
Battle of neighborhoods

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1. Introduction

Using neighborhood and location data,
objective is to find solutions to two
problems:

- **Matching neighborhood**
Find matching neighborhood between
Manhattan and Toronto cities
- **Find places to open a restaurant**
If anyone needs to open a restaurant
e.g. Thai restaurant, then find out best
possible locations which could have
less competition and more customers



2. Data

We would be using following data to generate our analysis:

→ Neighborhood data

Manhattan Data

Toronto Data

Neighborhood data is generated from previous programs by using foursquare APIs.

→ Using foursquare venue extraction

Using foursquare APIs to extract location data

Manhattan Neighborhoods with top 10 most common venues

	Borough	Neighborhood	Latitude	Longitude	Cluster Labels	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	Manhattan	Marble Hill	40.876551	-73.910660	0	Discount Store	Sandwich Place	Coffee Shop	Gym	Yoga Studio	Tennis Stadium	Department Store	Pizza Place	Diner	Pharmacy
1	Manhattan	Chinatown	40.715618	-73.994279	2	Chinese Restaurant	Bakery	Cocktail Bar	American Restaurant	Noodle House	Shanghai Restaurant	Salon / Barbershop	Dessert Shop	Optical Shop	Spa
2	Manhattan	Washington Heights	40.851903	-73.936900	0	Café	Bakery	Grocery Store	Bank	Sandwich Place	Coffee Shop	Park	Spanish Restaurant	Deli / Bodega	New American Restaurant
3	Manhattan	Inwood	40.867684	-73.921210	4	Mexican Restaurant	Café	Lounge	Restaurant	Park	Chinese Restaurant	Frozen Yogurt Shop	Bakery	Caribbean Restaurant	Pizza Place
4	Manhattan	Hamilton Heights	40.823604	-73.949688	4	Pizza Place	Coffee Shop	Café	Mexican Restaurant	Cocktail Bar	Indian Restaurant	Liquor Store	Sushi Restaurant	Park	Deli / Bodega

Toronto Neighborhoods with top 10 most common venues

	Borough	Neighborhood	Latitude	Longitude	Cluster Labels	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	North York	Parkwoods	43.753259	-79.329656	0.0	Food & Drink Shop	Park	Drugstore	Diner	Discount Store	Distribution Center	Dog Run	Doner Restaurant	Donut Shop	Women's Store
1	North York	Victoria Village	43.725882	-79.315572	1.0	Portuguese Restaurant	Pizza Place	French Restaurant	Coffee Shop	Hockey Arena	Intersection	Doner Restaurant	Dim Sum Restaurant	Diner	Discount Store
2	Downtown Toronto	Regent Park, Harbourfront	43.654260	-79.360636	1.0	Coffee Shop	Park	Pub	Bakery	Breakfast Spot	Café	Theater	Hotel	Chocolate Shop	Spa
3	North York	Lawrence Manor, Lawrence Heights	43.718518	-79.464763	1.0	Clothing Store	Women's Store	Coffee Shop	Boutique	Furniture / Home Store	Gift Shop	Event Space	Accessories Store	Vietnamese Restaurant	Convenience Store
4	Downtown Toronto	Queen's Park, Ontario Provincial Government	43.662301	-79.389494	1.0	Coffee Shop	Yoga Studio	Bank	Beer Bar	Smoothie Shop	Sandwich Place	Restaurant	Café	Portuguese Restaurant	Chinese Restaurant



3. Methodology

Neighborhood comparison can be done using already extracted neighborhood data.

→ **Matching neighborhoods**

Matching 2 out of 3 top venue categories is considered as similar neighborhoods

→ **New location for restaurant**

Neighborhoods which do not have Thai restaurant in top 10 venue categories can be explored further to decide location for new Thai restaurant,



Matching Neighborhoods

Neighborhood comparison can be done using already extracted neighborhood data.

→ **For loop to compare**

A simple for loop can be used to compare most common venues

→ **Criteria for comparison**

Neighborhoods can be compared if 2 out of top 3 most common venue matches between Manhattan and Toronto Neighborhoods.



Matching Neighborhoods - Common venues

	Manhattan Neighborhood	Toronto Neighborhood	Common Venue Categories
0	Marble Hill	Bedford Park, Lawrence Manor East	Sandwich Place; Coffee Shop
1	Washington Heights	Christie	Café; Grocery Store
2	Hamilton Heights	Garden District, Ryerson	Coffee Shop; Café
3	Manhattanville	Stn A PO Boxes	Coffee Shop; Seafood Restaurant
4	East Harlem	High Park, The Junction South	Mexican Restaurant; Thai Restaurant
5	Upper East Side	Central Bay Street	Italian Restaurant; Coffee Shop
6	Yorkville	Don Mills	Coffee Shop; Gym
7	Lenox Hill	Central Bay Street	Italian Restaurant; Coffee Shop
8	Upper West Side	Central Bay Street	Italian Restaurant; Café
9	Midtown	Toronto Dominion Centre, Design Exchange	Hotel; Coffee Shop
10	Murray Hill	Toronto Dominion Centre, Design Exchange	Coffee Shop; Hotel
11	Chelsea	Studio District	Coffee Shop; Bakery
12	East Village	High Park, The Junction South	Bar; Mexican Restaurant
13	Lower East Side	Bayview Village	Chinese Restaurant; Japanese Restaurant
14	Little Italy	University of Toronto, Harbord	Café; Bakery
15	Soho	Lawrence Manor, Lawrence Heights	Clothing Store; Coffee Shop
16	Manhattan Valley	Queen's Park, Ontario Provincial Government	Coffee Shop; Yoga Studio
17	Morningside Heights	Regent Park, Harbourfront	Park; Coffee Shop
18	Gramercy	Central Bay Street	Italian Restaurant; Coffee Shop
19	Battery Park City	Canada Post Gateway Processing Centre	Hotel; Gym



New location for Thai restaurant

Options for new location can be decided using:

- **Exploring neighborhoods data**
Finding out neighborhoods which do not have Thai restaurant in top 10 most common venues
- **Plotting map of Thai restaurants**
After finding out neighborhoods without Thai restaurant in top 10 most common venues, next step is to plot a map with the objective of finding out areas where Thai restaurant is not available.



4. Results

After using neighborhood and venue data, we could plot map with below:

→ **Circle Maker**

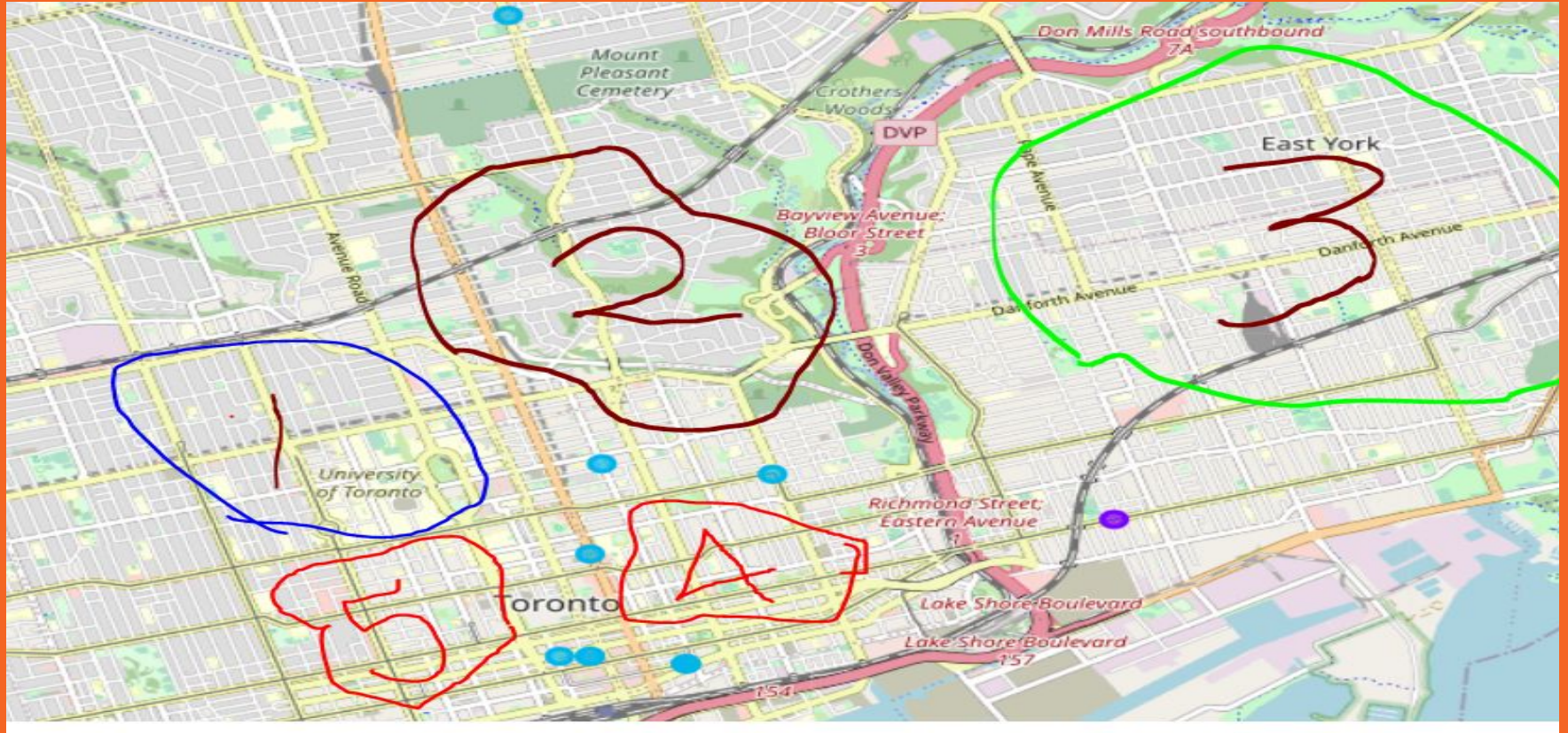
map shows Thai restaurants in Toronto highlighted using circlemarker.

→ **Areas highlighted in numbers**

Locations where there is no circle is a possible location for new Thai restaurant.

Next slide shows plot with details.

- Plot shows locations with Thai restaurants.
- Areas marked in numbers 1 to 5 could be potential area to open new restaurant.





Conclusion:

1. Understood How to compare two dataframes to effectively compare two neighborhoods.
2. Importance of location data extracted using foursquare APIs help us in analysing existing data.
3. Importance of plotting a graph to visualize location data and to make important decisions easily.