

Capstone Project:

Battle of Neighborhoods- New French restaurant

Description of the problem

- ▶ We can assume that we are contacted by a French investor wishing to open a business. In particular, a restaurant in New York more precisely in Manhattan, which aims to offer 100% food for 100% "made in France", since the country's current policy allows a certain advantage in terms of taxes and taxes for investors favouring "made in France" France."

Description of the problem

- ▶ However, this investor, not being from new york, therefore does not know or placed his establishment. Moreover being aware that the economic competition is tough in this city, he decides to take all these chances on his side and ask us what is the best location for his restaurant in this city.
- ▶ Therefore, we will aim to find the best location for this restaurant in manhattan.

Background Discussion

- ▶ New York is undoubtedly one of the most touristic cities in the world, thanks to its emblematic monuments, such as the Empire State Building or Statue of Liberty. Consequently its economy is based essentially on the tourist influx, my client would like therefore that one places his restaurant also in an area with high tourist potential.

Audience

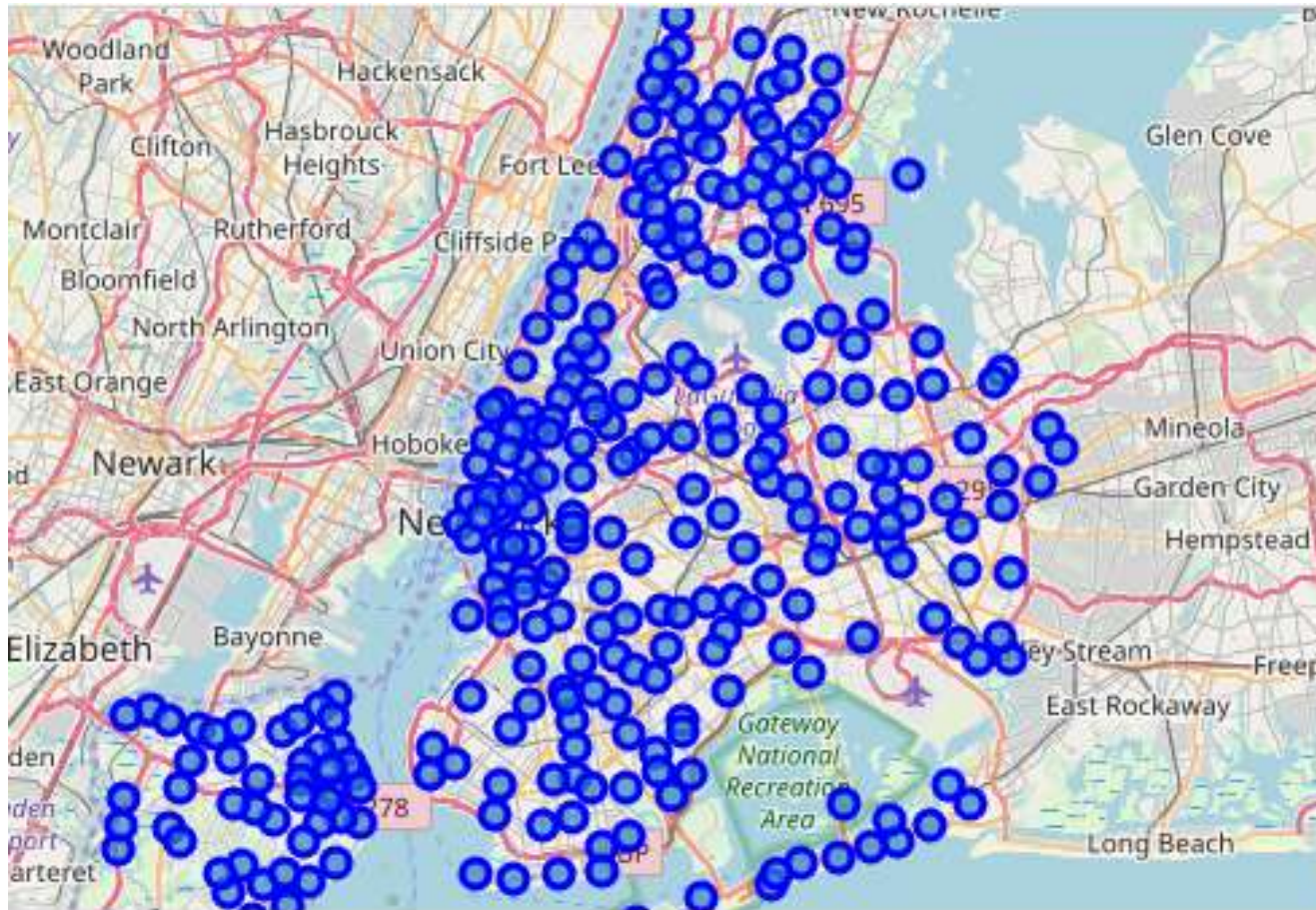
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- ▶ find a good location for the restaurant would allow on the one hand to have benefits for the investor but also to allow the potential customer (tourists) to easily find food made in France.

Data

- ▶ - For this project data available on the Foursquare's API will be used. Because The data used includes information about different venues and their neighborhoods.
- ▶ - One of the technique which will be used is KMeans to group neighborhoods with similar objects.
- ▶ - I will use a json file for the map of New york and Manhattan.
- ▶ - finally i use Foursquare to explore the neighbourhoods and determine the most popular venues per neighbourhoods.

Methodology



New-York Map

Data exploration and Geopy



Manhattan Map

Data exploration and Geopy

Neighborhood	Museums Store	Adult Boutique	Alghan Restaurant	African Restaurant	American Restaurant	Animal Shelter	Artistic Shop	Arcade	Araps Restaurant	Argentinian Restaurant	Art Gallery	Art Museum	Crafts Store	Asian Restaurant	Athletics & Sports	Auditorium	Australian Restaurant	Austrian Restaurant	Auto Workshop	B&B Joint	Baby Store	Bagel Shop	Bakery	Bar
0 Battery Park City	0.00000	0.00	0.00	0.0000	0.01000	0.00	0.00	0.00	0.00000	0.00000	0.00000	0.00	0.00000	0.00000	0.00	0.00	0.00	0.00	0.00000	0.02000	0.00	0.00000	0.01000	0.00000
1 Carnegie Hill	0.00000	0.00	0.00	0.0000	0.01000	0.00	0.00	0.00	0.00000	0.00000	0.00000	0.01	0.00000	0.00000	0.00	0.00	0.00	0.00	0.00000	0.00000	0.00	0.01000	0.02000	0.00000
2 Central Harlem	0.00000	0.00	0.00	0.0000	0.04255	0.00	0.00	0.00	0.00000	0.00000	0.04255	0.00	0.00000	0.00000	0.00	0.00	0.00	0.00	0.00000	0.02127	0.00	0.02127	0.02127	0.00000
3 Chelsea	0.00000	0.00	0.00	0.0000	0.03000	0.00	0.00	0.00	0.00000	0.00000	0.03000	0.00	0.00000	0.01000	0.00	0.00	0.00	0.00	0.00000	0.00000	0.00	0.00000	0.04000	0.00000
4 Chinatown	0.00000	0.00	0.00	0.0000	0.04000	0.00	0.00	0.00	0.00000	0.00000	0.00000	0.00	0.00000	0.02000	0.00	0.00	0.00	0.00	0.01000	0.00000	0.00	0.00000	0.02000	0.00000
5 Civic Center	0.00000	0.00	0.00	0.0000	0.03000	0.00	0.00	0.00	0.00000	0.00000	0.03000	0.00	0.00000	0.01000	0.00	0.00	0.00	0.00	0.00000	0.00000	0.01	0.01000	0.03000	0.00000
6 Cobble	0.00000	0.00	0.00	0.0000	0.04000	0.00	0.00	0.00	0.00000	0.00000	0.00000	0.00	0.00000	0.00000	0.00	0.00	0.00	0.00	0.00000	0.00000	0.00	0.00000	0.01000	0.00000
7 East Harlem	0.00000	0.00	0.00	0.0000	0.00000	0.00	0.00	0.00	0.00000	0.00000	0.00000	0.00	0.00000	0.00000	0.00	0.00	0.00	0.00	0.00000	0.00000	0.00	0.00000	0.00000	0.02272
8 East Village	0.00000	0.00	0.00	0.0000	0.02000	0.00	0.00	0.00	0.02000	0.01000	0.01000	0.00	0.00000	0.00000	0.00	0.00	0.00	0.00	0.00000	0.00000	0.00	0.02000	0.01000	0.00000
9 Financial District	0.01000	0.00	0.00	0.0000	0.03000	0.00	0.00	0.00	0.00000	0.00000	0.00000	0.00	0.00000	0.00000	0.00	0.00	0.00	0.00	0.00000	0.00000	0.00	0.01000	0.01000	0.00000
10 Flatiron	0.00000	0.00	0.00	0.0000	0.04000	0.00	0.00	0.00	0.00000	0.00000	0.00000	0.00	0.00000	0.00000	0.00	0.00	0.00	0.00	0.00000	0.00000	0.00	0.00000	0.02000	0.00000
11 Gramercy	0.00000	0.00	0.00	0.0000	0.04000	0.00	0.00	0.00	0.00000	0.00000	0.01000	0.00	0.00000	0.00000	0.00	0.00	0.00	0.00	0.00000	0.00000	0.00	0.04000	0.01000	0.00000
12 Greenwich Village	0.00000	0.00	0.00	0.0000	0.02000	0.00	0.00	0.00	0.00000	0.00000	0.01000	0.00	0.00000	0.00000	0.00	0.00	0.00	0.00	0.00000	0.00000	0.00	0.01000	0.01000	0.00000
13 Hamilton Heights	0.00000	0.00	0.00	0.0000	0.00000	0.00	0.00	0.00	0.00000	0.00000	0.00000	0.00	0.00000	0.00000	0.00	0.00	0.00	0.00	0.00000	0.00000	0.00	0.00000	0.02250	0.01012
14 Hudson Yards	0.00000	0.00	0.00	0.0000	0.00000	0.00	0.00	0.00	0.00000	0.00000	0.01223	0.00	0.00000	0.01223	0.00	0.00	0.00	0.00	0.00000	0.00000	0.00	0.00000	0.00000	0.00000
15 Inwood	0.00000	0.00	0.00	0.0000	0.04423	0.00	0.00	0.00	0.00000	0.00000	0.00000	0.00	0.00000	0.00000	0.00	0.00	0.00	0.00	0.00000	0.00000	0.00	0.00000	0.00174	0.00000
16 Lenox Hill	0.00000	0.00	0.00	0.0000	0.00000	0.00	0.00	0.00	0.00000	0.00000	0.02000	0.00	0.00000	0.00000	0.00	0.00	0.00	0.00	0.00000	0.01000	0.00	0.01000	0.02000	0.00000
17 Lincoln Square	0.00000	0.00	0.00	0.0000	0.02000	0.00	0.00	0.00	0.00000	0.00000	0.00000	0.00	0.00000	0.00000	0.00	0.00	0.00	0.00	0.00000	0.00000	0.00	0.00000	0.02000	0.00000
18 Little Italy	0.00000	0.00	0.00	0.0000	0.01000	0.01	0.00	0.00	0.00000	0.00000	0.01000	0.00	0.00000	0.00000	0.00	0.00	0.00	0.00	0.00000	0.00000	0.00	0.00000	0.00000	0.00000
19 Lower East Side	0.00000	0.00	0.00	0.0000	0.00000	0.00	0.00	0.00	0.00000	0.01000	0.02223	0.00	0.00000	0.00000	0.00	0.00	0.00	0.00	0.01000	0.00000	0.00	0.01000	0.02223	0.00000
20 Manhattan Valley	0.00000	0.00	0.00	0.0000	0.01000	0.00	0.00	0.00	0.00000	0.00000	0.00000	0.00	0.01000	0.00000	0.00	0.00	0.00	0.00	0.00000	0.00000	0.00	0.00000	0.01000	0.00000
21 Maritimesville	0.00000	0.00	0.00	0.0000	0.02272	0.00	0.00	0.00	0.00000	0.00000	0.02272	0.00	0.00000	0.00000	0.00	0.00	0.00	0.00	0.00000	0.02272	0.00	0.00000	0.00000	0.02272
22 Marble Hill	0.00000	0.00	0.00	0.0000	0.03042	0.00	0.00	0.00	0.00000	0.00000	0.00000	0.00	0.00000	0.00000	0.00	0.00	0.00	0.00	0.00000	0.00000	0.00	0.00000	0.03042	0.03042
23 Midtown	0.00000	0.00	0.00	0.0000	0.04000	0.00	0.00	0.00	0.00000	0.00000	0.01000	0.00	0.00000	0.00000	0.00	0.00	0.00	0.00	0.00000	0.00000	0.00	0.00000	0.04000	0.00000

statistical
representation

Cluster 1

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	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
11	Roosevelt Island	Park	Sandwich Place	Coffee Shop	Deli / Bodega	Pizza Place	Greek Restaurant	Dry Cleaner	Bus Stop	Baseball Field	Liquor Store
26	Morningside Heights	Park	Coffee Shop	Bookstore	American Restaurant	Food Truck	New American Restaurant	Burger Joint	Deli / Bodega	Tennis Court	Outdoor Sculpture
28	Battery Park City	Park	Coffee Shop	Hotel	Memorial Site	Gym	Wine Shop	Clothing Store	Italian Restaurant	Women's Store	BBQ Joint

Cluster 2

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
13	Lincoln Square	Theater	Gym / Fitness Center	Cafe	Plaza	Italian Restaurant	Concert Hall	French Restaurant	Performing Arts Venue	Indie Movie Theater	Park
14	Clinton	Theater	Italian Restaurant	Gym / Fitness Center	American Restaurant	Hotel	Coffee Shop	Sandwich Place	Wine Shop	Spa	New American Restaurant

Cluster 4

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
37	Stuyvesant Town	Bar	Park	Playground	Pet Service	Farmers Market	Baseball Field	Fountain	Harbor / Marina	Cocktail Bar	Coffee Shop

K-mean and cluster analyse

Cluster 3

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	Marble Hill	Coffee Shop	Discount Store	Sandwich Place	Yoga Studio	Tennis Stadium	Supplement Shop	Steakhouse	Spa	Seafood Restaurant	Clothing Store
1	Chinatown	Chinese Restaurant	American Restaurant	Cocktail Bar	Salon / Barbershop	Spa	Bubble Tea Shop	Dumpling Restaurant	Vietnamese Restaurant	Ice Cream Shop	Hotpot Restaurant
6	Central Harlem	African Restaurant	Public Art	Art Gallery	Seafood Restaurant	Chinese Restaurant	Gym / Fitness Center	French Restaurant	American Restaurant	Cosmetics Shop	Liquor Store
8	Upper East Side	Italian Restaurant	Exhibit	Coffee Shop	Juice Bar	Bakery	Art Gallery	Gym / Fitness Center	French Restaurant	Spa	Hotel
9	Yorkville	Italian Restaurant	Coffee Shop	Bar	Gym	Pizza Place	Sushi Restaurant	Deli / Bodega	Wine Shop	Mexican Restaurant	Diner
10	Lenox Hill	Coffee Shop	Italian Restaurant	Sushi Restaurant	Pizza Place	Gym	Café	Cosmetics Shop	Burger Joint	Sporting Goods Shop	Gym / Fitness Center
12	Upper West Side	Italian Restaurant	Wine Bar	Bar	Coffee Shop	Bakery	Mediterranean Restaurant	Vegetarian / Vegan Restaurant	Indian Restaurant	Yoga Studio	Pub
15	Midtown	Coffee Shop	Hotel	Cocktail Bar	American Restaurant	Clothing Store	Theater	Steakhouse	Sporting Goods Shop	Japanese Restaurant	Spa
16	Murray Hill	Coffee Shop	Hotel	Sandwich Place	Japanese Restaurant	Gym	Italian Restaurant	French Restaurant	Cocktail Bar	Bagel Shop	Bar
17	Chelsea	Coffee Shop	Ice Cream Shop	Italian Restaurant	Bakery	Nightclub	Theater	Seafood Restaurant	American Restaurant	Hotel	Art Gallery
18	Greenwich Village	Italian Restaurant	Sushi Restaurant	Clothing Store	French Restaurant	Café	Seafood Restaurant	Indian Restaurant	Ice Cream Shop	Dessert Shop	Cocktail Bar
19	East Village	Bar	Wine Bar	Mexican Restaurant	Chinese Restaurant	Ice Cream Shop	Pizza Place	Cocktail Bar	Ramen Restaurant	Coffee Shop	Vegetarian / Vegan Restaurant
20	Lower East Side	Coffee Shop	Pizza Place	Ramen Restaurant	Café	Cocktail Bar	Sandwich Place	Chinese Restaurant	Art Gallery	Bakery	Park
21	Tribeca	Café	Spa	Italian Restaurant	Park	American Restaurant	Boutique	Greek Restaurant	Coffee Shop	Wine Bar	Wine Shop
22	Little Italy	Bakery	Sandwich Place	Salon / Barbershop	Café	Italian Restaurant	Bubble Tea Shop	Hotel	Mediterranean Restaurant	Seafood Restaurant	Clothing Store
23	Soho	Clothing Store	Boutique	Women's Store	Shoe Store	Art Gallery	Italian Restaurant	Sporting Goods Shop	Bakery	Men's Store	Mediterranean Restaurant
24	West Village	Italian Restaurant	New American Restaurant	Cosmetics Shop	Park	Jazz Club	Wine Bar	American Restaurant	Bakery	Coffee Shop	Gastropub
27	Gramercy	Italian Restaurant	Pizza Place	American Restaurant	Bagel Shop	Bar	Cocktail Bar	Hotel	Thai Restaurant	Mexican Restaurant	Thrift / Vintage Store
29	Financial District	Coffee Shop	Wine Shop	Gym	Steakhouse	Cocktail Bar	Bar	Pizza Place	Italian Restaurant	Café	Juice Bar
30	Carnegie Hill	Coffee Shop	Pizza Place	Café	Yoga Studio	Bookstore	Wine Shop	Cosmetics Shop	French Restaurant	Bar	Japanese Restaurant
31	Noho	Italian Restaurant	Cocktail Bar	French Restaurant	Sandwich Place	Coffee Shop	Bookstore	Rock Club	Mexican Restaurant	Sushi Restaurant	Boutique
32	Civic Center	Italian Restaurant	Gym / Fitness Center	Sandwich Place	French Restaurant	Coffee Shop	Yoga Studio	Spa	Park	Hotel	American Restaurant
33	Midtown South	Korean Restaurant	Hotel	Hotel Bar	Japanese Restaurant	Coffee Shop	Cosmetics Shop	Cocktail Bar	American Restaurant	Gym / Fitness Center	Yoga Studio

K-mean and cluster analyse

Cluster 5

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
2	Washington Heights	Café	Mobile Phone Shop	Bakery	Deli / Bodega	Spanish Restaurant	Latin American Restaurant	New American Restaurant	Sandwich Place	Tapas Restaurant	Mexican Restaurant
3	Inwood	Mexican Restaurant	Café	Lounge	Bakery	Pizza Place	Park	Frozen Yogurt Shop	Chinese Restaurant	Deli / Bodega	American Restaurant
4	Hamilton Heights	Deli / Bodega	Café	Mexican Restaurant	Pizza Place	Chinese Restaurant	Coffee Shop	Sushi Restaurant	Caribbean Restaurant	School	Bakery
5	Manhattanville	Italian Restaurant	Mexican Restaurant	Deli / Bodega	Park	Coffee Shop	Seafood Restaurant	Beer Garden	Bike Trail	Lounge	Sushi Restaurant
7	East Harlem	Mexican Restaurant	Deli / Bodega	Bakery	Latin American Restaurant	Thai Restaurant	Convenience Store	Café	Gas Station	Taco Place	Steakhouse
25	Manhattan Valley	Indian Restaurant	Coffee Shop	Pizza Place	Yoga Studio	Mexican Restaurant	Café	Bar	Thai Restaurant	Deli / Bodega	Szechuan Restaurant
26	Tudor City	Park	Mexican Restaurant	Café	Greek Restaurant	Asian Restaurant	Deli / Bodega	Pizza Place	Hotel	Dog Run	Spa

K-mean and cluster analyse

Discussion

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- ▶ The cluster 5 is the most favorable, indeed we can see that there are many restaurants offering foreign, and European food: Spanish, Italian, Mexican, Indian, Latin, but no French restaurant, as a result we can see that there is no competition offering my client's food. The fact that there are many foreign restaurants, allows us to see that the population of the area enjoys non-local dishes.
- ▶ We can therefore offer the customer to create restaurants in Tudor City; Manhattan Valley; East Harlem; Manhattanville; Hamilton Heights; Inwood or Washington Heights

Discussion

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- ▶ If we did a cluster analysis, we can see that the most favorable locations for the restaurant to be the most profitable are: in Tudor City; Manhattan Valley; East Harlem; Manhattanville; Hamilton Heights; Inwood or Washington Heights.
- ▶ However, we can be even more precise, indeed, among all these comings, one must be more attractive than the others for that, we can analyze the frequencies of the venues show previously, in order to find the one having the strongest economic attractiveness.

Discussion

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In order to choose between these different places, we will analyze the strength of attractiveness. We will choose of course the one with the highest attractive potential. For this, we will identify the frequency with which the population goes into a type of restaurant within a venue, this frequency being the representation of the attractiveness force.

----Washington Heights----

	venue	freq
0	Café	0.06
1	Bakery	0.05
2	Mobile Phone Shop	0.05
3	Spanish Restaurant	0.04
4	Deli / Bodega	0.04

----Hamilton Heights----

	venue	freq
0	Deli / Bodega	0.06
1	Mexican Restaurant	0.06
2	Pizza Place	0.06
3	Café	0.06
4	Coffee Shop	0.05

----Manhattan Valley----

	venue	freq
0	Indian Restaurant	0.05
1	Coffee Shop	0.05
2	Pizza Place	0.05
3	Café	0.03
4	Mexican Restaurant	0.03

----Manhattanville----

	venue	freq
0	Seafood Restaurant	0.05
1	Italian Restaurant	0.05
2	Park	0.05
3	Deli / Bodega	0.05
4	Coffee Shop	0.05

----Inwood----

	venue	freq
0	Mexican Restaurant	0.07
1	Café	0.07
2	Bakery	0.05
3	Pizza Place	0.05
4	Lounge	0.05

----Tudor City----

	venue	freq
0	Mexican Restaurant	0.06
1	Park	0.06
2	Greek Restaurant	0.05
3	Café	0.05
4	Pizza Place	0.04

----East Harlem----

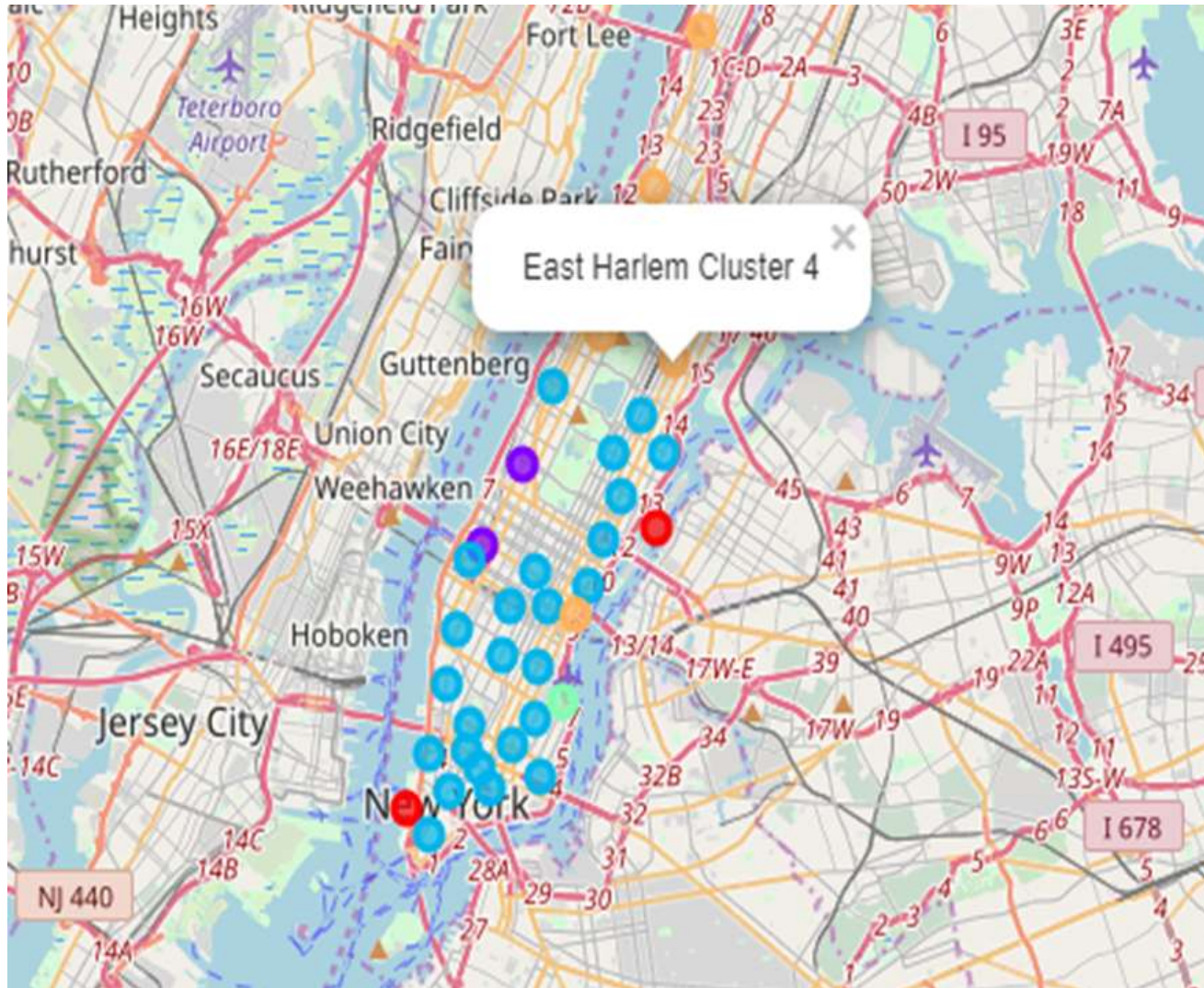
	venue	freq
0	Mexican Restaurant	0.14
1	Deli / Bodega	0.09
2	Bakery	0.09
3	Latin American Restaurant	0.05
4	Thai Restaurant	0.05

Attractiveness

Conclusion

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- ▶ To conclude, we can see that the economic attractiveness is greater in East Harleemn.
- ▶ In conclusion the most favorable place, economically speaking East Harleemn, if we take into account the population, as well as their consumption and preference for a type of trade, but also the attractiveness of the geographical area.



Location