



# WHERE TO OPEN A LEBANESE RESTAURANT IN MONTREAL

BY JOSEPH SAAD

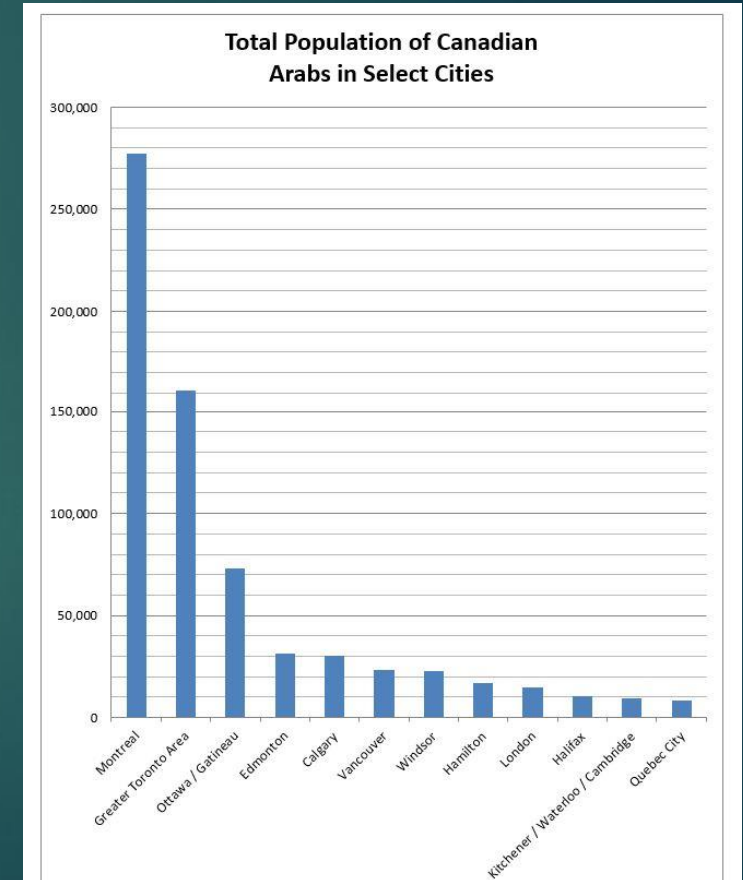
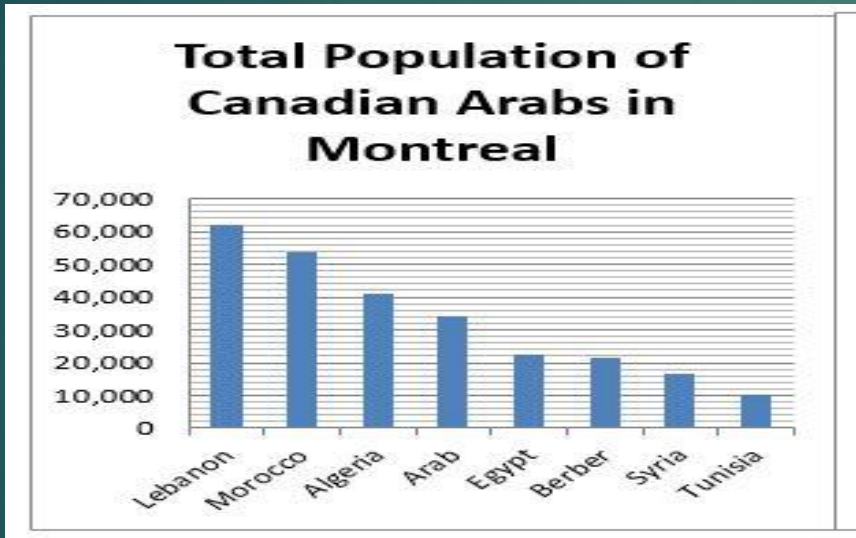
# Background

1. Lebanon has been struggling economically since 1990.
2. Starting October 2019, a revolution has started and economy stalled. Inflation exceeded 33% and unemployment rate above 25%.
3. As a result, immigration has increased rapidly!
4. A friend of mine wants to transform this sad reality to a good investment and at the same time help the immigrants.
5. Since Lebanon is famous for its tasty Mediterranean cuisine, the best investment would be to open a restaurant where these immigrants are heading, thus earning customers and allowing them to enjoy the cuisine they are used to!

# Data Acquisition(1)

1. It is estimated that the total number of Lebanese immigrants in 2019 alone was 61,924 person.
2. Out of these 61,924 immigrants, UN revealed that 30,644 immigrants immigrated to Canada at a percentage of over 49% of total immigrants.
3. Thus CANADA should be our country of interest for this topic.
4. Our next step should be determining what city should we focus on as Canada is a very big country.

Montreal holds the highest concentration of Arabs in Canada with the Lebanese being the highest percentage among the Arabs.



# Data Acquisition (2)

- Using Wikipedia and worldpostalcode.com, we searched and filled Montreal's PostalCodes, Boroughs, Neighborhoods, Latitude, and Longitude in a csv file that shall be used in our methodology.

	A	B	C	D	E
1	PostalCode	Borough	Neighborhood	Latitude	Longitude
2	H3L	Ahuntsic-Cartierville	Ahuntsic	45.5553	-73.67139
3	H3M	Ahuntsic-Cartierville	Nouveau-Bordeaux	45.53543	-73.68711
4	H4J	Ahuntsic-Cartierville	Cartierville	45.52899	-73.70293
5	H2Y	Ahuntsic-Cartierville	Saint-Sulpice	45.50453	-73.55515
6	H2B	Ahuntsic-Cartierville	Sault-au-Recollet (Ile de la Visitation)	45.57523	-73.66274
7	H1K	Anjou	Anjou	45.60219	-73.55961
8	H3T	Cote-des-Neiges-Notre-Dame-de-Grace	Cote-des-Neiges	45.49853	-73.62716
9	H4B	Cote-des-Neiges-Notre-Dame-de-Grace	Notre-Dame-de-Grace	45.46711	-73.6225
10	H3W	Cote-des-Neiges-Notre-Dame-de-Grace	Snowdon	45.48899	-73.64058

# Approach

- ▶ The best approach to solve such a topic is as follows:
- ▶ 1. Determine the top 10 venues for each neighborhood using foursquare location services.
- ▶ 2. Use k-means clustering algorithm to cluster similar neighborhoods. (Using Elbow Square Method, we found out  $k = 5$  to be the optimal)
- ▶ 3. Check each of the 5 clusters to find its unique characteristics.
- ▶ 4. Determine the best cluster that can fit our Lebanese Restaurant.



# Approach Step 1 (Top 10 Venues for each Neighborhood)

	Neighborhood	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	Ahuntsic	Deli / Bodega	Rental Car Location	Bus Station	Fast Food Restaurant	Metro Station	Gas Station	Park	Grocery Store	Restaurant	Coffee Shop
1	Anjou	Clothing Store	Coffee Shop	Burger Joint	Grocery Store	Pizza Place	Restaurant	Electronics Store	Fabric Shop	Fast Food Restaurant	Shop & Service
2	Cartierville	Construction & Landscaping	Kids Store	Yoga Studio	English Restaurant	Football Stadium	Food Court	Food & Drink Shop	Food	Fish & Chips Shop	Fast Food Restaurant
3	Cite du Multimedia	Café	French Restaurant	Hotel	Restaurant	Speakeasy	Seafood Restaurant	Portuguese Restaurant	History Museum	Cocktail Bar	Yoga Studio
4	Citta Italiana	Gas Station	Dessert Shop	Hockey Arena	Discount Store	Drugstore	Yoga Studio	Event Space	Food Court	Food & Drink Shop	Food
5	Cote-Saint-Paul	Soccer Stadium	Home Service	Pharmacy	Yoga Studio	Empanada Restaurant	Food & Drink Shop	Food	Fish & Chips Shop	Fast Food Restaurant	Farmers Market

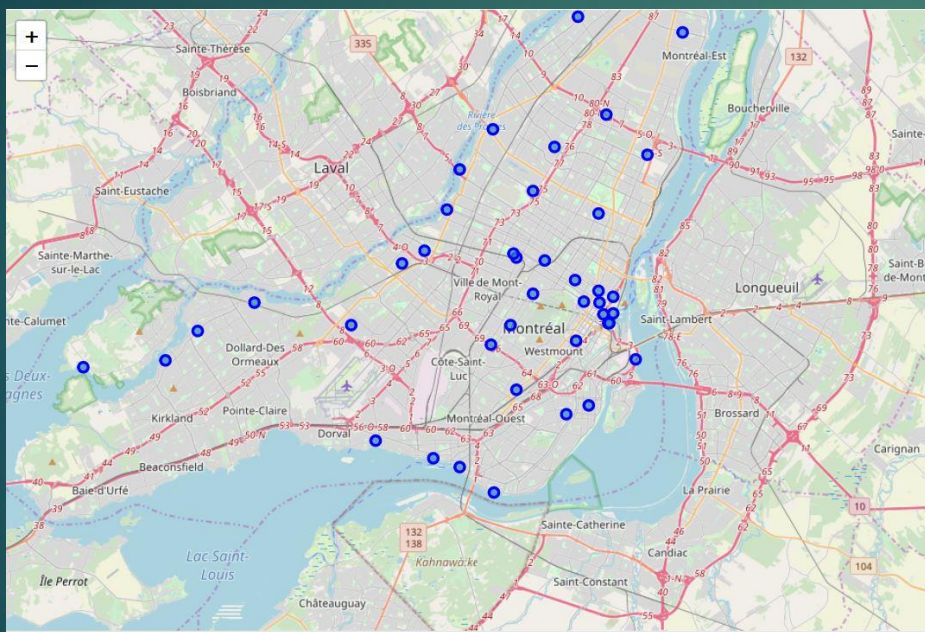
# Approach Step 2 (Use k-Means Clustering Algorithm)

	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 Most Common Venue	10th Most Common Venue
0	H3L	Ahuntsic-Cartierville	Ahuntsic	45.55530	-73.67139	0	Deli / Bodega	Rental Car Location	Bus Station	Fast Food Restaurant	Metro Station	Gas Station	Park	Grocery Store	Restaurant	
1	H3M	Ahuntsic-Cartierville	Nouveau-Bordeaux	45.53543	-73.68711	2	Tennis Court	Yoga Studio	English Restaurant	Football Stadium	Food Court	Food & Drink Shop	Food	Fish & Chips Shop	Fast Food Restaurant	
2	H4J	Ahuntsic-Cartierville	Cartierville	45.52899	-73.70293	4	Construction & Landscaping	Kids Store	Yoga Studio	English Restaurant	Football Stadium	Food Court	Food & Drink Shop	Food	Fish & Chips Shop	R
3	H2Y	Ahuntsic-Cartierville	Saint-Sulpice	45.50453	-73.55515	0	Hotel	Café	French Restaurant	Italian Restaurant	Steakhouse	Plaza	Restaurant	Speakeasy	Gift Shop	
4	H2B	Ahuntsic-Cartierville	Sault-au-Recollet (Ile de la Visitation)	45.57523	-73.66274	0	Park	Gas Station	Café	History Museum	Yoga Studio	Food Court	Food & Drink Shop	Food	Fish & Chips Shop	R

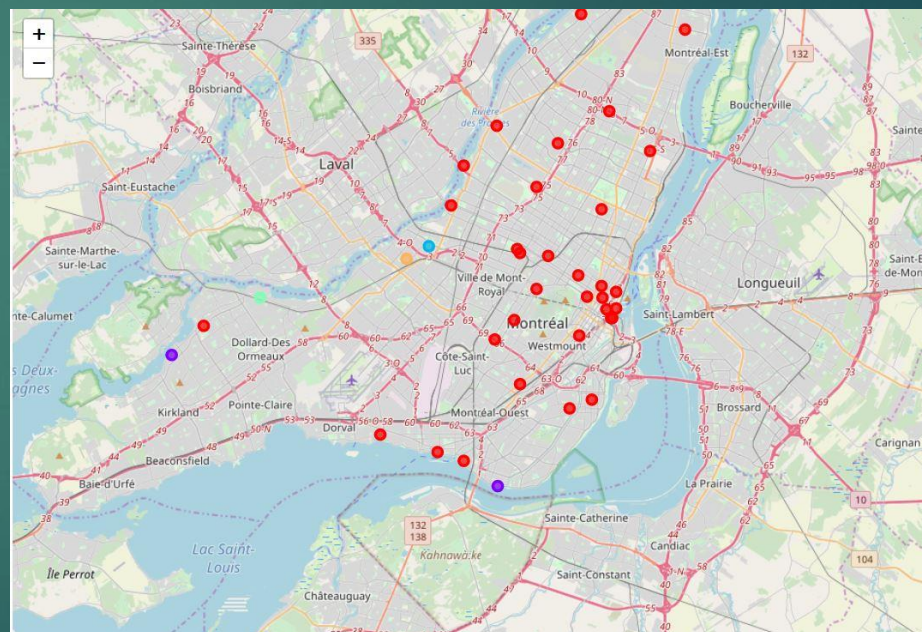


# Visualization of Clustering Algorithm

Neighborhoods before Clustering



Neighborhoods after Clustering



# Approach Step 3 (Check clusters)

- ▶ Clusters 4, 3 and 2 are formed of 1 neighborhood each.
- ▶ Cluster 1 is formed of 2 neighborhoods.
- ▶ Cluster 0 is formed of the remaining neighborhoods.
- ▶ Cluster 4 contains construction and landscaping amenities.
- ▶ Cluster 3 contains playgrounds and train stations.
- ▶ Cluster 2 contains tennis courts, yoga studios and farmer markets.
- ▶ Cluster 1 contains performing arts venues, convenience and grocery stores.
- ▶ Cluster 0 contains a big variety from banks and parks to all types of restaurants and food amenities.

# Approach Step 4 (Determine Best Cluster for our restaurant)

- ▶ As we saw in the previous slide, Cluster 0 contains the majority of restaurants and leisure amenities such as parks and banks that increase the probability of possible restaurant customers.
- ▶ Moreover 2 of the neighborhoods in cluster 0 (Cote-des-Neiges and Nun's Island) have Middle Eastern restaurants as the second and ninth most common venues respectively.
- ▶ All this show that the Lebanese Restaurant we want to open has to be in one of these 2 neighborhoods or in any neighborhood belonging to cluster 0.



# Middle Eastern Restaurants are abundant in cluster 0 and specifically in neighborhoods Cote-des-Neiges and Nun's Island

0	Ahuntsic	0	Deli / Bodega	Rental Car Location	Bus Station	Fast Food Restaurant	Metro Station	Gas Station	Park	Grocery Store	Restaurant	Coffee Shop
3	Saint-Sulpice	0	Hotel	Café	French Restaurant	Italian Restaurant	Steakhouse	Plaza	Restaurant	Speakeasy	Gift Shop	Sandwich Place
4	Sault-au-Recollet (Ile de la Visitation)	0	Park	Gas Station	Café	History Museum	Yoga Studio	Food Court	Food & Drink Shop	Food	Fish & Chips Shop	Fast Food Restaurant
5	Anjou	0	Clothing Store	Coffee Shop	Burger Joint	Grocery Store	Pizza Place	Restaurant	Electronics Store	Fabric Shop	Fast Food Restaurant	Shop & Service
6	Cote-des-Neiges	0	Coffee Shop	Middle Eastern Restaurant	Vietnamese Restaurant	Pharmacy	Pub	Farmers Market	Thai Restaurant	Bar	Convenience Store	Burger Joint
7	Notre-Dame-de-Grace	0	Indian Restaurant	Grocery Store	Café	Pharmacy	Korean Restaurant	Bank	Persian Restaurant	Convenience Store	Pub	Diner
8	Snowdon	0	Rental Car Location	Gym	Hotel	Salon / Barbershop	Italian Restaurant	Gas Station	Park	History Museum	Pizza Place	Fast Food Restaurant
9	Ville Saint-Pierre	0	Italian Restaurant	Café	Cheese Shop	Ice Cream Shop	Pizza Place	Pub	Farmers Market	Mexican Restaurant	Bakery	Falafel Restaurant
10	LaSalle	0	Playground	Fast Food Restaurant	History Museum	Historic Site	Park	Yoga Studio	Empanada Restaurant	Food & Drink Shop	Food	Fish & Chips Shop
12	Mile End	0	Coffee Shop	Tennis Court	Art Gallery	Comfort Food Restaurant	Tea Room	Sushi Restaurant	Breakfast Spot	Café	Sandwich Place	Indian Restaurant
13	Milton-Parc	0	Coffee Shop	Café	Pizza Place	Japanese Restaurant	Bar	Hotel	Restaurant	Bakery	Pub	Nightclub
14	DeLorimier	0	Café	Breakfast Spot	Bakery	French Restaurant	Japanese Restaurant	Portuguese Restaurant	Burger Joint	Bar	Restaurant	Record Shop
15	Jeanne-Mance	0	Pharmacy	Pizza Place	Asian Restaurant	Yoga Studio	Empanada Restaurant	Food Court	Food & Drink Shop	Food	Fish & Chips Shop	Fast Food Restaurant
16	Griffintown	0	Park	Pizza Place	Soccer Field	Asian Restaurant	Restaurant	Yoga Studio	Electronics Store	Food	Fish & Chips Shop	Fast Food Restaurant
18	Saint-Henri	0	Café	French Restaurant	Hotel	Restaurant	Speakeasy	Seafood Restaurant	Portuguese Restaurant	Cocktail Bar	History Museum	Polish Restaurant
19	Cote-Saint-Paul	0	Soccer Stadium	Home Service	Pharmacy	Yoga Studio	Empanada Restaurant	Food & Drink Shop	Food	Fish & Chips Shop	Fast Food Restaurant	Farmers Market
20	Ville-Emard	0	Park	Playground	Metro Station	Fast Food Restaurant	Yoga Studio	Food Court	Food & Drink Shop	Food	Fish & Chips Shop	Farmers Market
23	Hochelaga-Maisonneuve	0	Coffee Shop	Restaurant	Park	Yoga Studio	Empanada Restaurant	Food & Drink Shop	Food	Fish & Chips Shop	Fast Food Restaurant	Farmers Market
24	Montreal-Nord	0	Fast Food Restaurant	Comedy Club	Caribbean Restaurant	Yoga Studio	English Restaurant	Football Stadium	Food Court	Food & Drink Shop	Food	Fish & Chips Shop
25	Outremont	0	Park	Café	Diner	Metro Station	Bakery	Sandwich Place	Yoga Studio	Event Space	Food Court	Food & Drink Shop
26	Pierrefonds	0	Adult Boutique	Asian Restaurant	Dive Bar	Track	English Restaurant	Football Stadium	Food Court	Food & Drink Shop	Food	Fish & Chips Shop
28	Pointe-aux-Trembles	0	Fast Food Restaurant	Pharmacy	Discount Store	Sandwich Place	Coffee Shop	Grocery Store	Yoga Studio	Empanada Restaurant	Food & Drink Shop	Food
29	Riviere-des-Prairies	0	Pool	Liquor Store	Comedy Club	Grocery Store	Food Court	Food & Drink Shop	Food	Fish & Chips Shop	Fast Food Restaurant	Farmers Market
30	La Petite-Patrie	0	Café	Bar	French Restaurant	Vietnamese Restaurant	Diner	Thrift / Vintage Store	Pizza Place	Sushi Restaurant	Coffee Shop	Asian Restaurant
31	Rosemont	0	Park	Portuguese Restaurant	Dog Run	Furniture / Home Store	Supermarket	Grocery Store	Kids Store	Bus Stop	Pet Store	Convenience Store
33	Citta Italiana	0	Gas Station	Dessert Shop	Hockey Arena	Discount Store	Drugstore	Yoga Studio	Event Space	Food Court	Food & Drink Shop	Food
34	Nuns' Island	0	Grocery Store	Indian Restaurant	Café	Breakfast Spot	Bakery	Sandwich Place	Pizza Place	Pharmacy	Middle Eastern Restaurant	Mexican Restaurant
35	Downtown Montreal	0	Hotel	Coffee Shop	Vietnamese Restaurant	French Restaurant	Pub	Bar	Café	Karaoke Bar	Nightclub	Library
36	Cite du Multimedia	0	Café	French Restaurant	Hotel	Restaurant	Speakeasy	Seafood Restaurant	Portuguese Restaurant	History Museum	Cocktail Bar	Yoga Studio

# Conclusion

- ▶ This topic was created as a result of Lebanese immigration and a will to try to benefit and give benefit to others.
- ▶ This was transformed as a will to open a Lebanese restaurant to cater for the maximum number of emigrants possible.
- ▶ Studying immigration stats, collecting Canada's geographical data, utilizing foursquare location services, and applying K-means algorithm helped us to narrow down our search starting from the whole world down to two optimal neighborhoods in Montreal.