0	12	2	-12	*

Results: Cluster-wise ranks

Table 04: Ranks of Cluster 3 neighborhoods (Neighborhoods with 0 attractions are discarded).

Neighborhood	Number of Attractions	Number of Food Places	Cluster number	Score	Rank
Lincoln Square	4	5	3	3	1
Battery Park City	5	9	3	1	2
Clinton	3	8	3	-2	3
Hudson Yards	2	7	3	-3	4
Civic Center	2	11	3	-7	5
Midtown South	0	7	3	-7	*
Midtown	1	10	3	-8	6.5
Noho	2	12	3	-8	6.5
Carnegie Hill	0	9	3	-9	*
Gramercy	0	10	3	-10	*
Upper East Side	1	13	3	-11	8
Chelsea	0	13	3	-13	*
Murray Hill	0	14	3	-14	*

Results: Cluster-wise ranks

Table 05: Ranks of Cluster 4 neighborhoods

Neighborhood	Number of Attractions	Number of Food Places	Cluster number	Score	Rank
Stuyvesant Town	5	6	4	4	1

Table 06: Ranks of Cluster 5 neighborhoods

Neighborhood	Number of Attractions	Number of Food Places	Cluster number	Score	Rank
<u>Soho</u>	1	4	5	-2	1

Conclusion

- Food truck winning neighborhoods:
 - Morningside Heights
 - Manhattanville
 - Roosevelt Island
 - Lincoln Square
 - Stuyvesant Town
 - Soho

Discussion

- Some clusters have many competing neighborhoods with positive scores than winning neighborhoods in other clusters.
 - Ex: In cluster 3 Battery Park which a large positive value.
 - Sometimes placing a food truck in Battery Park could be advantages than placing food trucks in Morningside Heights, Manhattanville or Soho that has negative scores although they are cluster winners.



Thank you