

Bowling Alley near York University, Toronto

Balaji Sundarrangan

Problem Statement

- ▶ The young students of York University do not have a place to hang-out nearby their campus
- ▶ The Nearest bowling alley is about 10 kilometers
- ▶ Most of the food outlets close by 10 pm
- ▶ There is no Karaoke bar nearby to listen to foot-tapping music

Data Science for a Solution

- ▶ Use Python to import Neighborhood data from a Wikipedia site
- ▶ Identify top most venues that draw crowd
- ▶ Explore the neighborhood
- ▶ Use Data Science approach like K-Means for clustering the neighborhood
- ▶ Analyze the neighborhood to see what kind of activities are already present
- ▶ Examine the clusters
- ▶ Provide observations and recommendations

Scrape the data for a dataset

Index	PostalCode	Borough	Neighborhood	Latitude	Longitude
0	M3A	North York	Parkwoods	43.753259	-79.329656
1	M4A	North York	Victoria Village	43.725882	-79.315572
2	M6A	North York	Lawrence Manor, Lawrence Heights	43.718518	-79.464763
3	M3B	North York	Don Mills	43.745906	-79.352188
4	M4B	East York	Parkview Hill, Woodbine Gardens	43.706397	-79.309937
5	M6B	North York	Glencairn	43.709577	-79.445073
13	M4H	East York	Thornccliffe Park	43.705369	-79.349372
14	M2J	North York	Fairview, Henry Farm, Oriole	43.778517	-79.346556
15	M3J	North York	Northwood Park, York University	43.767980	-79.487262
16	M4J	East York	East Toronto, Broadview North (Old East York)	43.685347	-79.338106
17	M2K	North York	Bayview Village	43.786947	-79.385975
18	M3K	North York	Downsview	43.737473	-79.464763
19	M2L	North York	York Mills, Silver Hills	43.757490	-79.374714
20	M3L	North York	Downsview	43.739015	-79.506944
21	M6L	North York	North Park, Maple Leaf Park, Upwood Park	43.713756	-79.490074
22	M9L	North York	Humber Summit	43.756303	-79.565963
23	M2M	North York	Willowdale, Newtonbrook	43.789053	-79.408493
24	M3M	North York	Downsview	43.728496	-79.495697
25	M5M	North York	Bedford Park, Lawrence Manor East	43.733283	-79.419750

Choose York University

Explore the Neighborhoods

Index	Name	Categories	Latitude	Longitude
0	MUSE Massage Spa	Massage Studio	43.765686	-79.489318
1	Caribbean Heat	Caribbean Restaurant	43.764155	-79.490227
2	Bamiyan Kabob	Middle Eastern Restaurant	43.773769	-79.492741
3	Nino D'Aversa	Pizza Place	43.759913	-79.488885
4	Elite Restaurant	Restaurant	43.767935	-79.475379
5	Tim Hortons	Coffee Shop	43.764289	-79.488790
6	Tim Hortons	Coffee Shop	43.768074	-79.472489
7	Walmart Supercentre	Furniture / Home Store	43.757860	-79.488981
8	Decorium	Furniture / Home Store	43.776867	-79.474017
9	Thai Express	Restaurant	43.773536	-79.501941
10	Dollarama	Discount Store	43.756249	-79.487950
11	Starbucks	Coffee Shop	43.766762	-79.475957
12	Aroma Espresso Bar	Coffee Shop	43.769918	-79.502217
13	Subway	Sandwich Place	43.767815	-79.469573
14	Oishi Sushi	Japanese Restaurant	43.763523	-79.490136
15	TD Canada Trust	Bank	43.762819	-79.490251
16	Tim Hortons	Coffee Shop	43.760737	-79.499224
17	Tim Hortons	Coffee Shop	43.774266	-79.493165
18	Tim Hortons	Coffee Shop	43.772286	-79.503403
19	Petro-Canada	Gas Station	43.760887	-79.499426
20	Tim Hortons (TEL Building)	Coffee Shop	43.773197	-79.501292

Cluster Neighborhoods

- ▶ Run K-Means to cluster the neighborhoods into 5 clusters
- ▶ See below a sample of Cluster 1.0, that has most common venues displayed

index	PostalCode	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 Cor V	
0	0	M3A	North York	Parkwoods	43.753259	-79.329656	1.0	Park	Construction & Landscaping	Food & Drink Shop	Yoga Studio	Distribution Center	Comfort Food Restaurant	Convenience Store	Cosmetics Shop	Curlin
1	1	M4A	North York	Victoria Village	43.725882	-79.315572	1.0	Coffee Shop	Pizza Place	Portuguese Restaurant	Hockey Arena	Intersection	Discount Store	Comfort Food Restaurant	Construction & Landscaping	Conver
2	3	M6A	North York	Lawrence Manor, Lawrence Heights	43.718518	-79.464763	1.0	Clothing Store	Accessories Store	Furniture / Home Store	Athletics & Sports	Miscellaneous Shop	Boutique	Event Space	Coffee Shop	Arts &
3	7	M3B	North York	Don Mills	43.745906	-79.352188	1.0	Japanese Restaurant	Coffee Shop	Restaurant	Asian Restaurant	Gym	Beer Store	Café	Italian Restaurant	San
4	8	M4B	East York	Parkview Hill, Woodbine Gardens	43.706397	-79.309937	1.0	Pizza Place	Pet Store	Athletics & Sports	Gastropub	Pharmacy	Fast Food Restaurant	Bank	Intersection	F (C
5	10	M6B	North York	Glencairn	43.709577	-79.445073	1.0	Italian Restaurant	Pub	Asian Restaurant	Japanese Restaurant	Bakery	Distribution Center	Discount Store	Diner	Din Rest
6	13	M3C	North York	Don Mills	43.725900	-79.340923	1.0	Japanese Restaurant	Coffee Shop	Restaurant	Asian Restaurant	Gym	Beer Store	Café	Italian Restaurant	San
7	14	M4C	East York	Woodbine Heights	43.695344	-79.318389	1.0	Pharmacy	Athletics & Sports	Park	Beer Store	Curling Ice	Skating Rink	Cosmetics Shop	Convenience Store	Cons Land

Observations and Recommendations

Observations:

- ▶ There are Coffee shops (Tim Hortons, Starbucks, Aroma Espresso Bar)
- ▶ There are pizza places (Pizza Nova, Domino's Pizza, Pizza Pizza)
- ▶ None of the above are open beyond 10 pm
- ▶ Most frequented places are
 - ▶ Cafeteria, Baseball Field, Park, Home Store

Recommendations:

- ▶ Humberlea, Emery (43.724766, -79.532242)
 - ▶ - For its proximity to Expressway 401 and other establishments.
- ▶ Weston (43.706876, -79.518188)
 - ▶ - For its proximity to Expressway 407 and other establishments.