

Which Neighborhood in Toronto I Should Build a Crossfit Gym

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1. Background:

Crossfit is a sport with growing interest worldwide because of the most recent implementation of "National Champions" reporting to the Crossfit Games. In years past, only the top 40 men and women worldwide were invited to the Crossfit Games to determine who is the best. This past year, Sanctionals were implemented, allowing for smaller competitions around the world whose winner was also invited to this game. This gave people more opportunities to experience Crossfit and enjoy watching local competition. They also invited the top ranked Crossfiter from each country that has a Crossfit gym.

2. Problem:

Two of the most famous Crossfit personalities are Patrick Vellner, and Brent Fikowski, both of whom are Canadian. This has caused a rise in popularity of Crossfit, so I am looking to determine which neighborhood in Toronto should I build a Crossfit gym.

3. Interest

Anyone who is looking to open a Crossfit gym in Toronto, or someone looking to move to Toronto that may have an interest in joining a Crossfit gym.

4. Neighborhood Data Acquisition

Data on neighborhood segmentation was scraped from https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M using Beautiful Soup and merged with Latitude and Longitude data from Geospatial_Coordinates.csv

5. Neighborhood Data Cleaning

First, the data was sorted by Postal Code, but many of the postal codes did not have a Borough assigned to them, so I had to remove those codes. After removing the postal codes with no Borough, the Data Frame was merged with another containing the Latitude and Longitude coordinates of the different Postal Codes. This mapped the Latitude and Longitude to the different neighborhoods. Finally, I narrowed the Data Frame down to just those neighborhoods in the City of Toronto, because that is where I hope to build the Crossfit Gym.

6. Neighborhood Data Visualization

Using Folium, I created a map with the different neighborhoods to visualize the surroundings and see where the different neighborhoods were in relation to some of the Toronto Landmarks (CN Tower, University of Toronto, etc.). After understanding where the neighborhoods were, I wanted to understand the main venues in the neighborhoods.



Using the Foursquare API, I made a call to get the nearest venues for each neighborhood. Using this information, I was able to determine the top 5 most common types of venue for each neighborhood. Exploring this, I was able to understand the general makeup of each different neighborhood.

Some neighborhoods prioritize restaurants and nightlife (Berczy Park & Brockton for example), meaning they will probably not be an ideal location for a Crossfit gym. Others prioritize shopping and suburban life, such as parks and gyms (Davisville North & Dufferin for example), but since gyms are common there, the market may be too flush and competition too steep.

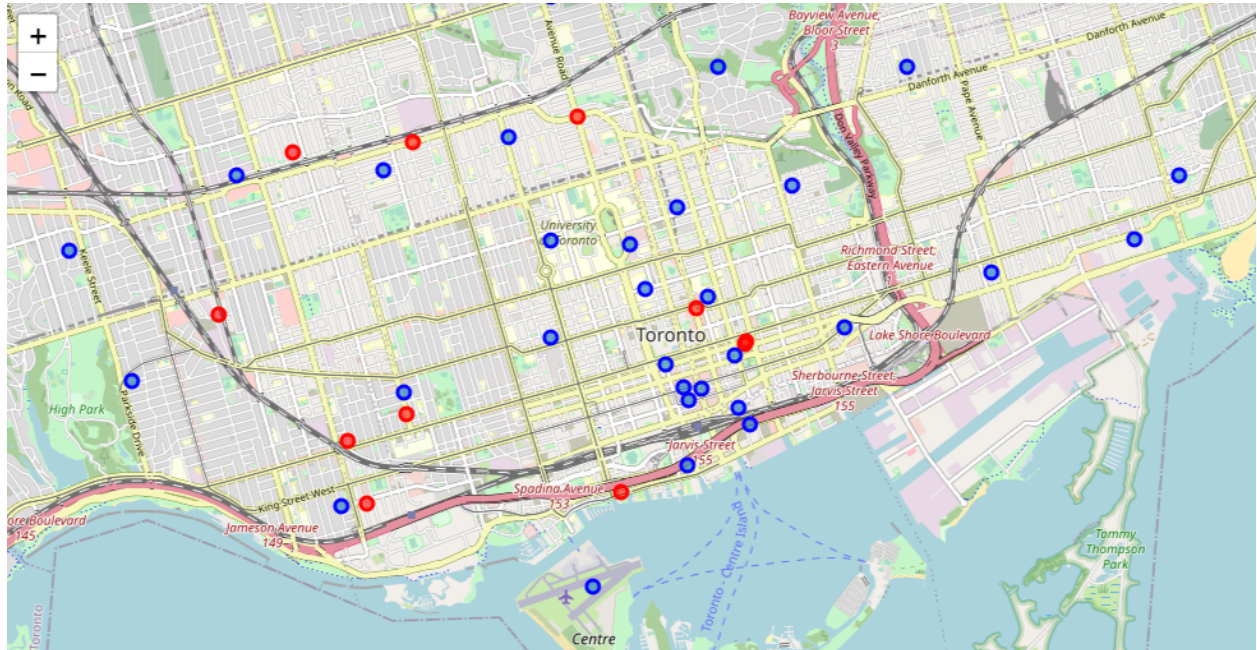
7. Competition Question Surfaces

Upon seeing the neighborhoods that already have several gyms, I decided that I needed to look for 2 more things in order to determine where to build my Crossfit gym.

- 1) How many other Crossfit gyms are there, and where are they?
- 2) Which Neighborhoods have any kind of fitness center (yoga studio, classic gym, etc.)

8. Getting Crossfit Gym Data

Using the Foursquare API, I made a call for any venue in Toronto relating to Crossfit. This returned 12 results, 11 of which were unique. So in Toronto, there are already 11 other Crossfit Gyms that I will have to compete with. I then added the Crossfit gyms onto my map of the Toronto Neighborhoods.



9. Direct vs. Indirect Competitors

The other Crossfit gyms will be the direct competition, but any other fitness center will also pose indirect competition. To find this out, I searched through all of the dummy column names for any venue I got earlier to find the different types of fitness centers that may pose a threat. The types I decided would impact my decision were:

- 1) Yoga Studio
- 2) Climbing Gym
- 3) College Gym
- 4) College Rec Center
- 5) Gym
- 6) Gym/Fitness Center

I created a new data frame to analyze which neighborhoods have these different venues.

10. Determining Which Neighborhoods Have the Different Types

I looked at 5 Different Data Frames to see which Neighborhoods had the following types of venues:

- 1) Yoga Studio

Neighborhood	
2	Business reply mail Processing Centre
4	Central Bay Street
6	Church and Wellesley
19	Little Portugal, Trinity
21	North Toronto West
23	Queen's Park, Ontario Provincial Government
24	Regent Park, Harbourfront
28	Runnymede, Swansea
31	Stn A PO Boxes
32	Studio District
36	The Danforth West, Riverdale
38	University of Toronto, Harbord

Of the 38 neighborhoods, 12 of them (31.5%) have a Yoga Studio. Since many Crossfit gyms, and the one that I intend to build also offer Yoga classes, these 12 Neighborhoods would be the worst options to build my gym.

2) Climbing Gym

Neighborhood	
1	Brockton, Parkdale Village, Exhibition Place

Only 1 neighborhood has a climbing gym, and it was determined that this would not impact where I wanted to build my gym.

3) College Gym/College Rec Center

Neighborhood	
38	University of Toronto, Harbord

Not surprisingly, the University of Toronto neighborhood is the only one with the College Gym or College Rec Center Venue. While this is technically competition, it is also important to note that the University of Toronto has an enrollment of nearly 62,000 students, creating quite a large population to potentially have join the new Crossfit gym.

4) Gym

	Neighborhood
1	Brockton, Parkdale Village, Exhibition Place
6	Church and Wellesley
7	Commerce Court, Victoria Hotel
8	Davisville
9	Davisville North
11	First Canadian Place, Underground city
13	Garden District, Ryerson
14	Harbourfront East, Union Station, Toronto Isla...
16	India Bazaar, The Beaches West
20	Moore Park, Summerhill East
23	Queen's Park, Ontario Provincial Government
25	Richmond, Adelaide, King
28	Runnymede, Swansea
29	St. James Town
31	Stn A PO Boxes
37	Toronto Dominion Centre, Design Exchange

Similar to the Yoga Studios, there are quite a few neighborhoods with gyms, 16 of the 38 (42%) already have at least one gym. Several of these neighborhoods prioritize gyms as seen before in the exploratory analysis (Davisville North and First Canadian Place for example). Therefore, avoiding these neighborhoods would be ideal, especially those with a high percentage of gyms.

5) Gym/Fitness Center

Neighborhood	
4	Central Bay Street
7	Commerce Court, Victoria Hotel
11	First Canadian Place, Underground city
13	Garden District, Ryerson
24	Regent Park, Harbourfront
25	Richmond, Adelaide, King
32	Studio District
37	Toronto Dominion Centre, Design Exchange

This was an interesting category because it depended on the Foursquare API classification to distinguish from the “Gym” category before. Cross referencing these neighborhoods with the ones above resulted in the addition of Central Bay Street, Regent Park/Harbourfront, and Studio District, bringing the total neighborhoods with gyms up to 19, or exactly 50%.

11. Potential Neighborhoods

After eliminating all neighborhoods with pre-existing fitness alternatives, I was left with 14 potential options for where to build the Crossfit Gym.

Neighborhood	
3	CN Tower, King and Spadina, Railway Lands, Har...
5	Christie
10	Dufferin, Dovercourt Village
12	Forest Hill North & West
15	High Park, The Junction South
17	Kensington Market, Chinatown, Grange Park
18	Lawrence Park
22	Parkdale, Roncesvalles
26	Rosedale
27	Roselawn
30	St. James Town, Cabbagetown
33	Summerhill West, Rathnelly, South Hill, Forest...
34	The Annex, North Midtown, Yorkville
35	The Beaches

Now looking at these neighborhoods, the other classifier I chose to use was Income. Crossfit is a very expensive hobby due to its unique coaching requirements and small class sizes. Therefore, I scraped more data from

https://en.wikipedia.org/wiki/Demographics_of_Toronto_neighbourhoods

Using BeautifulSoup to find the neighborhood with the highest average income that is still on my list.

12. Income Data Cleaning

When I attempted to sort the data by average income after scraping, I noticed that the cells were not sorting correctly. This caused me to check the types of the columns and discovered that they were objects, not floats, so the data was not sorting the way that I wanted. I had to convert the data in the Average Income column to a float, but first had to convert to a string and eliminate the commas in the numbers. Once I completed this, the income was easily sortable and I was able to search for the neighborhood with the highest average income.

13. Conclusion

After comparing the list of potential neighborhoods with the average income, it was clear that Rosedale is the best option for a new Crossfit Gym. There are very few neighborhoods with no alternative fitness opportunities for the citizens in the city. Rosedale is one of those neighborhoods that also has the 5th highest average income. It is also close to other neighborhoods with successful Crossfit gyms, hoping to draw in members who were leaving from Rosedale to the other neighborhoods to workout.

