# Final Capstone Project - The Battle of Neighborhoods

Best location to open a SUSHI BAR IN Manhattan, New York
By Karthik Gunalan

### Introduction

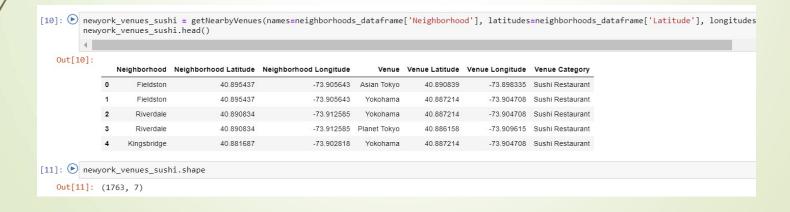
- The city of NewYork is one the most developed cities in the United States of America.
- As it is highly developed so cost of doing business is also one of the highest.
- Thus any new business venture has to undergo some sort of Analysis.
- Sushi has become a very common cuisine. So starting a sushi restaurant in NewYork can be a great business oppurtunity.

## **Business Problem**

Client's necessity to understand the optimal location to set up the sushi restaurant

#### Data Selection

- First we identify the other competitors
- We then used Google Map API to find their geographic coordinates based on their postal code addresses.
- In Manhattan, there is 1763 sushi bars are currently operating.



- Addresses are converted into their equivalent latitude and longitude values.
- Foursquare API is used to explore neighborhoods in Manhattan, New York.
- After that, explore function to get sushi restaurant categories in each neighborhood.

		Neighborhood	Asian Restaurant	Bakery	Chinese Restaurant	Cocktail Bar	Deli / Bodega	Grocery Store	Hawaiian Restaurant	Japanese Restaurant	Noodle House	Poke Place	Ramen Restaurant	Restaurant	Sake Bar	Sandwich Place	Re
-	)	Marble Hill	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	1	Chinatown	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2	2	Chinatown	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
3	3	Chinatown	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
/	1	Chinatown	0	0	0	0	0	0	0	0	0	0	0	0	0	0	



Sushi bars in Manhattan

Then using this feature to group the neighborhoods into clusters K-means clustering algorithm will be use to complete this task. And also, the Folium library to visualize the neighborhoods in Manhattan and its emerging clusters.

	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	/th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	Annadale	Sushi Restaurant	Vegetarian / Vegan Restaurant	Korean Restaurant	Bakery	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar	Deli / Bodega
1	Arden Heights	Sushi Restaurant	Vegetarian / Vegan Restaurant	Korean Restaurant	Bakery	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar	Deli / Bodega
2	Astoria	Sushi Restaurant	Asian Restaurant	Japanese Restaurant	Korean Restaurant	Bakery	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar
3	Astoria Heights	Sushi Restaurant	Vegetarian / Vegan Restaurant	Korean Restaurant	Bakery	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar	Deli / Bodega
4	Auburndale	Sushi Restaurant	Vegetarian / Vegan Restaurant	Korean Restaurant	Bakery	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar	Deli / Bodega

Using K-mean to clustering data area with less number of sushi bars

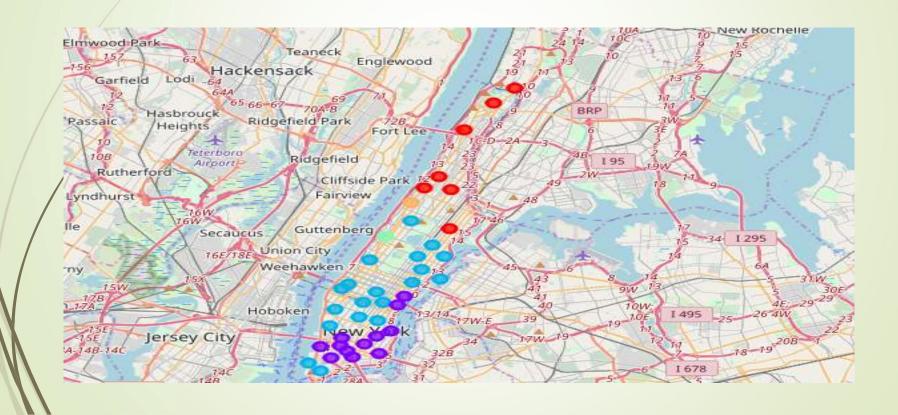
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3	Fieldston	Sushi Restaurant	Vegetarian / Vegan Restaurant	Korean Restaurant	Bakery	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar	Deli / Bodega
4	Riverdale	Sushi Restaurant	Vegetarian / Vegan Restaurant	Korean Restaurant	Bakery	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar	Deli / Bodega
5	Kingsbridge	Sushi Restaurant	Vegetarian / Vegan Restaurant	Korean Restaurant	Bakery	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar	Deli / Bodega
6	Marble Hill	Sushi Restaurant	Vegetarian / Vegan Restaurant	Korean Restaurant	Bakery	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar	Deli / Bodega
7	Woodlawn	Sushi Restaurant	Vegetarian / Vegan Restaurant	Korean Restaurant	Bakery	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar	Deli / Bodega

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142	Maspeth	Japanese Restaurant	Sushi Restaurant	Vegetarian / Vegan Restaurant	Korean Restaurant	Bakery	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar
182	Holliswood	Japanese Restaurant	Vegetarian / Vegan Restaurant	Theme Restaurant	Bakery	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar	Deli / Bodega
191	Rockaway Park	Japanese Restaurant	Vegetarian / Vegan Restaurant	Theme Restaurant	Bakery	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar	Deli / Bodega
239	Charleston	Japanese Restaurant	Vegetarian / Vegan Restaurant	Theme Restaurant	Bakery	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar	Deli / Bodega
300	Erasmus	Asian Restaurant	Japanese Restaurant	Theme Restaurant	Bakery	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar	Deli / Bodega

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29	Country Club	Sushi Restaurant	Asian Restaurant	Korean Restaurant	Bakery	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar	Deli / Bodega
37	Pelham Bay	Sushi Restaurant	Asian Restaurant	Korean Restaurant	Bakery	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar	Deli / Bodega
38	Schuylerville	Sushi Restaurant	Chinese Restaurant	Vegetarian / Vegan Restaurant	Korean Restaurant	Bakery	Bubble Tea Shop	Burger Joint	Café	Cocktail Bar	Deli / Bodega
46	Bay Ridge	Sushi Restaurant	Japanese Restaurant	Asian Restaurant	Korean Restaurant	Bakery	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar
48	Sunset Park	Asian Restaurant	Sushi Restaurant	Korean Restaurant	Bakery	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar	Deli / Bodega
52	Sheepshead Bay	Sushi Restaurant	Poke Place	Japanese Restaurant	Vegetarian / Vegan Restaurant	Korean Restaurant	Bakery	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant

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83	Marine Park	Sushi Restaurant	Japanese Restaurant	Vegetarian / Vegan Restaurant	Korean Restaurant	Bakery	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar
84	Clinton Hill	Sushi Restaurant	Japanese Restaurant	Vegetarian / Vegan Restaurant	Korean Restaurant	Bakery	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar
91	Bergen Beach	Sushi Restaurant	Japanese Restaurant	Vegetarian / Vegan Restaurant	Korean Restaurant	Bakery	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar
93	Prospect Park South	Asian Restaurant	Sushi Restaurant	Japanese Restaurant	Korean Restaurant	Bakery	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar
94	Georgetown	Sushi Restaurant	Chinese Restaurant	Japanese Restaurant	Vegetarian / Vegan Restaurant	Korean Restaurant	Bakery	Bubble Tea Shop	Burger Joint	Café	Cocktail Bar
95	East Williamsburg	Sushi Restaurant	Japanese Restaurant	Vegetarian / Vegan Restaurant	Korean Restaurant	Bakery	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar

Neighborhood		1st Most	2nd Most	3rd Most	4th Most	5th Most	6th Most	7th Most	8th Most	9th Most	10th Most
		Common	Common	Common	Common	Common	Common	Common	Common	Common	Common
		Venue	Venue	Venue	Venue	Venue	Venue	Venue	Venue	Venue	Venue
80	Borough Park	Kosher Restaurant	Theme Restaurant	Bakery	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar	Deli / Bodega	Fish Market



#### Discussion

- This analysis is performed on limited data. This may be right or may be wrong. But if good amount of data is available there is scope to come up with better results.
- This analysis is performed on limited data. This may be right or may be wrong. But if good amount of data is available there is scope to come up with better results.
- FourSquare is a good source of data but when I exceed my hourly limit it keeps locking me out for a day.

## Conclusion

- Although all of the goals of this project were met there is definitely room for further improvement and development as noted below.
- However, the goals of the project were met and, with some more work, could easily be developed