

Battle of The Neighbourhoods.

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Introduction/business problem

- Our customer, the coffee shop chain “coffee-mugs” is interested in opening a new coffee shop in Toronto. Toronto is the fastest growing city in North America. It is an international centre of business, finance, arts, and culture, and is recognized as one of the most multicultural and cosmopolitan cities in the world. This would be our customer’s second location, after having successfully opened a venue in Adelaide, a very lively neighbourhood from Scarbrough.
- Considering that our customer has had very good results with their current location, they have requested our data science team to find a neighbourhood with similar characteristics.
- The problem question would be: What other neighbourhood from Toronto has the most similar characteristics in terms of entertainment and cafe options compared to Adelaide?

Data Used

- Foursquare- It is a local search-and-discovery service which provides information on different types of entertainment, drinking and dining venues. Foursquare has an API that can be used to query their database and find information related to the venues, such as location, overall category, reviews, and tips.
- Toronto Neighbourhood Names and geographic coordinates- We will scrap a Wikipedia page for the postal codes of the Burroughs and the URL "[https://cocl.us/Geospatial data](https://cocl.us/Geospatial%20data)" for the geographic coordinates of each borough

Methodology

- Scraping the Wikipedia page to get the postal codes for each neighbourhood

	Postalcode	Borough	Neighborhood
0	M1B	Scarborough	Rouge, Malvern
1	M1C	Scarborough	Highland Creek, Rouge Hill, Port Union
2	M1E	Scarborough	Guildwood, Morningside, West Hill
3	M1G	Scarborough	Woburn
4	M1H	Scarborough	Cedarbrae

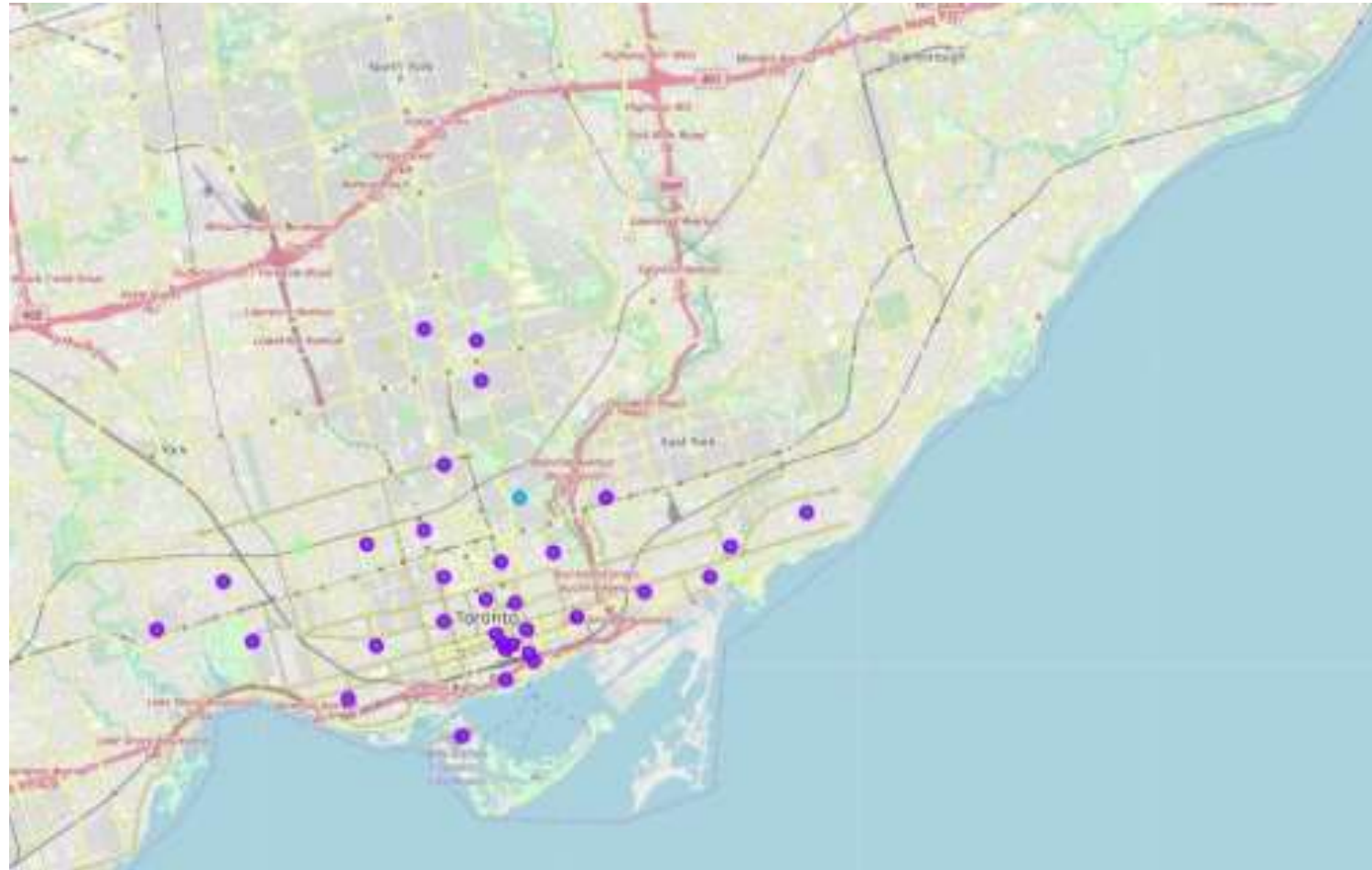
- Getting the geolocation of each neighbourhood

	Borough	Neighborhood
Postalcode		
M1B	Scarborough	Rouge, Malvern
M1C	Scarborough	Highland Creek, Rouge Hill, Port Union
M1E	Scarborough	Guildwood, Morningside, West Hill
M1G	Scarborough	Woburn
M1H	Scarborough	Cedarbrae

	Postal Code	Latitude	Longitude
0	M1B	43.806686	-79.194353
1	M1C	43.784535	-79.160497
2	M1E	43.763573	-79.188711
3	M1G	43.770992	-79.216917
4	M1H	43.773136	-79.239476

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Toronto Neighbourhoods



Foursquare API- Getting insights on each neighbourhood

Rouge, Malvern
Highland Creek, Rouge Hill, Port Union
Guildwood, Morningside, West Hill
Woburn
Cedarbrae
Scarborough Village
East Birchmount Park, Ionview, Kennedy Park
Clairlea, Golden Mile, Oakridge
Cliffcrest, Cliffside, Scarborough Village West
Birch Cliff, Cliffside West
Dorset Park, Scarborough Town Centre, Wexford Heights
Maryvale, Wexford
Agincourt
Clarks Corners, Sullivan, Tam O'Shanter
Agincourt North, L'Amoreaux East, Milliken, Steeles East
L'Amoreaux West
Upper Rouge
Hillcrest Village
Fairview, Henry Farm, Oriole
Bayview Village
Silver Hills, York Mills
Newtonbrook, Willowdale

- Venue categories

	Neighbourhood	Neighbourhood Latitude	Neighbourhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Rouge, Malvern	43.806686	-79.194353	Wendy's	43.807448	-79.199056	Fast Food Restaurant
1	Rouge, Malvern	43.806686	-79.194353	Interprovincial Group	43.805630	-79.200378	Print Shop
2	Highland Creek, Rouge Hill, Port Union	43.784535	-79.160497	Chris Effects Painting	43.784343	-79.163742	Construction & Landscaping
3	Highland Creek, Rouge Hill, Port Union	43.784535	-79.160497	Royal Canadian Legion	43.782533	-79.163085	Bar
4	Guildwood, Morningside, West Hill	43.763573	-79.188711	Swiss Chalet Rotisserie & Grill	43.767697	-79.189914	Pizza Place

Applying one-hot-coding

[illegible]

	Neighbourhood	Accessories Store	Adult Boutique	Afghan Restaurant	Airport	Airport Food Court	Airport Gate	Airport Lounge	Airport Service	Airport Terminal	American Restaurant
0	Adelaide, King, Richmond	0.0100	0.000000	0.000000	0.000000	0.0000	0.0000	0.000	0.000	0.000	0.040000
1	Agincourt	0.0000	0.000000	0.000000	0.000000	0.0000	0.0000	0.000	0.000	0.000	0.000000
2	Agincourt North, L'Amoreaux East, Milliken, St...	0.0000	0.000000	0.000000	0.000000	0.0000	0.0000	0.000	0.000	0.000	0.000000
3	Albion Gardens, Beaumont Heights, Humbergate, ...	0.0000	0.000000	0.000000	0.000000	0.0000	0.0000	0.000	0.000	0.000	0.000000
4	Alderwood, Long Branch	0.0000	0.000000	0.000000	0.000000	0.0000	0.0000	0.000	0.000	0.000	0.000000
5	Bathurst Manor, Downsview North, Wilson Heights	0.0000	0.000000	0.000000	0.000000	0.0000	0.0000	0.000	0.000	0.000	0.000000
6	Bayview Village	0.0000	0.000000	0.000000	0.000000	0.0000	0.0000	0.000	0.000	0.000	0.000000
7	Bedford Park, Lawrence Manor	0.0000	0.000000	0.000000	0.000000	0.0000	0.0000	0.000	0.000	0.000	0.040000

Getting the top five venues in each neighbourhood

----Adelaide, King, Richmond----

	venue	freq
0	Coffee Shop	0.06
1	Café	0.05
2	Bar	0.04
3	American Restaurant	0.04
4	Steakhouse	0.04

	Neighbourhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
0	Adelaide, King, Richmond	Coffee Shop	Café	Thai Restaurant	Steakhouse	American Restaurant
1	Agincourt	Lounge	Breakfast Spot	Sandwich Place	Chinese Restaurant	Yoga Studio
2	Agincourt North, L'Amoreaux East, Milliken, St...	Park	Playground	Asian Restaurant	Yoga Studio	Drugstore
3	Albion Gardens, Beaumont Heights, Humbertgate, ...	Grocery Store	Fried Chicken Joint	Pizza Place	Sandwich Place	Fast Food Restaurant
4	Alderwood, Long Branch	Pizza Place	Gym	Coffee Shop	Pharmacy	Skating Rink

----Agincourt----

	venue	freq
0	Sandwich Place	0.25
1	Breakfast Spot	0.25
2	Lounge	0.25
3	Chinese Restaurant	0.25
4	Accessories Store	0.00

----Agincourt North, L'Amoreaux East, Milliken, Steeles East----

	venue	freq
0	Playground	0.33

Clustering the neighbourhoods



Result

- We observe that downtown Toronto and central toronto are the best location for a new branch for our customer “Cofee-mugs”

East Toronto	0	Café	Coffee Shop	Gastropub	Bakery	Italian Restaurant
Central Toronto	0	Hotel	Park	Gym	Grocery Store	Breakfast Spot
Central Toronto	0	Coffee Shop	Yoga Studio	Bagel Shop	Fast Food Restaurant	Mexican Restaurant
Central Toronto	0	Pizza Place	Dessert Shop	Sandwich Place	Sushi Restaurant	Restaurant
Central Toronto	0	Coffee Shop	Pub	Fried Chicken Joint	American Restaurant	Light Rail Station
Downtown Toronto	0	Coffee Shop	Restaurant	Café	Pizza Place	Italian Restaurant
Downtown Toronto	0	Coffee Shop	Japanese Restaurant	Sushi Restaurant	Gay Bar	Restaurant
Downtown Toronto	0	Coffee Shop	Pub	Bakery	Park	Theater
Downtown Toronto	0	Coffee Shop	Clothing Store	Café	Cosmetics Shop	Middle Eastern Restaurant
Downtown Toronto	0	Coffee Shop	Café	Hotel	Restaurant	Cosmetics Shop
Downtown Toronto	0	Coffee Shop	Cocktail Bar	Italian Restaurant	Cheese Shop	Café
Downtown Toronto	0	Coffee Shop	Italian Restaurant	Café	Sandwich Place	Middle Eastern Restaurant
Downtown Toronto	0	Coffee Shop	Café	Steakhouse	Bar	Thai Restaurant
Downtown Toronto	0	Coffee Shop	Aquarium	Hotel	Italian Restaurant	Café

Conclusion

- Our location, Adelaide lies in the cluster number 0.
- We observe that downtown Toronto and central Toronto have successful cafe businesses just like our neighbourhood Adelaide.