

THE BATTLE OF NEIGHBORHOODS

GYM PROJECT IN TORONTO CANADA

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1 Introduction

Toronto is the capital city of the Canadian province of Ontario. It is the most populous city in Canada and the fourth most populous city in North America with approximately 2,731,571 inhabitants. It is an international centre of business, finance, arts, and culture, and is recognized as one of the most multicultural and cosmopolitan cities in the world. Its varied cultural institutions, which include numerous museums and galleries, festivals and public events, entertainment districts, national historic sites, and sports activities, attract over 43 million tourists each year.

The purpose of this project is to analyze Toronto's neighborhoods with the aim to identify the most appropriate place to open a fitness center. This industry is highly remunerated since specially in the last decades people have become more conscious about having a healthy lifestyle. The idea is to design a place where people can be part of a fitness community, make thousand of friends, being able to develop a huge variety of activities, to stay in shape and with the body of their dreams while having too much fun.

2 Business Problem

It consists on identifying the best location in the city of Toronto, CAD for opening a new fitness center. This is going to be done through a deeply analysis to obtain valuable information, computing some statistics and understanding the market competitiveness to maximize the probability of success.

3 Data Acquisition and Cleaning

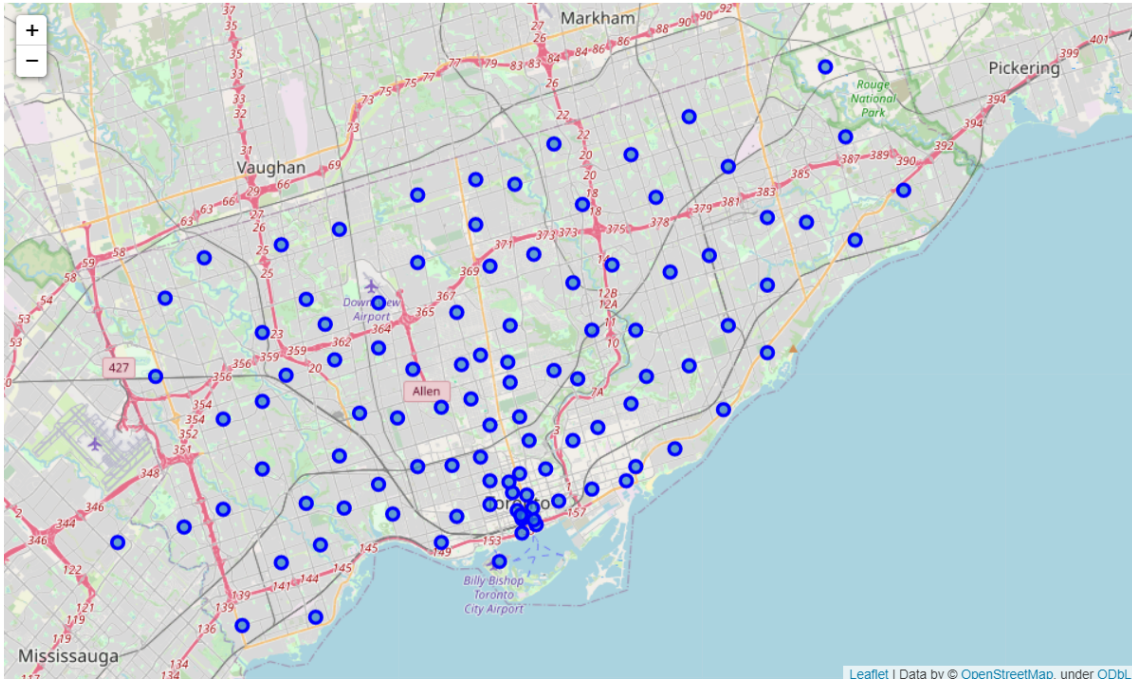
3.1 Data source

The data was obtained using the [foursquareAPI](#) from which we collect some geographical information for each neighborhood based on [Postcode-CAD](#) that shows a list of postal codes in Canada located within the city of Toronto in the province of Ontario.

3.2 Data cleaning

Data was scraped using foursquare API and it was stored in a table. The raw data is conformed basically by three variables: i) Postal Code, ii) Borough and iii) Neighborhood. There are several problems with the data set. First, all data has the symbol “\n” at the end of each word, hence, we remove this element using the replace function available in python. Second, many elements corresponding to the variables borough and neighborhood have missing (not assigned) values, we solve this problem eliminating all these rows. Third, as a part of data preparation we add the variables latitude as well as longitude for future analysis. Finally, we obtain a data frame which has 11 boroughs and 103 neighborhoods (see Figure 1).

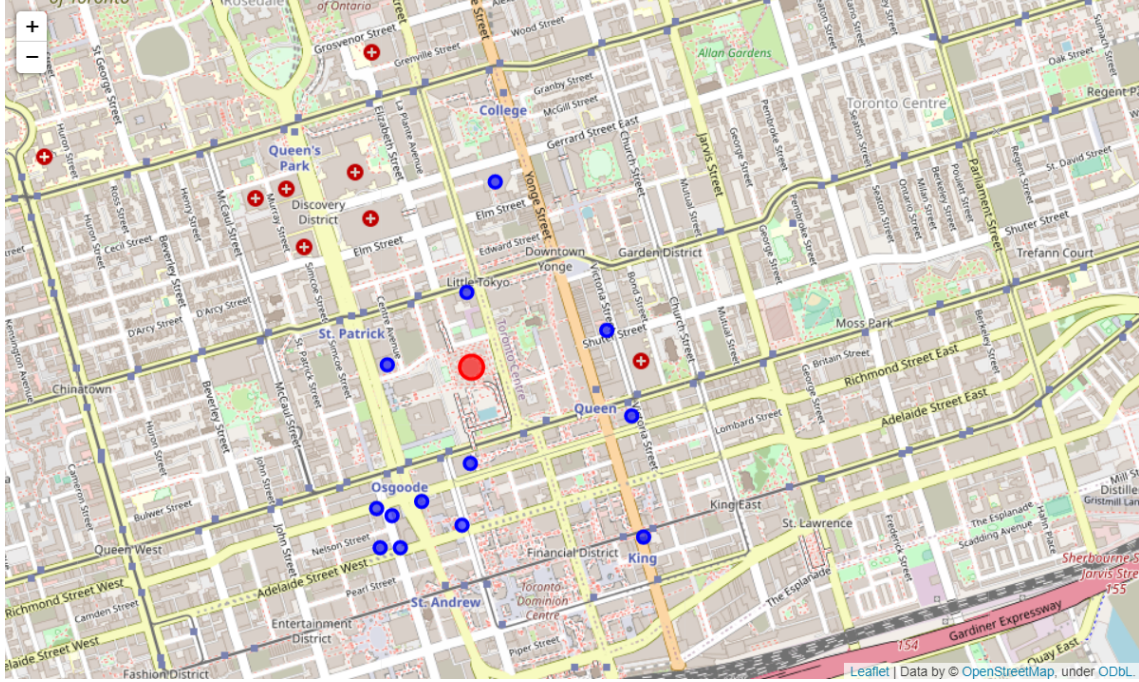
Figure 1: Toronto’ Neighborhoods Map



4 Exploratory Data Analysis

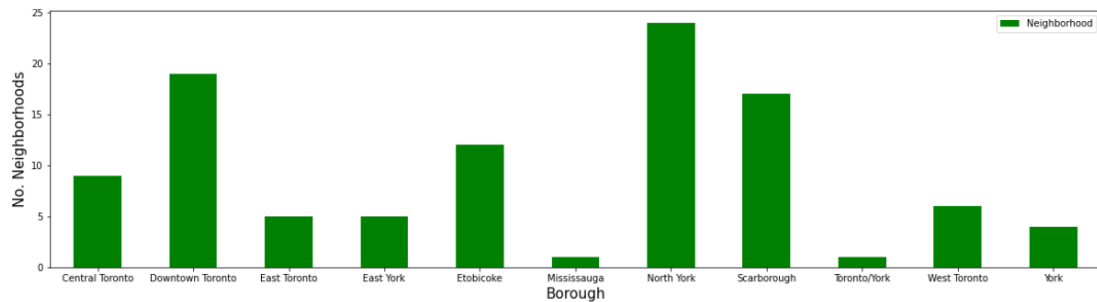
We begin our analysis focusing in Downtown neighborhood, since this is definitely one of the most emblematic and visited place in the city. First, we proceed to identify the current gyms around Toronto city Hall within a diameter of 500 meters as shows in Figure 2.

Figure 2: Gyms Located around Toronto City Hall



Now in Figure 3 we show the eleven boroughs that conform Toronto (x-axis) versus the number of neighborhoods per each borough (y-axis). We observe that North York has the highest number of neighborhoods follow by Downtown. This results give us an idea how big might be a borough that will help us later to define the best location.

Figure 3: Neighborhoods per Borough



In Figure 4 we plot a graph where we observe how many gyms are registered per each borough, as a result, Downtown is by far the borough with the highest number of gyms, with fourteen in

total. Additionally, in Figure 5 we observe the top five number of gyms in Downtown, where Commerce Court is the most dense neighborhood. This implies that even though Downtown is an emblematic place, the market is very competitive. Hence, it seems reasonable to consider other boroughs that might be more convenient.

Figure 4: Gyms per Borough

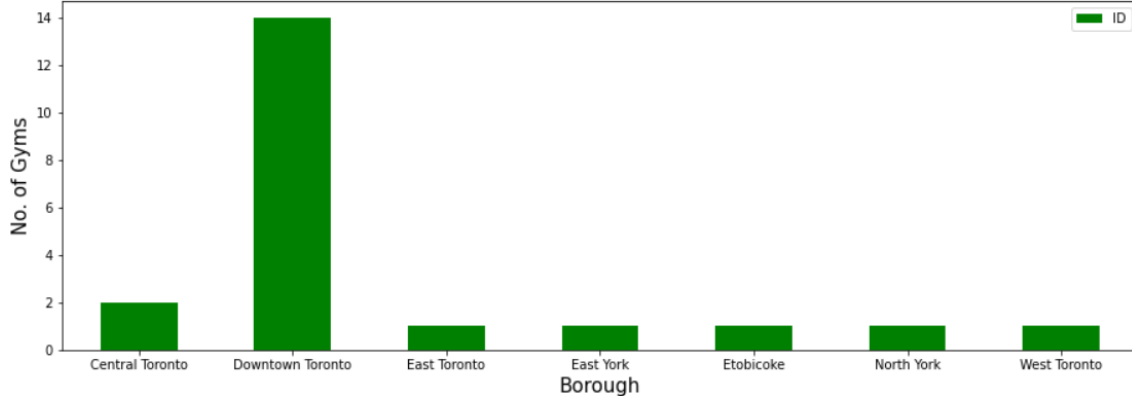
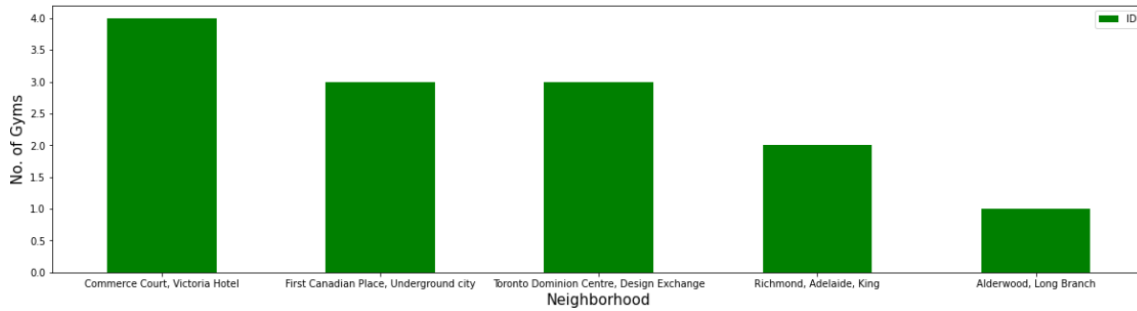


Figure 5: Gyms in Downtown



We continue our analysis now focusing in the performance of each gym. As a matter of simplicity we just present five gyms ranking in Toronto city based on the variables “likes”, “rating” and “tips” (see Table 1). Moreover, in Table 2 we see some basic statistics about the performance of the gyms. The count variable means that data is available for 21 gyms registered in the city of Toronto. We observe that in the first quantile the values for each variable are: likes=8, rating=7.2 and tips=2. For the second quantile or median the values are very close to the previous ones (“likes”=8, “rating”=7.5 and “tips”=5). Now, there is a considerable increment in the values corresponding to the third quantile, “likes”=30, “rating”=8.4 and “tips”=13; and this difference is enormous compared with the maximum values “likes”=126, “rating”=8.6 and “tips”=30. To be more precise, the gym “GoodLife Fitness Toronto” located in Downtown has the maximum “likes”

and also “tips”. However, the highest raking is “Reebok Crossfit” located in West Toronto.

Table 1: Gym’s Ranking in Toronto

	Borough	Neighborhood	ID	Name	Likes	Rating	Tips
16	Downtown Toronto	First Canadian Place, Underground city	501ae947e4b0d11883b910a7	Equinox Bay Street	54	8.4	13
17	Downtown Toronto	First Canadian Place, Underground city	4c8166f4d34ca143fc272280	Toronto Athletic Club	8	7.5	5
18	Downtown Toronto	First Canadian Place, Underground city	4b8702fdf964a52055ab31e3	The Cambridge Club	7	7.9	2
19	West Toronto	Brockton, Parkdale Village, Exhibition Place	4f54ef6ce4b0929810978bb6	Reebok Crossfit Liberty Village	16	8.6	2
20	Etobicoke	Alderwood, Long Branch	4b9fdbb4f964a520583a37e3	Toronto Gymnastics International	8	7.2	1

Table 2: Gym’s Statistics in Toronto

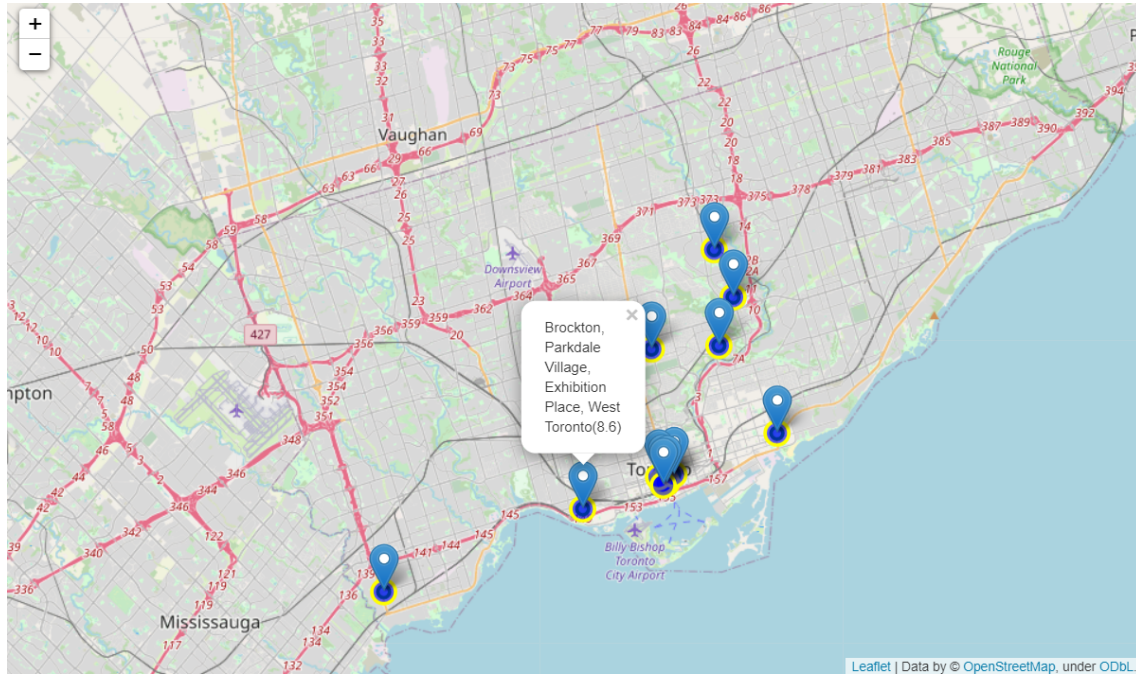
	Likes	Rating	Tips
count	21.000000	21.000000	21.000000
mean	28.000000	7.338095	7.714286
std	36.666061	1.814518	8.608965
min	0.000000	0.000000	0.000000
25%	8.000000	7.200000	2.000000
50%	8.000000	7.500000	5.000000
75%	30.000000	8.400000	13.000000
max	126.000000	8.600000	30.000000

Finally, it is important to identify the key neighborhoods for opening the fitness center. In Table 3 we show all the neighborhoods around the city that have an average rating gym’s score greater than 7.0, see Figure 6 to have a visual image of the spatial area. The neighborhood called Brockton Parkdale Village located in West Toronto has the maximum value follow by St. James Town in Downtown. Both of them represent tentative options for this project.

Table 3: Top Neighborhoods based on Gym 's Rating

	Borough	Neighborhood	Latitude	Longitude	Average Rating
0	Etobicoke	Alderwood, Long Branch	43.602414	-79.543484	7.200000
1	West Toronto	Brockton, Parkdale Village, Exhibition Place	43.636847	-79.428191	8.600000
2	Downtown Toronto	Commerce Court, Victoria Hotel	43.648198	-79.379817	8.025000
3	Central Toronto	Davisville	43.704324	-79.388790	7.200000
4	North York	Don Mills	43.745906	-79.352188	7.400000
5	North York	Don Mills	43.725900	-79.340923	7.400000
6	Downtown Toronto	First Canadian Place, Underground city	43.648429	-79.382280	7.933333
7	East Toronto	India Bazaar, The Beaches West	43.668999	-79.315572	8.200000
8	Downtown Toronto	Richmond, Adelaide, King	43.650571	-79.384568	7.550000
9	Downtown Toronto	St. James Town	43.651494	-79.375418	8.500000
10	East York	Thornccliffe Park	43.705369	-79.349372	7.500000
11	Downtown Toronto	Toronto Dominion Centre, Design Exchange	43.647177	-79.381576	7.566667

Figure 6: Map of the Top Neighborhoods based on Gym 's Rating



5 Conclusion

First of all, West Toronto and East Toronto are the boroughs with the highest gyms rating. Secondly, Downtown has the highest number of gyms with a total of fourteen where the neighborhood called Commerce Court is on the top of the list with a total number of four. To be even more precise, the best fitness center in Downtown based on “likes” and “tips” is “Good Life Fitness

Toronto”. However, the best ranking gym in the whole city is “Reebok Crossfit” located in West Toronto. Thirdly, based on the information collected from Foursquare that we have already discussed, we would state that West Toronto is the best option for opening a new fitness center, since even though Downtown also represent a tentative location for all the business around, we should take into account that real state prices are highest than in West Toronto. Additionally, the market in Downtown is highly competitive since there are too many gyms, while in West Toronto there is just one, so it might be easy to gain clients. Finally, we also recommend to look for a place in the Brockton, Parkdale Village which is the neighborhood with the highest average rating of gyms in the West Toronto borough.