Best Coffee Shop Location in Manilla

Introduction of Business Problem:

We assumed that we have a friend who wants to open a coffee shop in the capital city *manila* of the Philippines. We have to decide where or which neighborhoods have a greater development potential.

Methodology:

1. Find out a similar city as training dataset.

2. Using Regression model to predict the number of coffee shop in manilla.

3. Compare with the existing number of coffee shops to find out their development potential.

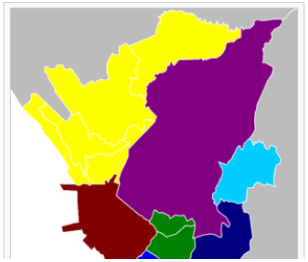
4. Determine the best location of coffee shop.

Data acquisition:

List [edit]

List of ZIP codes in the Philippines [hide]

ZIP Code	Area	Province or city
400	International Correspondence School	San Juan
401	Asian Development Bank	San Juan
410	Radio Bible Class	San Juan
420	Bible School on the Air	San Juan
550	Febias College of Bible	Valenzuela
560	Far East Broadcasting Corporation	Valenzuela
700	Plain Truth Ministries	Makati
701	Colgate Palmolive Philippines	Makati
702	Citibank	Makati
703	Sarmiento Enterprises	Makati
704	Producers Bank	Makati
705	Union Ajinomoto	Makati
706	Faith Embassy	Makati
707	Canadian Embassy	Makati



- Scrap from website and organize into df

	postalcode	Borough	city
0	400	International Correspondence School	San Juan
1	401	Asian Development Bank	San Juan
2	410	Radio Bible Class	San Juan
3	420	Bible School on the Air	San Juan
4	550	Febias College of Bible	Valenzuela
5	560	Far East Broadcasting Corporation	Valenzuela
6	700	Plain Truth Ministries	Makati
7	701	Colgate Palmolive Philippines	Makati
8	702	Citibank	Makati
9	703	Sarmiento Enterprises	Makati
10	704	Producers Bank	Makati
11	705	Union Ajinomoto	Makati

LINKS: HTTPS://EN.WIKIPEDIA.ORG/WIKI/LIST_OF_ZIP_CODES_IN_THE_PHILIPPINES

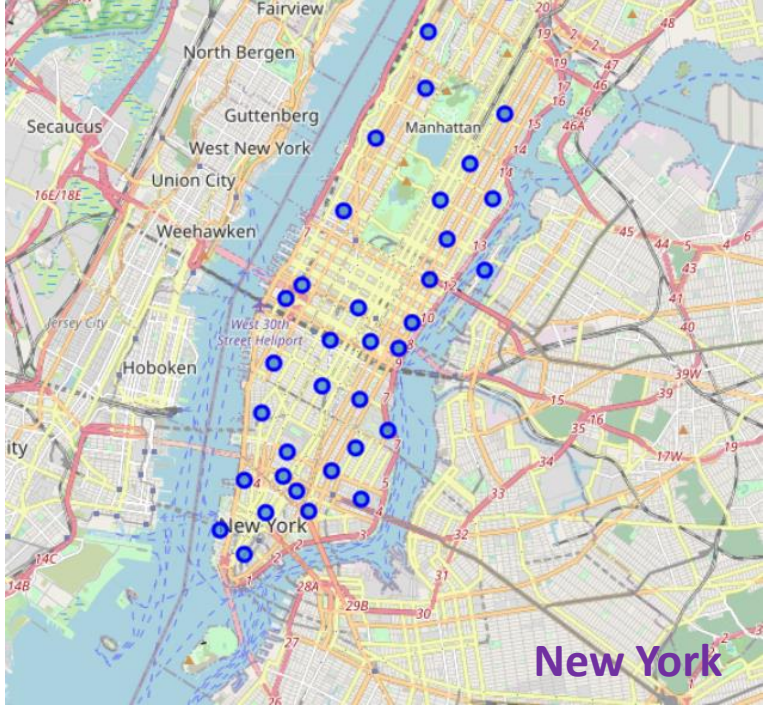
Get location information:

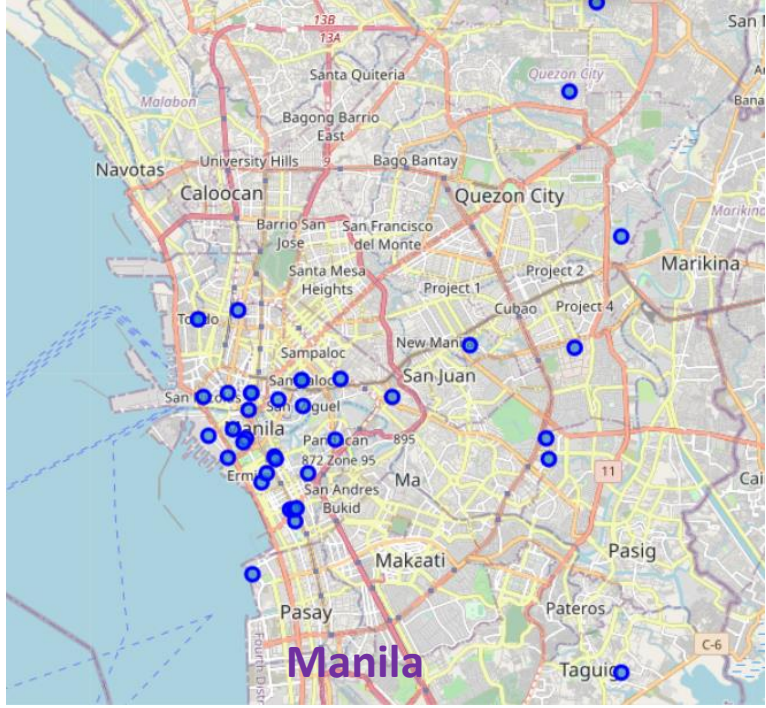
- Use geocoder package to get location information

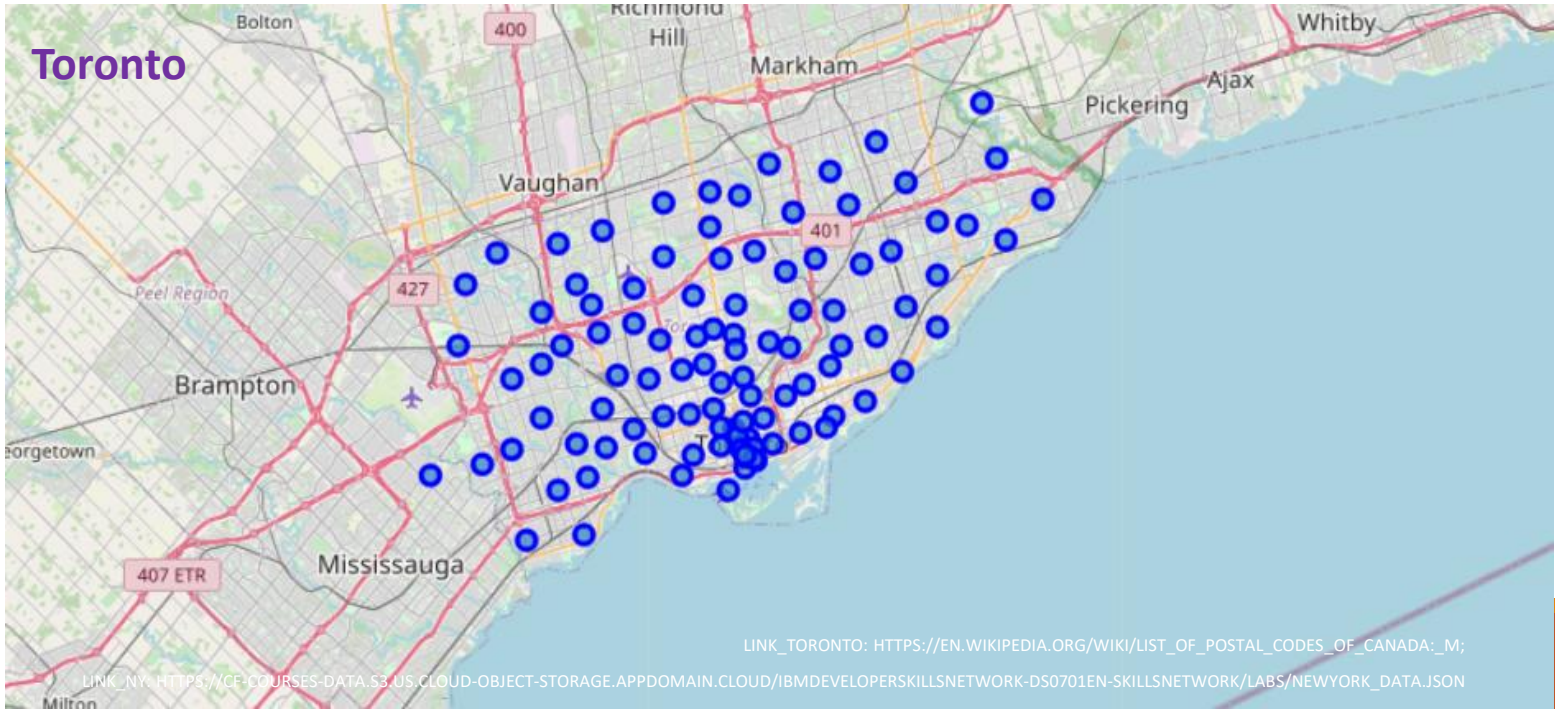
	postalcode	Borough	loc	lat	lon
0	900	Manila Bulletin,Manila	(Manila Bulletin, Muralla Street, Barangay 657...	14.588223	120.978553
1	901	Adventist University of the Philippines,Manila	(Adventist University of the Philippines, Sant...	14.219603	121.036696
2	904	Midland Plaza Manila Hotel,Manila	(Midland Plaza Manila Hotel, Santa Monica Stre...	14.576926	120.982775
3	906	Manila Medical Center,Manila	(Manila, Bonifacio Village, Pingki-an 2, Quezo...	14.677324	121.064665
4	907	San Miguel Corporation,Manila	(San Miguel Corporation, Mandaluyong, Second D...	14.582773	121.058949
5	909	Summer Institute of Linguistics,Manila	(SIL Manila Guest House, Big Horseshoe Drive, ...	14.612002	121.038064
6	910	Department of Labor and Employment,Manila	(Department of Labor and Employment, General L...	14.587209	120.977879
7	911	Philippine Statistics Authority,Manila	(Philippine Statistics Authority, Pureza Stree...	14.603355	121.003728
8	912	Bureau of Plant Industry,Manila	(Bureau of Plant Industry, Malate, Fifth Distr...	14.570108	120.990223
9	913	Manila Hotel,Manila	(Manila Hotel, Bonifacio Drive, Barangay 657, ...	14.583323	120.973858
10	916	Radio Veritas,Manila	(Radio Veritas Asia, Buick, Fairview, Quezon C...	14.700146	121.071774
11	917	Ateneo de Manila University,Manila	(Ateneo de Manila University, Katipunan Avenue...	14.639898	121.078195

Visualization in maps:

- Repeat the steps for cities Toronto and NY cities and visualize them into maps



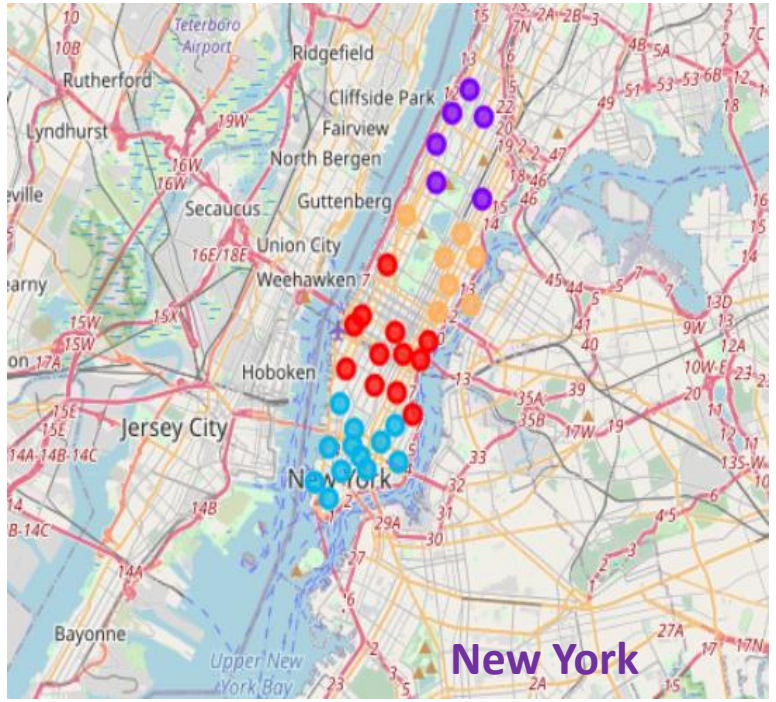


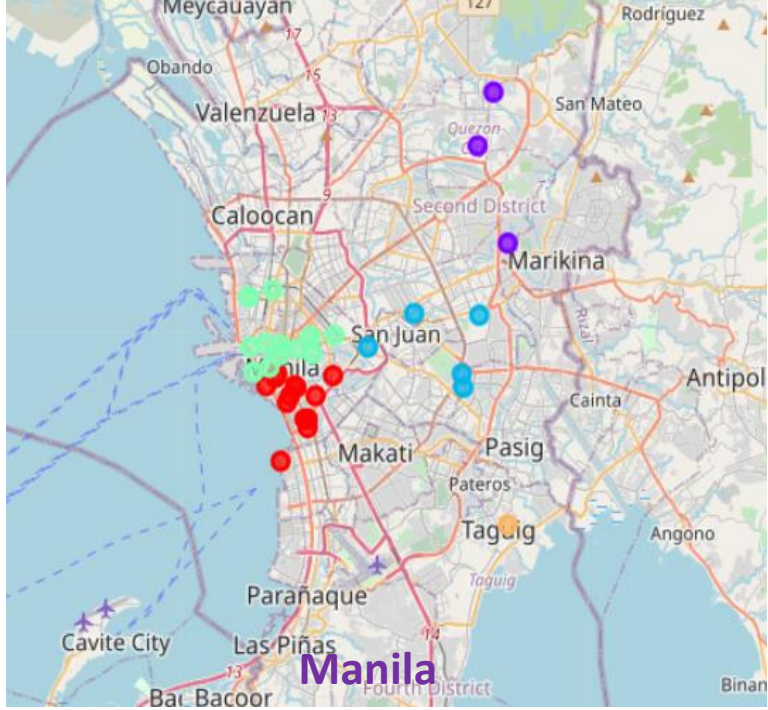


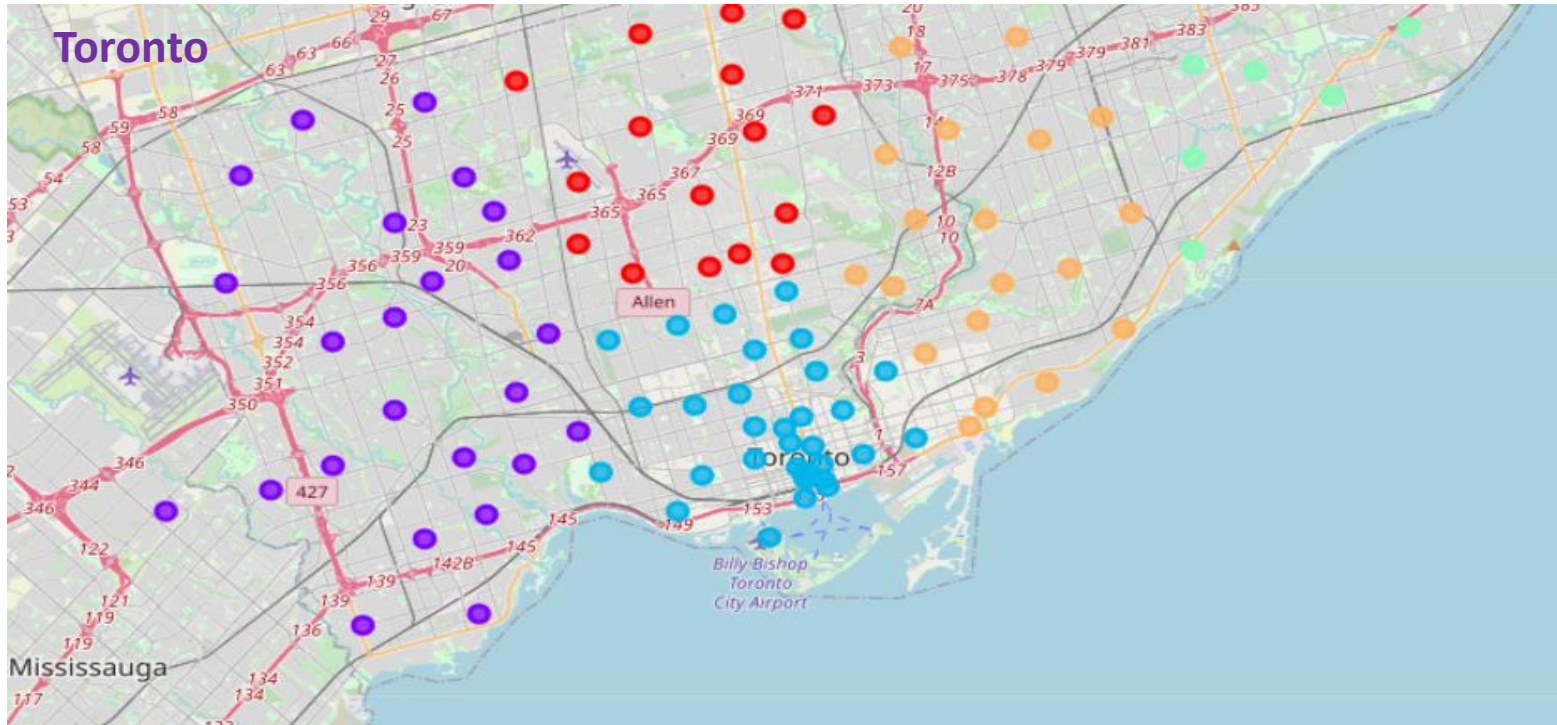
LINK_TORONTO: HTTPS://EN.WIKIPEDIA.ORG/WIKI/LIST_OF_POSTAL_CODES_OF_CANADA:_M;

LINK_NY: HTTPS://CF-COURSES-DATA.S3.US.CLOUD-OBJECT-STORAGE.APPDOMAIN.CLOUD/IBMDEVELOPERSKILLSNETWORK-DS0701EN-SKILLSNETWORK/LABS/NEWYORK_DATA.JSON

Clustering neighborhoods in maps:







Conclusion after clustering:

- After clustering we can find out that manila was much more similar to Toronto than New York city.
- Manila and Toronto have shown a radial distribution of neighborhoods.
- The density of neighborhoods increases as the neighborhoods get close to the city centre.

Chose Toronto as training set

Get venues information:

- Use ***Foursqaure*** API, we can explore the venues around on specific location, so we could obtain venue‘s name and category

- Create one-hot encoding for each category

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Parkwoods	43.753259	-79.329656	Brookbanks Park	43.751976	-79.332140	Park
1	Parkwoods	43.753259	-79.329656	Variety Store	43.751974	-79.333114	Food & Drink Shop
2	Victoria Village	43.725882	-79.315572	Victoria Village Arena	43.723481	-79.315635	Hockey Arena
3	Victoria Village	43.725882	-79.315572	Portugril	43.725819	-79.312785	Portuguese Restaurant
4	Victoria Village	43.725882	-79.315572	Tim Hortons	43.725517	-79.313103	Coffee Shop

Get X and y data for training:

X_train (dropped Neighborhood and Coffee shop columns)

	Yoga Studio	Accessories Store	Airport	Airport Food Court	Airport Gate	Airport Lounge	Airport Service	Airport Terminal	American Restaurant	A
0	0	0	0	0	0	0	0	0	0	
1	0	0	0	0	0	0	0	0	0	
2	0	0	0	0	0	0	0	0	0	
3	0	0	0	0	0	0	0	0	0	
4	0	0	0	0	0	0	0	0	1	
5	0	0	0	0	0	0	0	0	0	
6	0	0	0	0	0	0	0	0	0	
7	0	0	0	0	0	0	0	0	0	
8	0	0	1	1	1	2	2	1	0	
9	0	0	0	0	0	0	0	0	0	
10	0	0	0	0	0	0	0	0	0	
11	1	0	0	0	0	0	0	0	0	
12	0	0	0	0	0	0	0	0	0	
13	2	0	0	0	0	0	0	0	1	
14	0	0	0	0	0	0	0	0	0	
15	0	0	0	0	0	0	0	0	0	
16	0	0	0	0	0	0	0	0	1	
17	0	0	0	0	0	0	0	0	3	
18	0	0	0	0	0	0	0	0	0	
19	0	0	0	0	0	0	0	0	0	

Index: Neighborhoods

Y_train

Coffee Shop
0
1
2
0
2
5
0
2
0
0
0
11

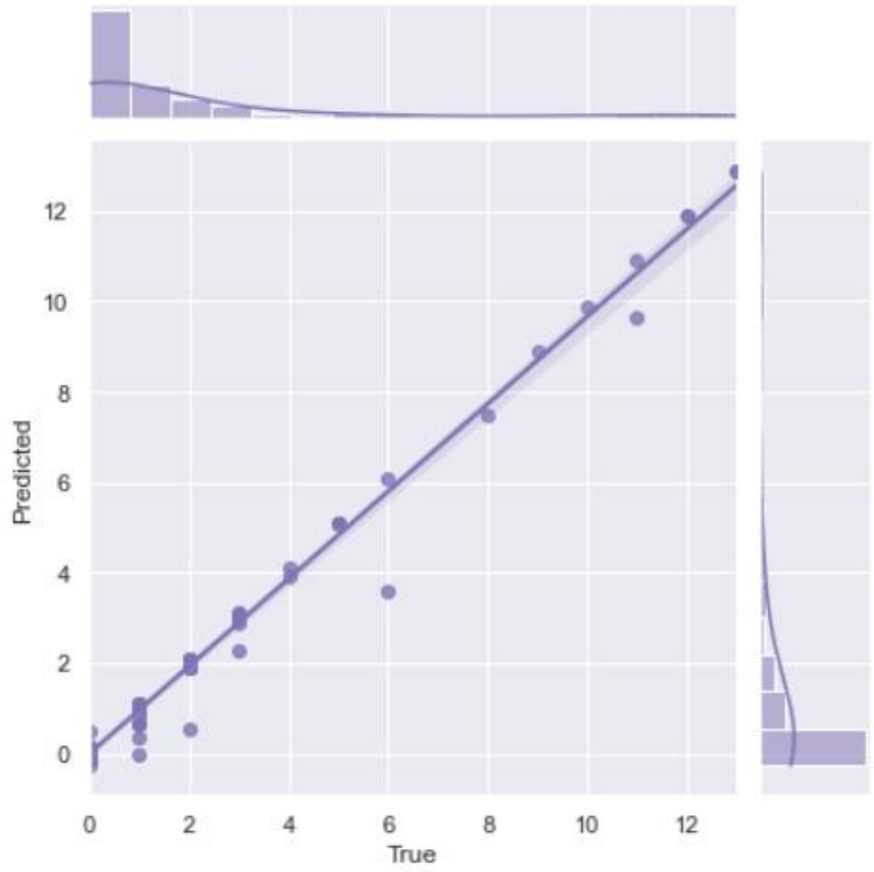
Build Model for prediction:

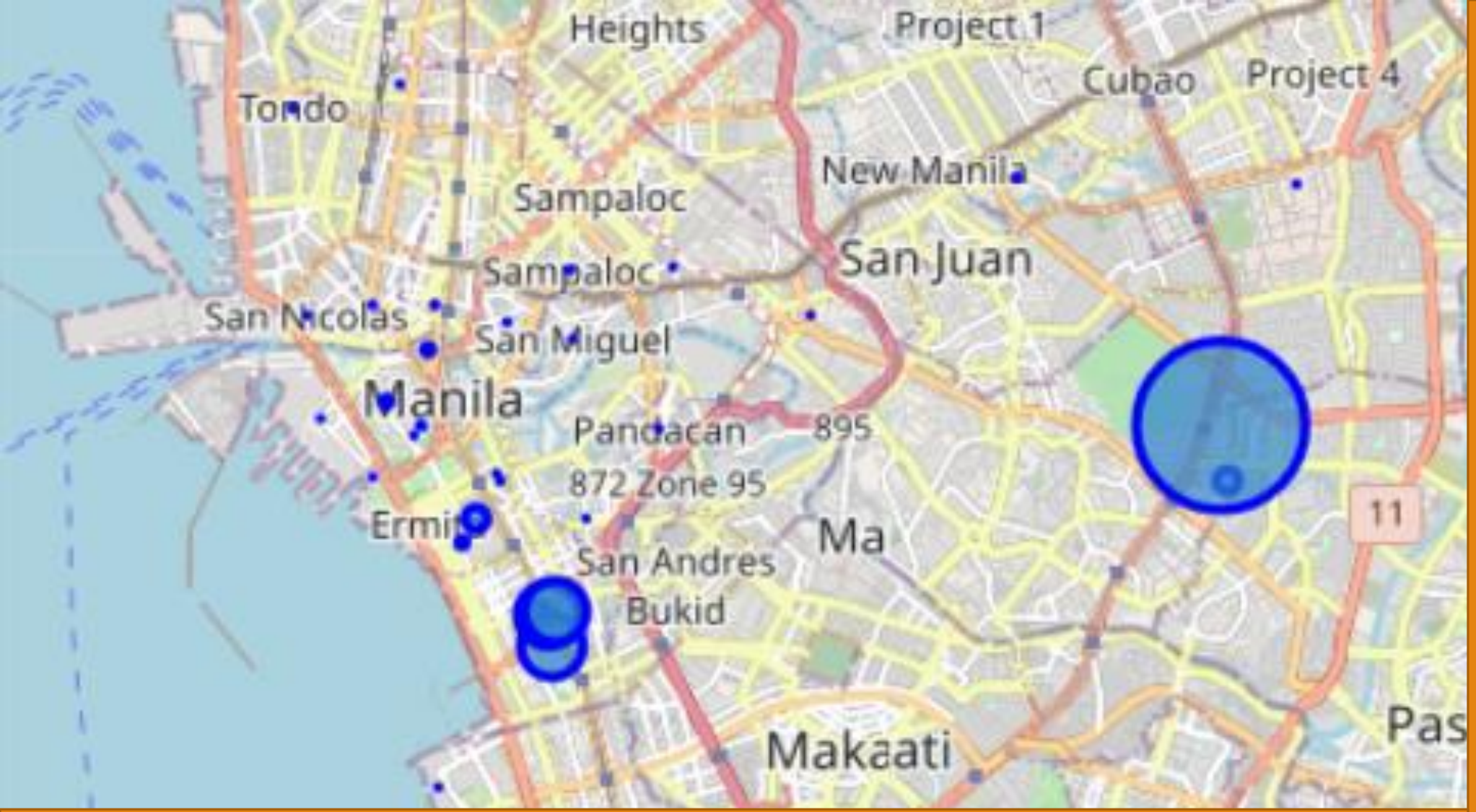
We use the number of other types of venues in each neighborhood except Coffee Shop as input and the number of Coffee shop as output.

Use SVR(rbf kernel) as learning algorithm

As shown in the figure right hand side, the predicted value matches well to the true value.

We can use this trained model to predict the number of coffee shops in Manila.

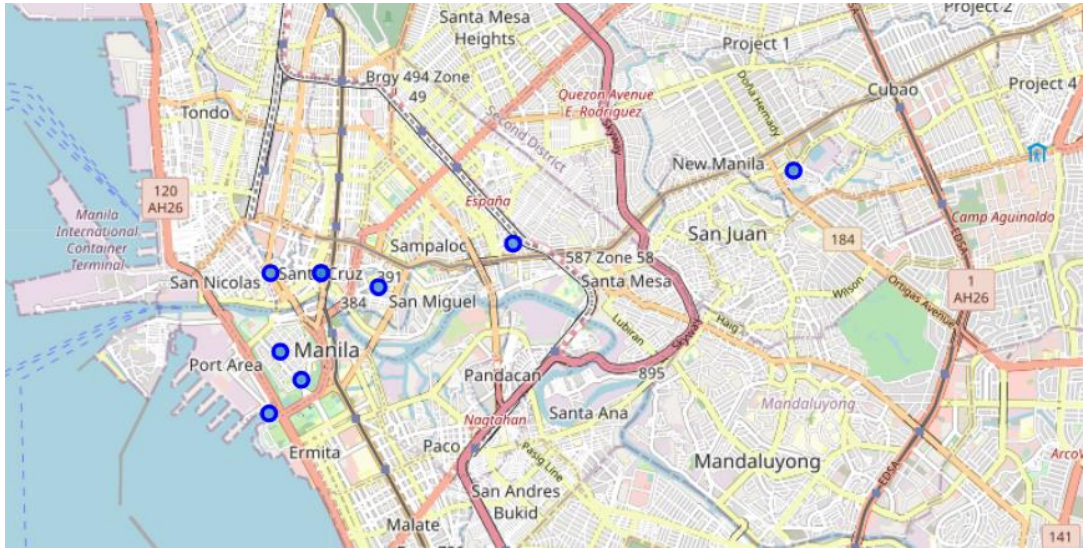


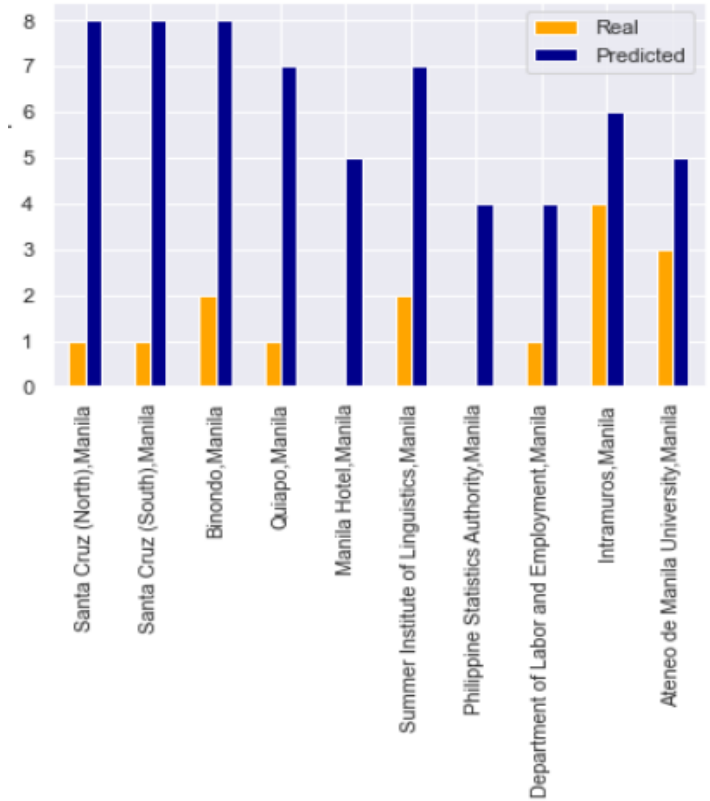


Distribution of current coffee shops in each neighborhood, the bigger the radius, the more coffee shops are opened in the neighborhoods.

Use Foursquare API to explore the venues around the neighborhoods in Manila.

Repeat steps as same as used in Toronto to build X test data.





Predict using trained model :

Top 10 recommendations for opening a coffee shop in Manial