

# **Finding the best place to put a Fast Food restaurant in Toronto**

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22/03/2021

## **1. Introduction**

### **1.1 Background**

Fast food restaurants most of the time are used by people who want to have a quick lunch break between their daily activities. Given this background they are ideal for high transit zones with students/office workers that don't have a lot of free time to wait for their food and want to spend their resting time eating outdoors.

### **1.2 Investors interest - Requests**

The investors want to set up a new fast food restaurant branch in the city of Toronto. They want to know what would be a good location to set up their business. The conditions asked for this project is that the restaurant needs to be near two universities, preferably near the city center and student campus with high people transit. The branch is big enough to attract customers so competition in the area is not a problem for them.

## **2. Data acquisition and methodology**

### **2.1 Data sources**

All the datasets used are public. The ones that we will be using to solve the investors request are the following:

- Toronto Adult Education – <https://open.toronto.ca/dataset/wellbeing-youth-alternative-education>
- Toronto Postal Codes for geolocation – [https://en.wikipedia.org/w/index.php?title=list\\_of\\_postal\\_codes\\_of\\_Canada:\\_M&oldid=1011037969](https://en.wikipedia.org/w/index.php?title=list_of_postal_codes_of_Canada:_M&oldid=1011037969)
- FourSquare geolocation Data for venues in Toronto
- Toronto bicycle parking racks location - <https://open.toronto.ca/dataset/bicycle-parking-racks/>
- Toronto Bikeways - <https://open.toronto.ca/dataset/bikeways/>

2.2 Methodology

We'll be using K-cluster nearest neighbor to pinpoint the clusters with a high concentration of venues. The data will be manipulated to find places with high concentration of normal restaurants/coffee shops and find where the investors fast food restaurant will face less competition.

In addition to that we'll map the universities and campuses in the city in order to define high transit areas with students. In order to do this we'll chart them and after that superimpose the locations to the venues clusters.

2.3 Data Analysis

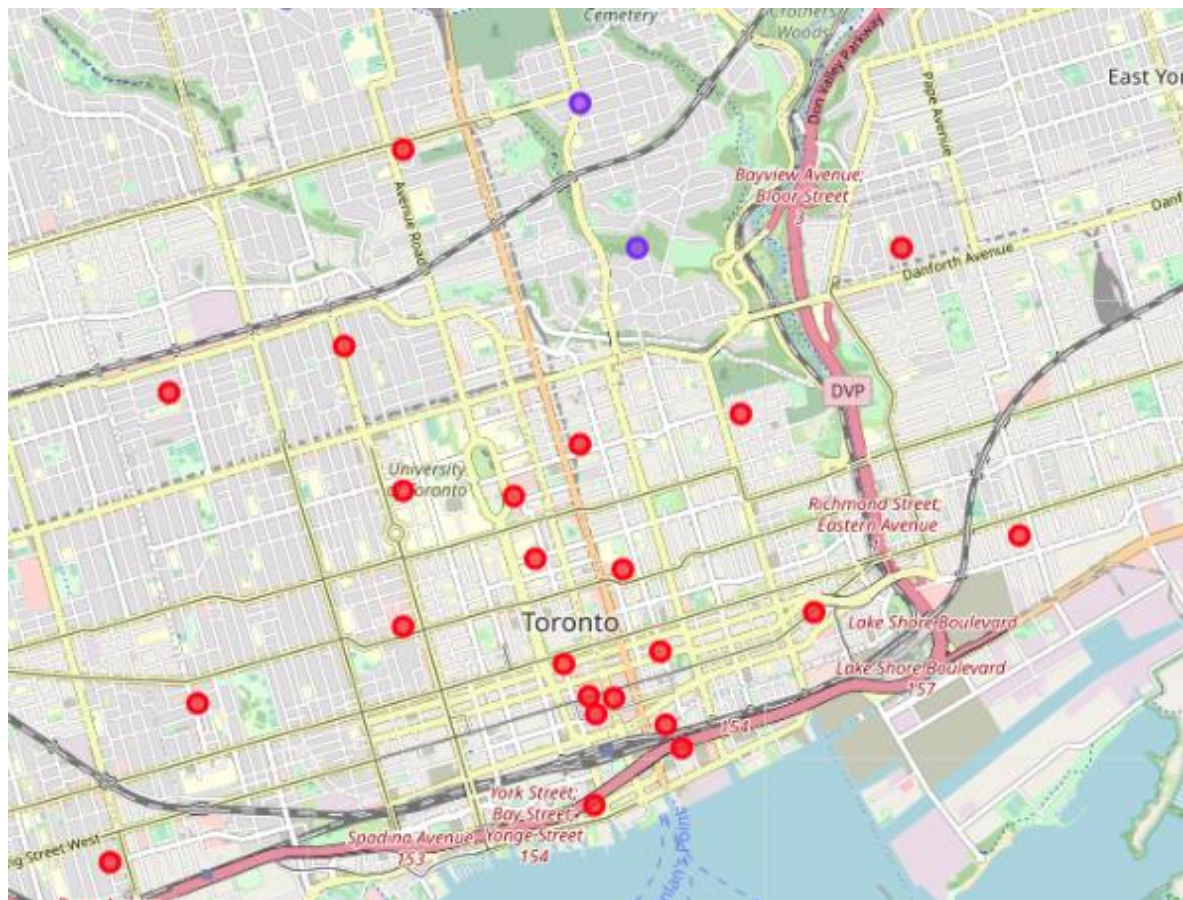
2.3.1 Methodology

In order to effectively process the data we'll sort the venues by neighborhood using FourSquare API resulting in charts like these:

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	The Beaches	43.676357	-79.293031	Glen Manor Ravine	43.676821	-79.293942	Trail
1	The Beaches	43.676357	-79.293031	The Big Carrot Natural Food Market	43.678879	-79.297734	Health Food Store
2	The Beaches	43.676357	-79.293031	Grover Pub and Grub	43.679181	-79.297215	Pub
3	The Beaches	43.676357	-79.293031	Upper Beaches	43.680563	-79.292869	Neighborhood
4	The Danforth West, Riverdale	43.679557	-79.352188	MenEssentials	43.677820	-79.351265	Cosmetics Shop

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
Bercy Park	Coffee Shop	Cocktail Bar	Bakery	Seafood Restaurant	Cheese Shop	Pharmacy	Restaurant	Farmers Market	Beer Bar	Shopping Mall
Brockton, Parkdale Village, Exhibition Place	Café	Bakery	Coffee Shop	Breakfast Spot	Burrito Place	Convenience Store	Stadium	Restaurant	Italian Restaurant	Bar
Business reply mail Processing Centre, South C...	Pizza Place	Garden	Restaurant	Butcher	Burrito Place	Skate Park	Brewery	Smoke Shop	Park	Light Rail Station
CN Tower, King and Spadina, Railway Lands, Man...	Airport Service	Airport Lounge	Airport Terminal	Harbor / Marina	Bar	Coffee Shop	Rental Car Location	Sculpture Garden	Boat or Ferry	Plane
Central Bay Street	Coffee Shop	Café	Italian Restaurant	Sandwich Place	Japanese Restaurant	Bubble Tea Shop	Burger Joint	Salad Place	Thai Restaurant	Yoga Studio

After doing that we'll segment them into clusters to define what place has more venues in it, resulting in this map, were we can clearly see which place the higher concentration of them (Marked in red)



For the universities the process is similar, but with fewer data points and getting the location from their postal codes. In order to do so we use again the latitude/longitude values of Toronto Postal codes, but first we clean this dataframe.

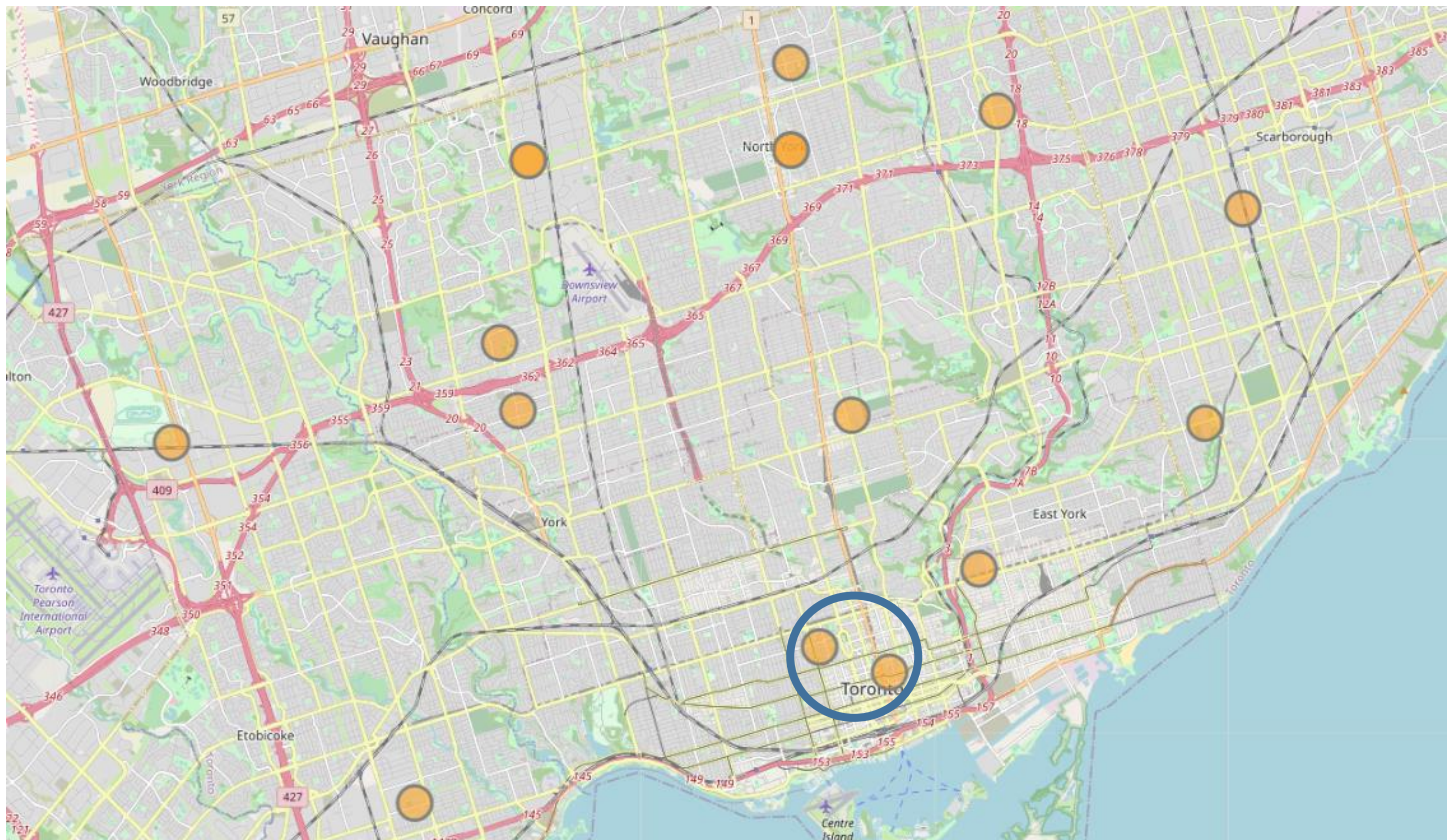
_id	OBJECTID	AGENCY_NAME	ORGANIZATION_ADDRESS	NEIGHBOURHOOD	OFFICE_PHONE	EMAIL	WEBSITE	ELIGIBILITY	DESCRIPTION_SERVICE	APPLICATION	LANGUAGES	ACCESSIBILITY	HOI
1	262	Joint Training and Apprenticeship Committee	936 Warden Ave, Toronto, ON M1L 4C9	Wexford-Maryvale, 119	416-759-9351	jtaoffice@ualocal46.org	<a href="http://www.ualocal46.org" target="_blank" ...	United Association Local 46 member * or enroll...	Apprenticeship programs in plumbing and steamf...	Course description and application form availa...	English	Wheelchair accessible building including main ...	Mon 8 a
2	263	Ontario Industrial and Finishing Skills Centre	130 Toro Rd, Unit C, Toronto, ON M3J 3M9	York University Heights, 27	416-635-7300	info@oifsc.com	<a href="http://www.oifsc.com" target="_blank" ...	Minimum Grade 10 English, math and science or ...	Apprenticeship programs for painter decorators...	Apply through local union or employer	English	Wheelchair accessible -- call for details	Mon 8:30 4:30
3	264	Toronto Ironworkers Local 721	909 Kipling Ave, Toronto, ON M8Z 5H3	Islington-City Centre West, 14	416-232-1046	ironworkerslocal721@rogers.com	<a href="http://www.iw721.org" target="_blank" ...	Must have Grade 10	Apprenticeship programs for ironworkers and ro...	Call for information	English	Wheelchair accessible building including main ...	Mon 7:30 3
4	265	Toronto Catholic District School Board	Catholic Education Centre, 80 Sheppard Ave E, ...	Willowdale East, 51	416-222-8282 ext 5314 ; Admissions 416-222-828...	webmaster@tcdsb.org	<a href="http://www.tcdsb.org" target="_blank" ...	Elementary level -- Roman Catholic children an...	Full academic program in a Roman Catholic enl...	Contact nearest Catholic school for appointment...	English ; French - (school programs) ; Interpr...	Wheelchair accessible building including main ...	Mon 8:30 4:45 * a houi ans
5	266	Academy of Computer and Employment Skills	55 Eglinton Ave E, Ste 703, Toronto, ON M4...	Mount Pleasant West, 104	416-703-7770 ext 206	marina.n@workingskillscentre.com	href="http://www.workingskillscentre.com/dl...	Canadian Language Benchmark Level 4 to Level 7...	Registered private career college * vocational...	Information sessions Thursday 9 am * academic ...	English	Wheelchair accessible building including main ...	Mon 8:30 6 p 3c eveni ; Sat

To clean this dataframe we drop several columns that we won't be using and normalize their name. Also we get the universities coordinates by merging it with the Toronto postal codes, resulting in this table



Postalcode	Latitude	Longitude	University
M1L	43.711112	-79.284577	Joint Training and Apprenticeship Committee
M1P	43.757410	-79.273304	Redemption Reintegration Services
M2J	43.778517	-79.346556	Seneca College
M2M	43.789053	-79.408493	Conseil scolaire de district catholique Centre...
M2N	43.770120	-79.408493	Toronto Catholic District School Board
M2N	43.770120	-79.408493	Toronto District School Board
M3J	43.767980	-79.487262	Ontario Industrial and Finishing Skills Centre
M3J	43.767980	-79.487262	York University
M3M	43.728496	-79.495697	LIUNA Local 183 Training Centre
M4K	43.679557	-79.352188	Ambassador Program
M4P	43.712751	-79.390197	Academy of Computer and Employment Skills
M5B	43.657162	-79.378937	Ryerson University
M5S	43.662696	-79.400049	University of Toronto
M6L	43.713756	-79.490074	Conseil scolaire Viamonde
M8Z	43.628841	-79.520999	Toronto Ironworkers Local 721
M9W	43.706748	-79.594054	Humber College

Once we have the geolocation we can proceed to map them





### 2.3.2 Data Exploration and inferential statistical testing

As we can see in the university map most of them aren't close enough, however we can see that near Queen's Park (Blue circle in the previous map) there are plenty of education centers and the University of Toronto.



In addition to that we can see that there are student campuses and the University Avenue. This is looking like a good place to put the restaurant, so what we need to do now is to mix both maps, venue and universities. This is what it looks like.





The red dots represent clusters with high concentration of venues, this could imply a lot of competition, but as we could see in the previous table there aren't many fast food restaurants in the area.

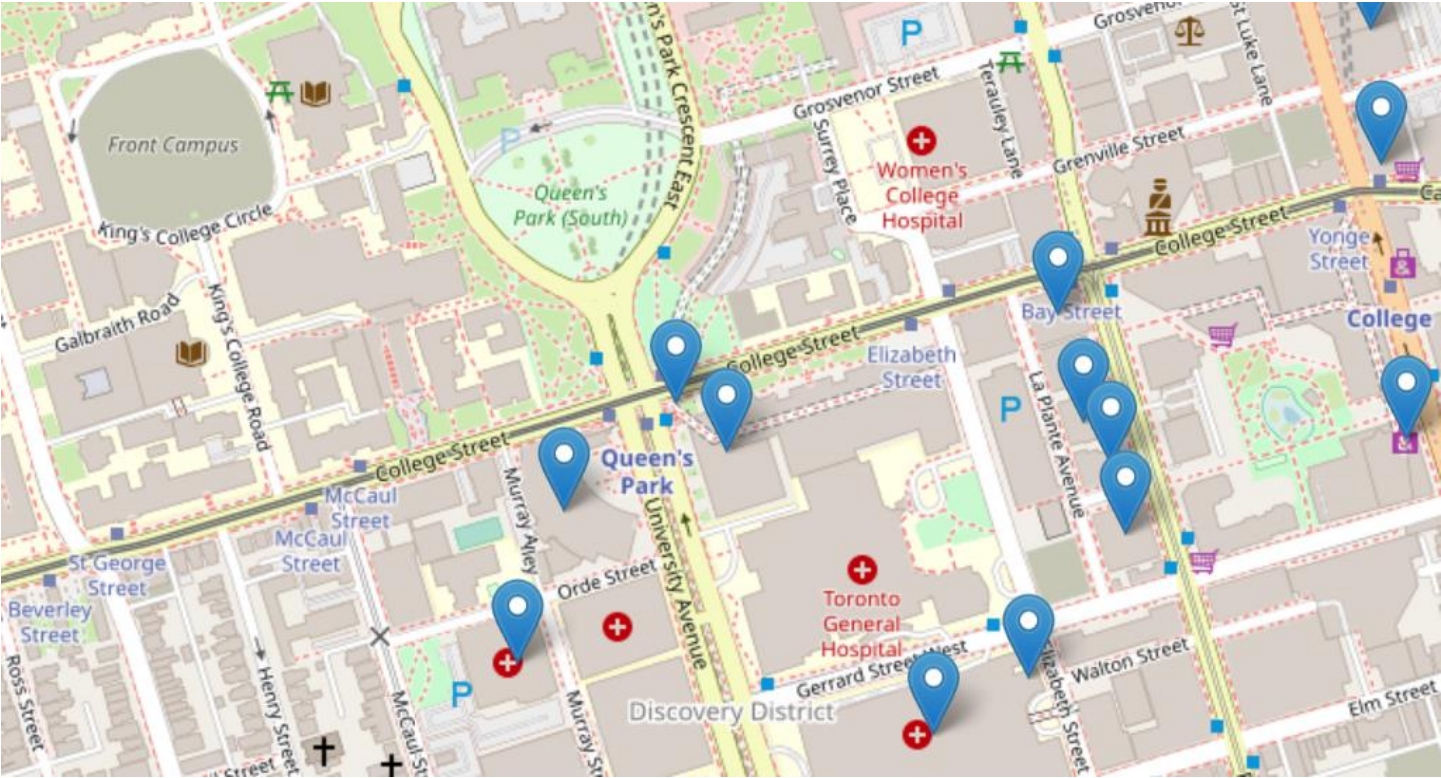
Borough	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue
East Toronto	0	Pub	Health Food Store	Trail	Yoga Studio	Distribution Center	Dog Run	Doner Restaurant	Donut Shop	Dumpling Restaurant
East Toronto	0	Greek Restaurant	Coffee Shop	Italian Restaurant	Ice Cream Shop	Restaurant	Bookstore	Furniture / Home Store	Bubble Tea Shop	Indian Restaurant
East Toronto	0	Park	Pizza Place	Fast Food Restaurant	Liquor Store	Board Shop	Italian Restaurant	Restaurant	Fish & Chips Shop	Food & Drink Shop
East Toronto	0	Coffee Shop	Café	Bakery	Gastropub	American Restaurant	Brewery	Yoga Studio	Italian Restaurant	Fish Market
Central Toronto	0	Pizza Place	Hotel	Gym / Fitness Center	Breakfast Spot	Sandwich Place	Park	Department Store	Food & Drink Shop	Dog Run
Central Toronto	0	Coffee Shop	Clothing Store	Yoga Studio	Furniture / Home Store	Restaurant	Diner	Salon / Barbershop	Ice Cream Shop	Mexican Restaurant
Central Toronto	0	Pizza Place	Dessert Shop	Sandwich Place	Gym	Café	Coffee Shop	Sushi Restaurant	Italian Restaurant	Toy / Game Store
Central Toronto	0	Coffee Shop	Pizza Place	Pub	Café	Restaurant	Bank	Supermarket	Sushi Restaurant	Bagel Shop

Seems that we found a good area to put up a fast food restaurant.

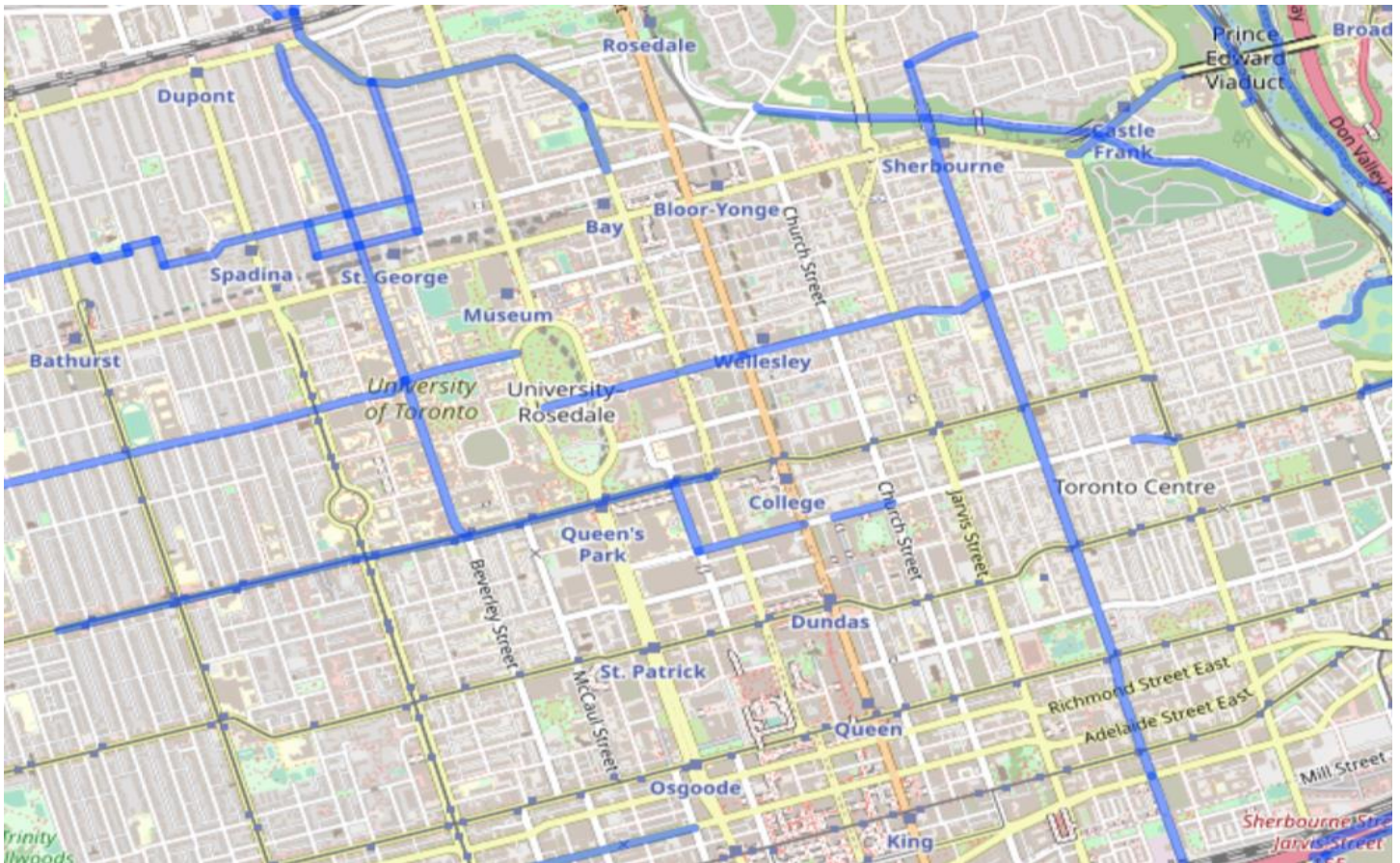
2.3.3 Another points to take into consideration

While not in the scope of the project we wanted to have some bonus information to present to our investors, so we added more information to take in consideration.

The first comes as the bicycle parking racks near the area, as shown in the map



As we can see near our proposed area we have a nice quantity of parking space for bikes, that ensures that potential customers can reach the area by bicycle. That lead us to another consideration, bikeways near the proposed area? The next map will show us that!

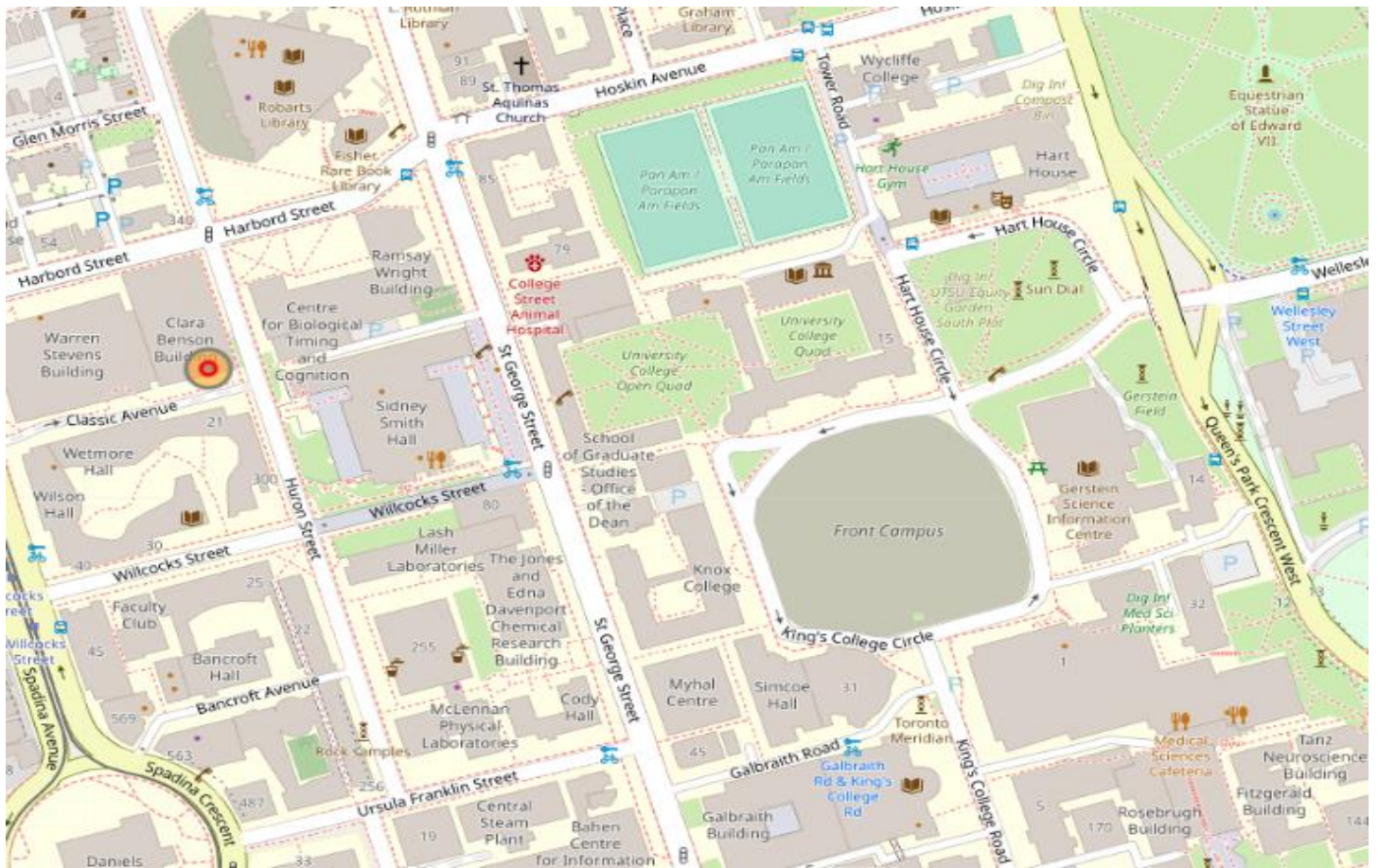


As we can see it's a high transit area, great for what we are aiming for.

### 3. Results and discussion

While there are more areas with potential, we are searching for what the investors asked for, and it seems that we found it. Let's make a deep dive into the map to check what would be the best location to set up the business, using the University of Toronto as the center.





Now let's check the Ryerson University area.

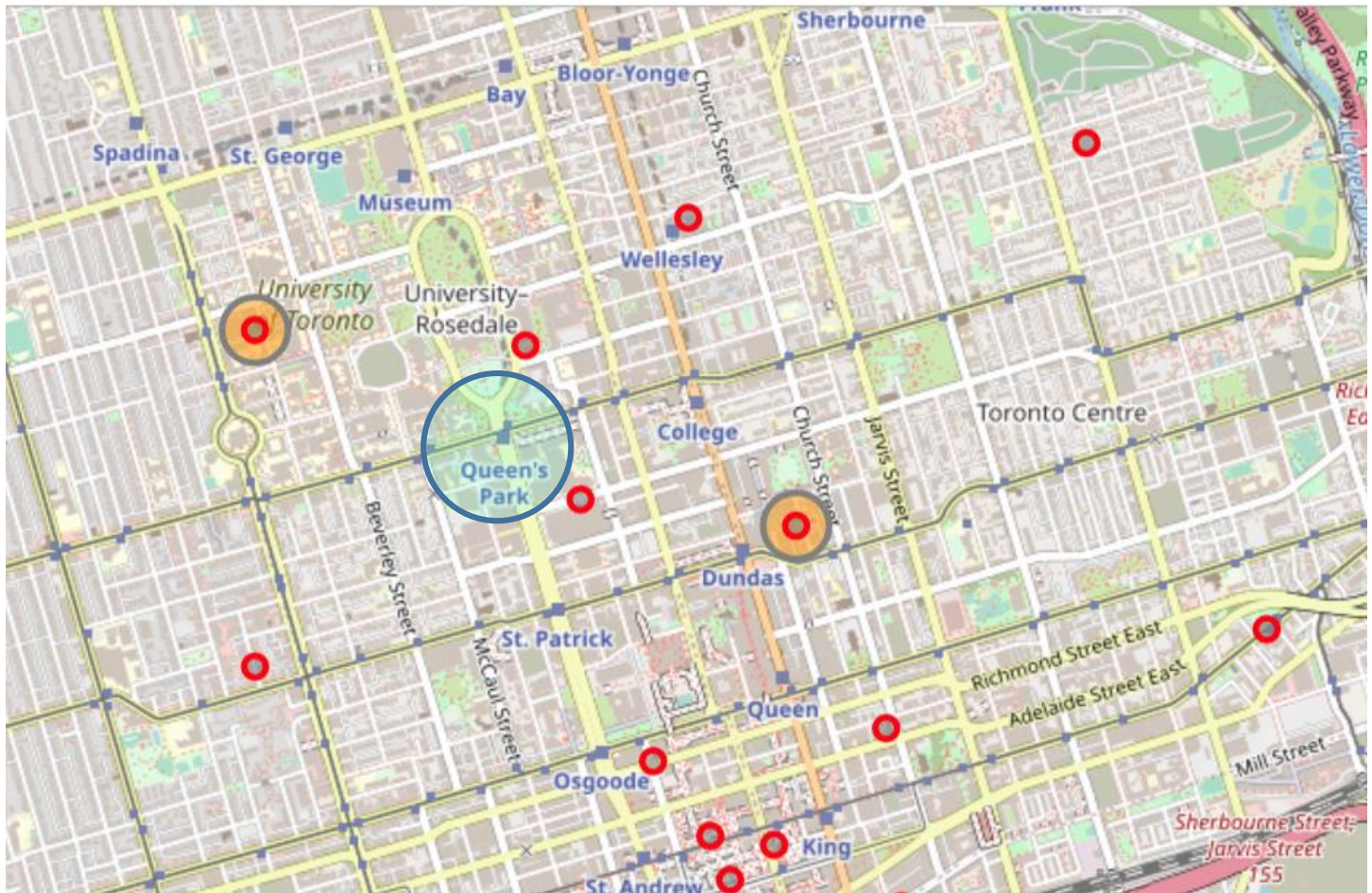




Given that both areas have many student facilities, the recommendation to the investors would be to put the restaurant in the middle of them, a great crosspoint between the two is the interjection between *University Avenue* and *College Street*. With that data we can pinpoint the possible area location for the venue, that we show in the next map.



Let's show the location in a bigger map for reference and circle the proposed area.



## 4. Conclusion

We can safely say that the best place to fill the investors request would be to put their restaurant near the interjection of University Avenue and College street in order to get customers from both Universities and use the Queen's Park transit in their favor to attract more customers.

If they want to expand their branch they can move down the University Avenue towards the coast in the interjection between University Avenue and Adelaide Street West. While it's a little bit further from the universities it will be near the train station, with has a high transit density.