

Clustering Toronto's Neighborhoods According to Physical Activity and Health Indicators

- What is the most effective and ideal location to open a low-cost gym to promote health and fitness ?
 - Two things to take into account :
 1. Availability of Gyms, Parks, and other sports locations
 2. General unhealthiness of the neighborhood

Data

- The data used is Urban Heart data
- Urban HEART is a framework that a variety of organizations with diverse mandates can use together to maximize their collective impact on equity.
- Metrics : the number of gym, parks, and pools (using foursquare API) to assess the availability of sport activities. The Walk Score and the diabetes prevalence from the Urban HEART dataset.

Dataset

Neighborhood	Walk score	Diabetes	Latitude	Longitude	Gyms	Parks	FastFood	Pools
Agincourt North	66.0	9.5	43.808038	-79.266439	0	0	4	0
Alderwood	70.0	8.5	43.601717	-79.545232	1	0	1	1
Annex	94.0	5.5	43.670338	-79.407117	3	3	4	1
Banbury-Don Mills	67.0	6.5	43.751672	-79.370169	0	1	0	0
Bathurst Manor	61.0	8.5	43.665519	-79.411937	7	2	5	1
Bay Street Corridor	99.0	5.1	43.672798	-79.390734	21	6	7	8
Bayview Village	71.0	6.0	43.769197	-79.376662	0	0	2	0
Bayview Woods-Steeles	57.0	7.1	43.798127	-79.382973	0	0	0	0
Bendale	64.0	11.5	43.753520	-79.255336	0	2	1	0
Black Creek	62.0	12.7	45.622607	-77.156242	0	0	0	0

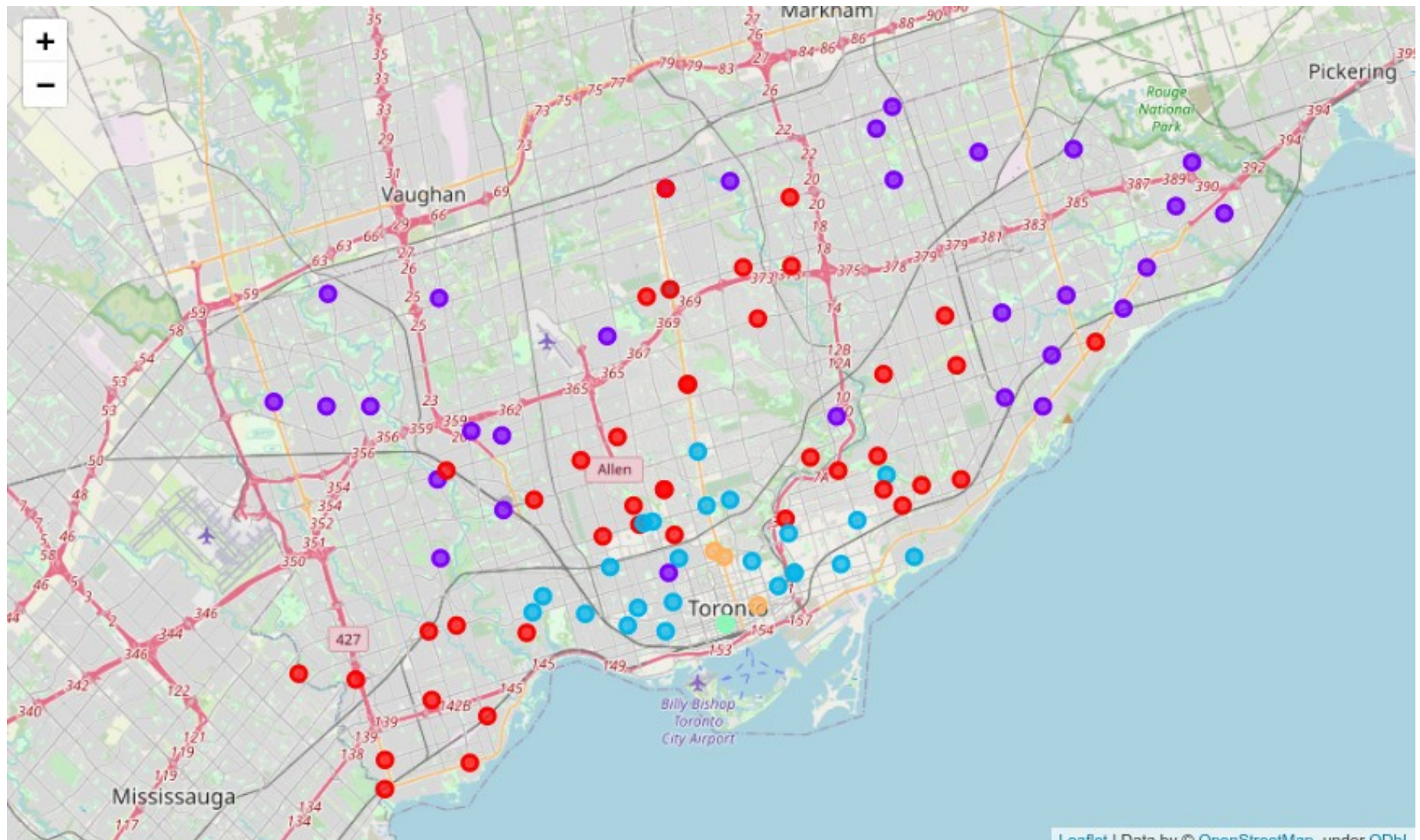
Methodology

1. Importation of Urban HEALTH dataset.
2. Getting the geolocation of each neighborhood using geopy.
3. Using Foursquare API to get the number of gym, parks, pools and fast food restaurants in each neighborhood.
4. Applying a k-means clustering to find the ideal location for the gym.

Results -Clusters

Cluster Labels		Neighborhood	Walk score	Diabetes	Latitude	Longitude	Gyms	Parks	FastFood	Pools
0	1	Agincourt North	66.0	9.5	43.808038	-79.266439	0	0	4	0
2	0	Alderwood	70.0	8.5	43.601717	-79.545232	1	0	1	1
3	2	Annex	94.0	5.5	43.670338	-79.407117	3	3	4	1
4	0	Banbury-Don Mills	67.0	6.5	43.751672	-79.370169	0	1	0	0
5	1	Bathurst Manor	61.0	8.5	43.665519	-79.411937	7	2	5	1
6	4	Bay Street Corridor	99.0	5.1	43.672798	-79.390734	21	6	7	8
7	0	Bayview Village	71.0	6.0	43.769197	-79.376662	0	0	2	0
8	1	Bayview Woods-Steeles	57.0	7.1	43.798127	-79.382973	0	0	0	0
11	1	Bendale	64.0	11.5	43.753520	-79.255336	0	2	1	0
13	1	Black Creek	62.0	12.7	45.622607	-77.156242	0	0	0	0

Results -Clusters



Finding the ideal location :

- Cluster 2 : No walking, prone to diabetes, and 3 times more fast food restaurants than gyms !!!

Cluster 2	
Walk score	59.617647
Diabetes	10.617647
Gyms	0.529412
Parks	0.647059
FastFood	1.529412
Pools	0.088235

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Conclusion

- Cluster 2 is in dire need of a gym, meaning that it contains the ideal locations to promote health and fitness in neighborhoods that clearly need it, and that opening up a gym there would turn a great profit because the absence of concurrence and the absence of alternative places to exercise.

Thank you for your attention !