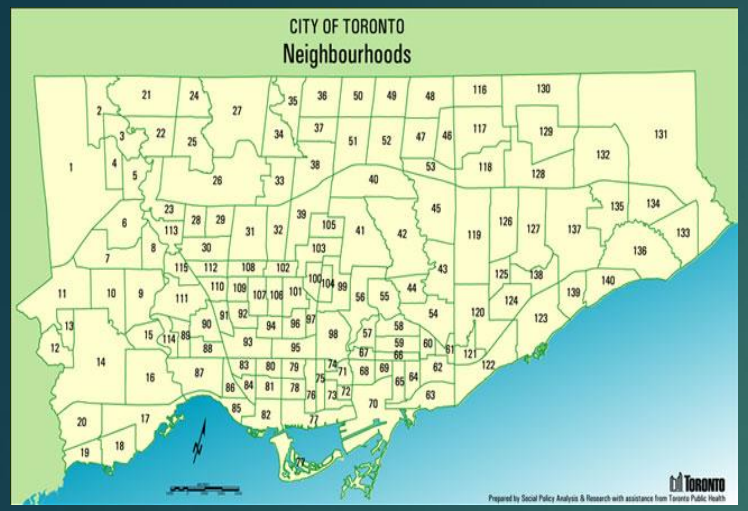


Which place in Toronto will you open a restaurant?

Which type of food would you buy ?

POWERED BY:

AYOUB WAHBI

Introduction :

There are many invistos witch invistigate in restaurants but there investisment do not sucsess , that is not by chance, becouse off the place chosen , the behaviors of people in this place , the type of product that the buy do not pay attention of client ,

Problems :

Now, I have a investor who want to open a restaurant in Canada , Toronto , his fist problem that he don't know a better place , and he looking for a safty place , and his second problem is wich type of food that the can make to pay attention o alml categorie o peaple ,

Data requirement:

-First phase :

We getting data from http://data.torontopolice.on.ca/datasets/neighbourhood-crime-rates-boundary-file-/data.

This data contain for each neighbors average of each type of crimes between 2014 and 2019

And wili use geopy to find latitude and langitude,

-Second phase:

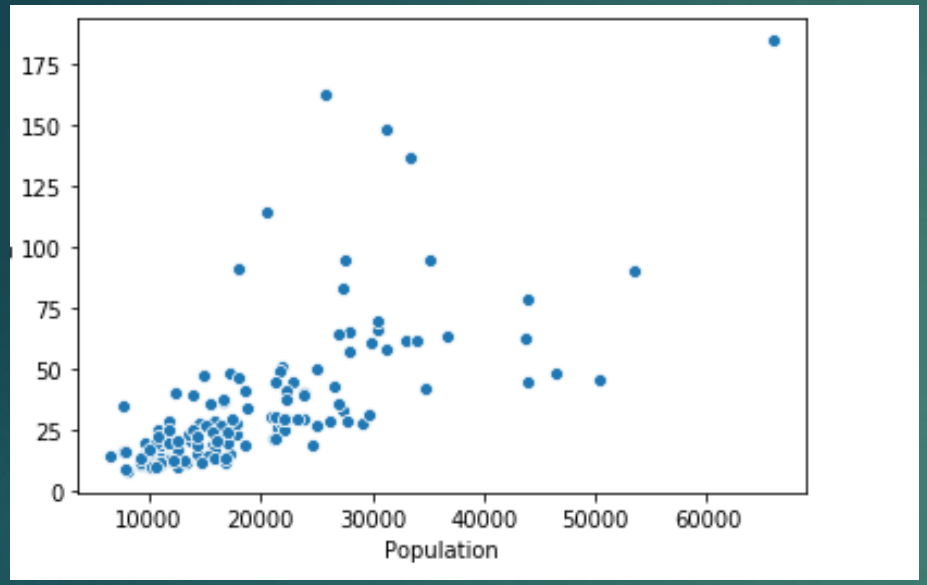
Foursquire to get restaurants in neighbors in data goting from the first phase

Exploring data 1:

	Neighbourhood	Hood_ID	Population	Assault_AVG	AutoTheft_AVG	BreakandEnter_AVG	Homicide_AVG	Homicide_CHG	Robbery_AVG	TheftOver_AVG
0	Yonge-St.Clair	97	12528	31.0	4.3	23.3	0.0	0.0	5.7	4.3
1	York University Heights	27	27593	333.2	106.3	113.2	0.8	-1.0	75.8	36.3
2	Lansing-Westgate	38	16164	70.7	23.7	38.8	1.7	-1.0	14.7	7.0
3	Yorkdale-Glen Park	31	14804	160.2	55.5	63.3	1.2	-0.5	31.5	22.5
4	Stonegate-Queensway	16	25051	83.2	28.7	52.8	0.0	0.0	20.7	6.0
...	...	...	...	...	...	...	...	...	...	...
135	Milliken	130	26572	83.8	58.5	108.3	0.2	1.0	32.7	16.5
136	Pleasant View	46	15818	46.0	13.5	19.8	0.2	0.0	11.8	3.8
137	Wychwood	94	14349	70.2	13.2	34.0	0.3	0.0	13.8	2.3
138	Leaside-Bennington	56	16828	32.8	18.2	33.3	0.2	0.0	7.5	5.2
139	Briar Hill-Belgravia	108	14257	73.7	18.2	36.7	0.2	0.0	21.5	5.0

	Neighbourhood	Population	Total_avg
0	Yonge-St.Clair	12528	9.800000
1	York University Heights	27593	94.942857
2	Lansing-Westgate	16164	22.228571
3	Yorkdale-Glen Park	14804	47.671429
4	Stonegate-Queensway	25051	27.342857

Exploring data 1

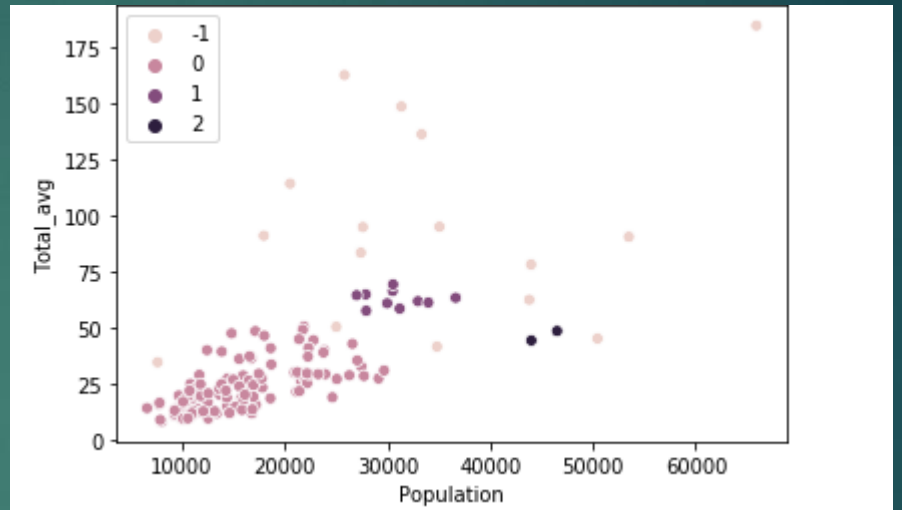


Ploting data and to see the desribution of data

there are like cluster in this figure, and we see that there are some place with great numbers of population and the avg is low or under 50 crimes in 5 years witch good for us . we see some point that are clustered and like they have some similarly

Modeling 1

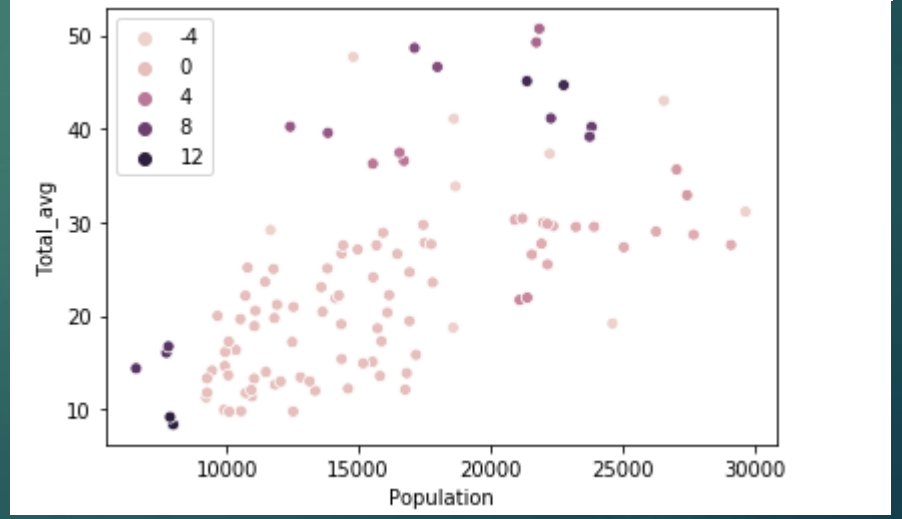
- Using DBSCAN
- Choose point with 0 number cluster



- Usins DBSCAN in the second times to

To remove noise,choose cluster with

Numbre 0



Exploring 2

- Using geopy to get latitude and langitude for each neighbor in final data goting from phase1

	Neighbourhood	Population	Total_avg	latitude	longitude
0	Yonge-St.Clair	12528	9.800000	43.688019	-79.394571
2	Lansing-Westgate	16164	22.228571	42.478656	-76.486138
7	Thistletown-Beaumond Heights	10360	16.371429	0.000000	0.000000
9	Danforth East York	17180	15.842857	43.686433	-79.300355
10	Humewood-Cedarvale	14365	15.400000	43.690844	-79.424931
...	...	...	...	...	...
134	Newtonbrook East	16097	20.357143	43.793886	-79.425679
136	Pleasant View	15818	13.585714	36.394216	-87.036669
137	Wychwood	14349	19.114286	-26.200556	28.127500
138	Leaside-Bennington	16828	13.885714	0.000000	0.000000
139	Briar Hill-Belgravia	14257	22.185714	0.000000	0.000000

Exploring data 2

- Using foursqureto det venues in each neighbos , and remove all venues whitch are not restaurant

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	id	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Yonge-St.Clair	43.688019	-79.394571	4ae22cf6f964a520778b21e3	Cava Restaurant	43.689809	-79.394932	Tapas Restaurant
1	Yonge-St.Clair	43.688019	-79.394571	4b15383bf964a52079a923e3	Capocaccia Café	43.685915	-79.393305	Italian Restaurant
2	Yonge-St.Clair	43.688019	-79.394571	5a119e738a6f175e860cac17	Mary Be Kitchen	43.687708	-79.395062	Restaurant
3	Yonge-St.Clair	43.688019	-79.394571	52acedc011d2bf5586251c3c	Union Social Eatery	43.687895	-79.394916	American Restaurant
4	Yonge-St.Clair	43.688019	-79.394571	4be349d763609c7439e11bff	Daeco Sushi	43.687838	-79.395652	Sushi Restaurant

Exploring data 2

- Extrait des dominating types of restaurants
- Regroupe all asian restaurants in Asiatique
- Choose the first 9 types whitch are dominating

Italian Restaurant	27
Restaurant	20
Sushi Restaurant	13
Fast Food Restaurant	12
Thai Restaurant	12
Korean Restaurant	11
Japanese Restaurant	10
Mexican Restaurant	10
Middle Eastern Restaurant	9
Indian Restaurant	7
American Restaurant	6
Vegetarian / Vegan Restaurant	5
Vietnamese Restaurant	5
French Restaurant	5
Seafood Restaurant	5
Caribbean Restaurant	4
Tapas Restaurant	3
Asian Restaurant	3

Modeling 2

- Grouping data by means of each type for each neighbor,

Neighborhood	Asiatique	Fast Food Restaurant	Italian Restaurant	Mexican Restaurant	Restaurant
Bathurst Manor	0.000000	1.000000	0.000000	0.000000	0.000000
Broadview North	0.000000	0.000000	0.000000	0.000000	1.000000
Corso Italia-Davenport	0.333333	0.000000	0.555556	0.111111	0.000000
Danforth East York	0.500000	0.000000	0.000000	0.500000	0.000000
Dufferin Grove	0.230769	0.076923	0.230769	0.153846	0.307692

Modeling 2

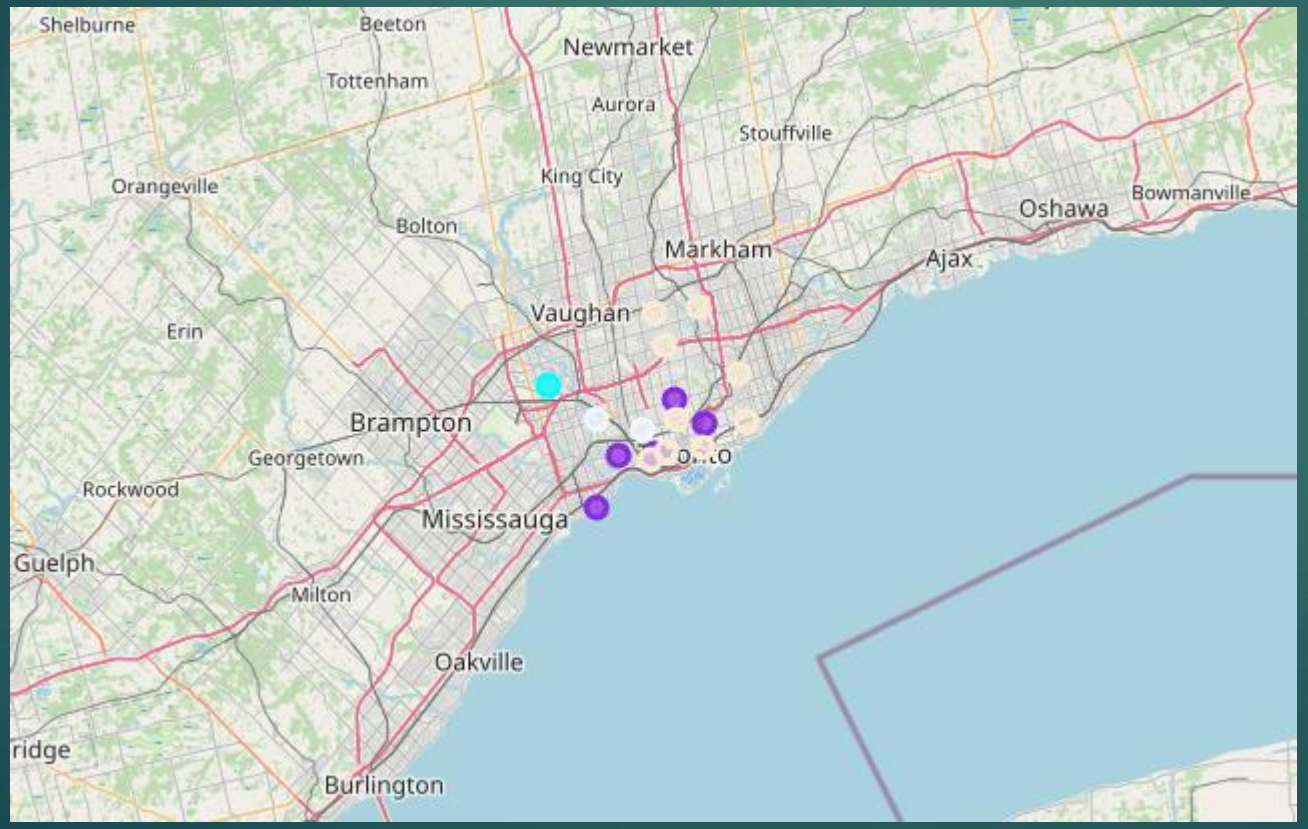
- We will use kmeans to cluster our data and choose k =5

Because we have 5 types of restaurants

Neighborhood	Asiatique	Fast Food Restaurant	Italian Restaurant	Mexican Restaurant	Restaurant	labels
Bathurst Manor	0.000000	1.000000	0.000000	0.000000	0.000000	1
Broadview North	0.000000	0.000000	0.000000	0.000000	1.000000	4
Corso Italia-Davenport	0.333333	0.000000	0.555556	0.111111	0.000000	0
Danforth East York	0.500000	0.000000	0.000000	0.500000	0.000000	2
Dufferin Grove	0.230769	0.076923	0.230769	0.153846	0.307692	4
Hillcrest Village	0.500000	0.000000	0.000000	0.000000	0.500000	2
Humber Heights-Westmount	0.000000	0.000000	1.000000	0.000000	0.000000	0
Kingsway South	0.000000	1.000000	0.000000	0.000000	0.000000	1
Lansing-Westgate	1.000000	0.000000	0.000000	0.000000	0.000000	2
Lawrence Park North	0.000000	0.000000	0.000000	1.000000	0.000000	3
Little Portugal	0.571429	0.000000	0.142857	0.000000	0.285714	2
Long Branch	0.000000	0.000000	0.000000	1.000000	0.000000	3
Morningside	0.000000	0.000000	1.000000	0.000000	0.000000	0

Modeling 2

- Posting the result in map



Conclusion

- Finally we arrived to solve our problems to found places in Toronto that are safe and we arrived to determine type of restaurants are dominating for each of this places

  0-Represent fast food and Italian restaurants

  1-Represent fast food restaurants

  2-Represent Italique and Asiatique restaurants

  3-Represent Mexican restaurants

  4-Represent all type restaurants