

Finding a neighborhood to install a Pizza Place in Toronto

IBM Professional Certificate in Data Science
Final Project Capstone

Introduction

- ▶ A client is looking to open an Pizza Place (PP) in Toronto and he/she doesn't know where to open it although a neighborhood with no PP among their top venues is aimed.
- ▶ Thus, by using the foursquare api we will explore the top5 most common venues in each neighborhood to see which neighborhood lacks from an PP.

Data

- ▶ The data to be employed will be the list of the neighborhood of Toronto.
- ▶ A group per 150 venues within a radius of 800 m from the coordinates of the neighborhood will be extracted from each neighbourhood by using Foursquare API.

Methodology-steps

- ▶ Preparing the dataframe with Toronto's neighborhoods and its coordinates
- ▶ Finding top venues as restaurants in Toronto
 - ▶ Download and Explore Dataset
 - ▶ Explore Neighborhoods
 - ▶ Filtering only Restaurant and food places venues
- ▶ Neighborhoods analysis
 - ▶ Analyzing each Neighborhood
 - ▶ Cluster Neighborhoods
 - ▶ Examine Clusters and decide on which neighborhood install our pizza place

Results

- Graphical distribution of neighborhoods in Toronto map



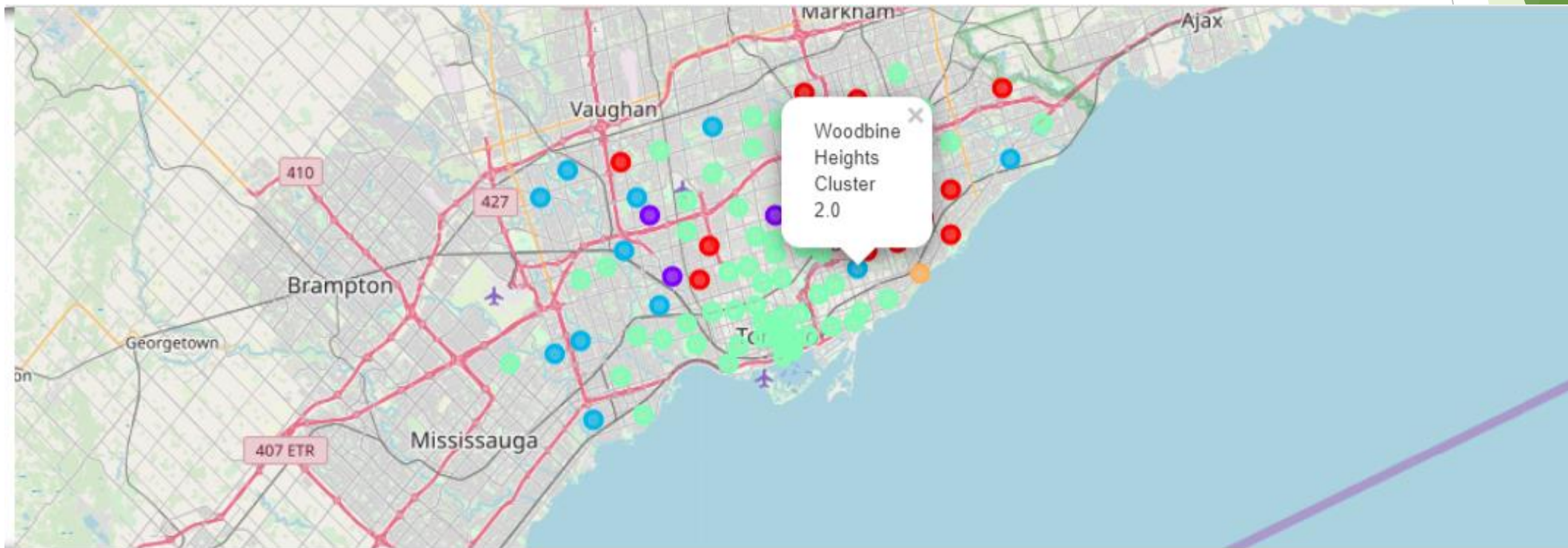
Results

- ▶ 1345 restaurant and food places venues/3988 total of venues in Toronto

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
0	Adelaide, King, Richmond	Sushi Restaurant	American Restaurant	Asian Restaurant	Steakhouse	Gastropub
1	Agincourt	Chinese Restaurant	Sushi Restaurant	American Restaurant	Sandwich Place	Latin American Restaurant
2	Agincourt North, L'Amoreaux East, Milliken, St...	Chinese Restaurant	Pizza Place	Korean Restaurant	Noodle House	Fast Food Restaurant
3	Albion Gardens, Beaumont Heights, Humbergate, ...	Pizza Place	Sandwich Place	Fast Food Restaurant	Vietnamese Restaurant	Doner Restaurant
4	Alderwood, Long Branch	Pizza Place	Sandwich Place	Vietnamese Restaurant	Doner Restaurant	Eastern European Restaurant

Results

- Clustering with k-means the Neighborhood in Toronto. 5 clusters



Results

- Neighborhoods from each cluster that not have Pizza place within their 5 top restaurant venues (1/2):

Cluster 0: 5 options

	Borough	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
0	Scarborough	0.0	Fast Food Restaurant	Chinese Restaurant	Vietnamese Restaurant	French Restaurant	Empanada Restaurant
6	Scarborough	0.0	Sandwich Place	Chinese Restaurant	Fast Food Restaurant	Vietnamese Restaurant	Dumpling Restaurant
10	Scarborough	0.0	Indian Restaurant	Fast Food Restaurant	Chinese Restaurant	Vietnamese Restaurant	BBQ Joint
18	North York	0.0	Fast Food Restaurant	Japanese Restaurant	American Restaurant	Restaurant	Sandwich Place
74	York	0.0	Mexican Restaurant	Japanese Restaurant	Fast Food Restaurant	Gastropub	Empanada Restaurant

Cluster 1: 3 options

	Borough	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
32	North York	1.0	Vietnamese Restaurant	Restaurant	American Restaurant	Dumpling Restaurant	Indian Chinese Restaurant
44	Central Toronto	1.0	Restaurant	French Restaurant	Eastern European Restaurant	Empanada Restaurant	Ethiopian Restaurant
80	York	1.0	Restaurant	Sandwich Place	Dim Sum Restaurant	Dumpling Restaurant	Eastern European Restaurant

Cluster 2: 0 options

	Borough	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
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Results

- Neighborhoods from each cluster that not have Pizza place within their 5 top restaurant venues (2/2):

	Borough	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
1	Scarborough	3.0	Italian Restaurant	Burger Joint	Indian Chinese Restaurant	Hotpot Restaurant	Hawaiian Restaurant
4	Scarborough	3.0	Indian Restaurant	Hakka Restaurant	Chinese Restaurant	Caribbean Restaurant	Thai Restaurant
11	Scarborough	3.0	Middle Eastern Restaurant	Vietnamese Restaurant	Restaurant	Korean Restaurant	Seafood Restaurant
12	Scarborough	3.0	Chinese Restaurant	Sushi Restaurant	American Restaurant	Sandwich Place	Latin American Restaurant
19	North York	3.0	Japanese Restaurant	Chinese Restaurant	Vietnamese Restaurant	French Restaurant	Empanada Restaurant
21	North York	3.0	Korean Restaurant	Indian Restaurant	Middle Eastern Restaurant	Japanese Restaurant	Sandwich Place
26	North York	3.0	Japanese Restaurant	Caribbean Restaurant	Vietnamese Restaurant	French Restaurant	Empanada Restaurant
27	North York	3.0	Japanese Restaurant	Italian Restaurant	Chinese Restaurant	Middle Eastern Restaurant	Fast Food Restaurant
30	North York	3.0	Vietnamese Restaurant	Middle Eastern Restaurant	Turkish Restaurant	Sandwich Place	Chinese Restaurant
34	North York	3.0	Portuguese Restaurant	French Restaurant	Eastern European Restaurant	Empanada Restaurant	Ethiopian Restaurant
37	East Toronto	3.0	Japanese Restaurant	Gastropub	Sandwich Place	Indian Restaurant	Asian Restaurant
38	East York	3.0	Burger Joint	Restaurant	Sandwich Place	Italian Restaurant	Indian Restaurant
42	East Toronto	3.0	Indian Restaurant	Italian Restaurant	Fast Food Restaurant	Sandwich Place	Burger Joint
48	Central Toronto	3.0	Japanese Restaurant	Sandwich Place	Thai Restaurant	Vietnamese Restaurant	Filipino Restaurant
49	Central Toronto	3.0	Sushi Restaurant	Italian Restaurant	Thai Restaurant	Sandwich Place	French Restaurant
53	Downtown Toronto	3.0	Italian Restaurant	Restaurant	Thai Restaurant	Mexican Restaurant	Sandwich Place
54	Downtown Toronto	3.0	Gastropub	Middle Eastern Restaurant	Ramen Restaurant	Restaurant	Italian Restaurant
55	Downtown Toronto	3.0	Italian Restaurant	Restaurant	American Restaurant	Gastropub	Seafood Restaurant
56	Downtown Toronto	3.0	Restaurant	Italian Restaurant	Japanese Restaurant	Seafood Restaurant	Gastropub
57	Downtown Toronto	3.0	Italian Restaurant	Japanese Restaurant	Chinese Restaurant	Burger Joint	Ramen Restaurant
58	Downtown Toronto	3.0	Sushi Restaurant	American Restaurant	Asian Restaurant	Steakhouse	Gastropub
59	Downtown Toronto	3.0	Italian Restaurant	Restaurant	Japanese Restaurant	Steakhouse	Indian Restaurant
60	Downtown Toronto	3.0	Restaurant	Italian Restaurant	Steakhouse	American Restaurant	Gastropub
61	Downtown Toronto	3.0	Restaurant	Seafood Restaurant	American Restaurant	Asian Restaurant	Gastropub
64	Central Toronto	3.0	Italian Restaurant	Sushi Restaurant	Japanese Restaurant	Chinese Restaurant	Gastropub

Cluster 4: 1 option

	Borough	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
9	Scarborough	4.0	Thai Restaurant	Vietnamese Restaurant	French Restaurant	Eastern European Restaurant	Empanada Restaurant

Discussion

- ▶ Among a total of 103 neighborhood that exist in Toronto 46 six of them have not a Pizza Place in their 5 top restaurant venues.
- ▶ The clustering technique allow us to refine the neighbourhood candidates to install our Pizza Place since in every clusters except cluster 3 we have no more than 5 options of choice.
- ▶ The Cluster 3 has 37 optional neighborhood which seems unbearable to make a decision. Therefore, a finer processing in this cluster has to be made in order decrease the amount of options. The criteria of such finer processing could be the vicinity of other entertainment venues such as casinos, sport arenas,etc.
- ▶ As we have get a total of 46 neighborhoods candidates which is quite a lot to make a decision, we can say that our system is not quite feasible for finding a neighborhood to install a Pizza Place. Thus, we can check if the system is better for another kind of restaurant.