

Capstone Project Presentation

Where to open the new fast food restaurant in Toronto ?

Introduction and Business Problem

- A famous fast food chain wants to open a new branch in Toronto.
- The customer requested us to find the best area to place the new store.
- We need to choose a place that has small number of competitors and a high number of potential customers.

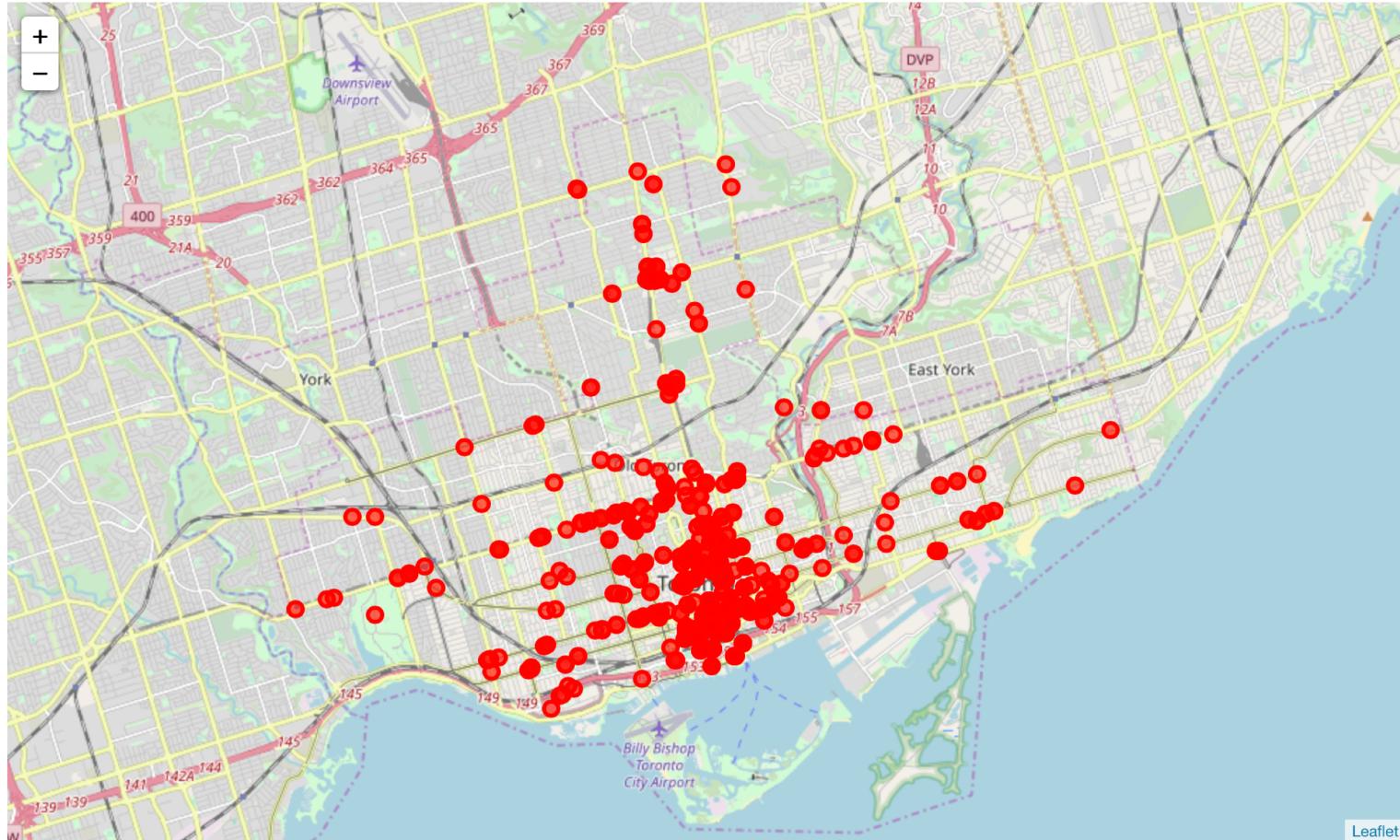
Data

- The Neighbourhood/Latitude/Longitude/Postcode data which can be consolidated from:
 - Wikipedia Toronto postcode/neighbourhood data:
https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M
 - csv file that has the geographical coordinates of each postal code:
http://cocl.us/Geospatial_data
- We will obtain the following venues data from Foursquare :
 - the fast food restaurants in the neighbourhood
 - the high schools in the neighbourhood
 - the universities in the neighbourhood
 - the offices in the neighbourhood
- We will then leverage the data to determine which neighbourhood is the best location for the new branch.

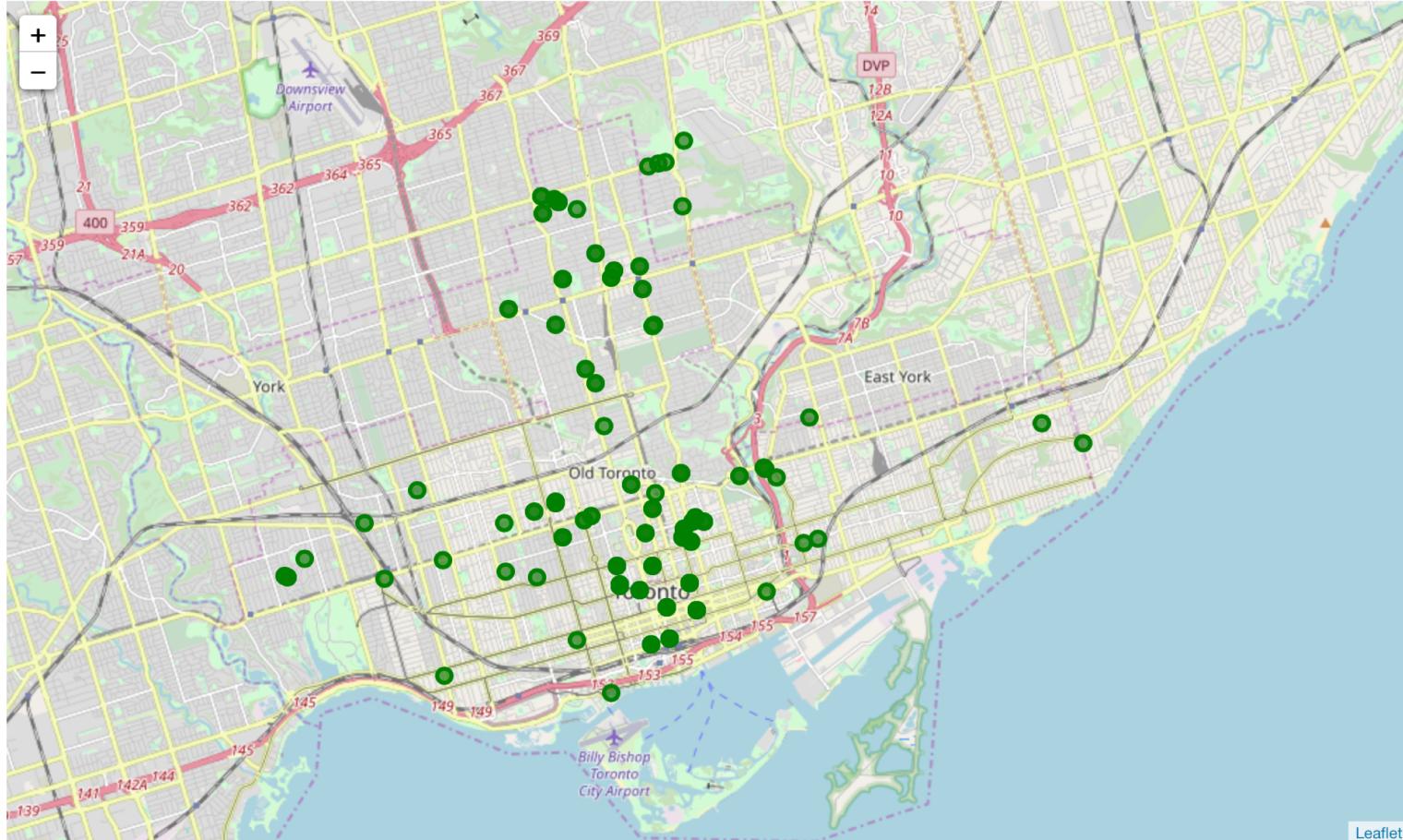
Methodology

- First we retrieve the latitude and longitude of each Postcode of Toronto city, this has been done in the previous week.
- We also collected the venues data of fast food restaurants, high schools, universities and offices in each postcode area from Foursquare.
- Then for each area, we compute the number of fast food restaurants, high schools, universities and offices.
- For each of these four kinds of venues, a weight was assigned based on the top priorities defined by the customer. The weights were set to arbitrary values for this project for simplicity. We can always modify them based on real scenarios.
- We assigned weight 1 to High Schools since high school student are potential customers.
- Weight 2 was assigned for Universities and offices, since university students and employees are even better potential customers.
- Fast food restaurants received a negative weight (-2), since they are potential competitors.
- Then, the weighted sums of the number of venues was calculated for each of the 4 venue categories (high school, university, office, fast food restaurants).
- At last, we ranked the areas based on the scores and found the best location for the new fast food branch.

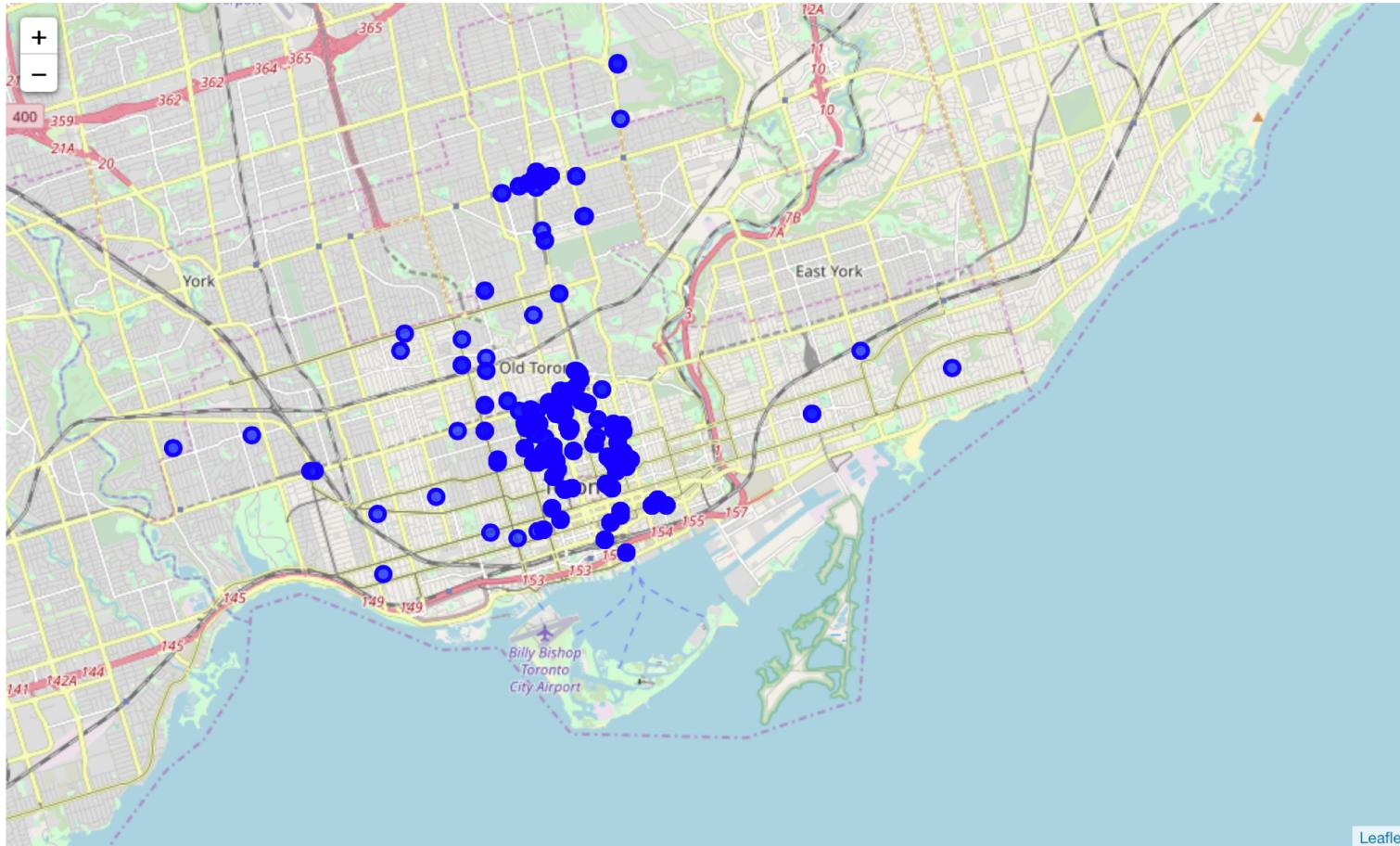
Fast food restaurants in Toronto



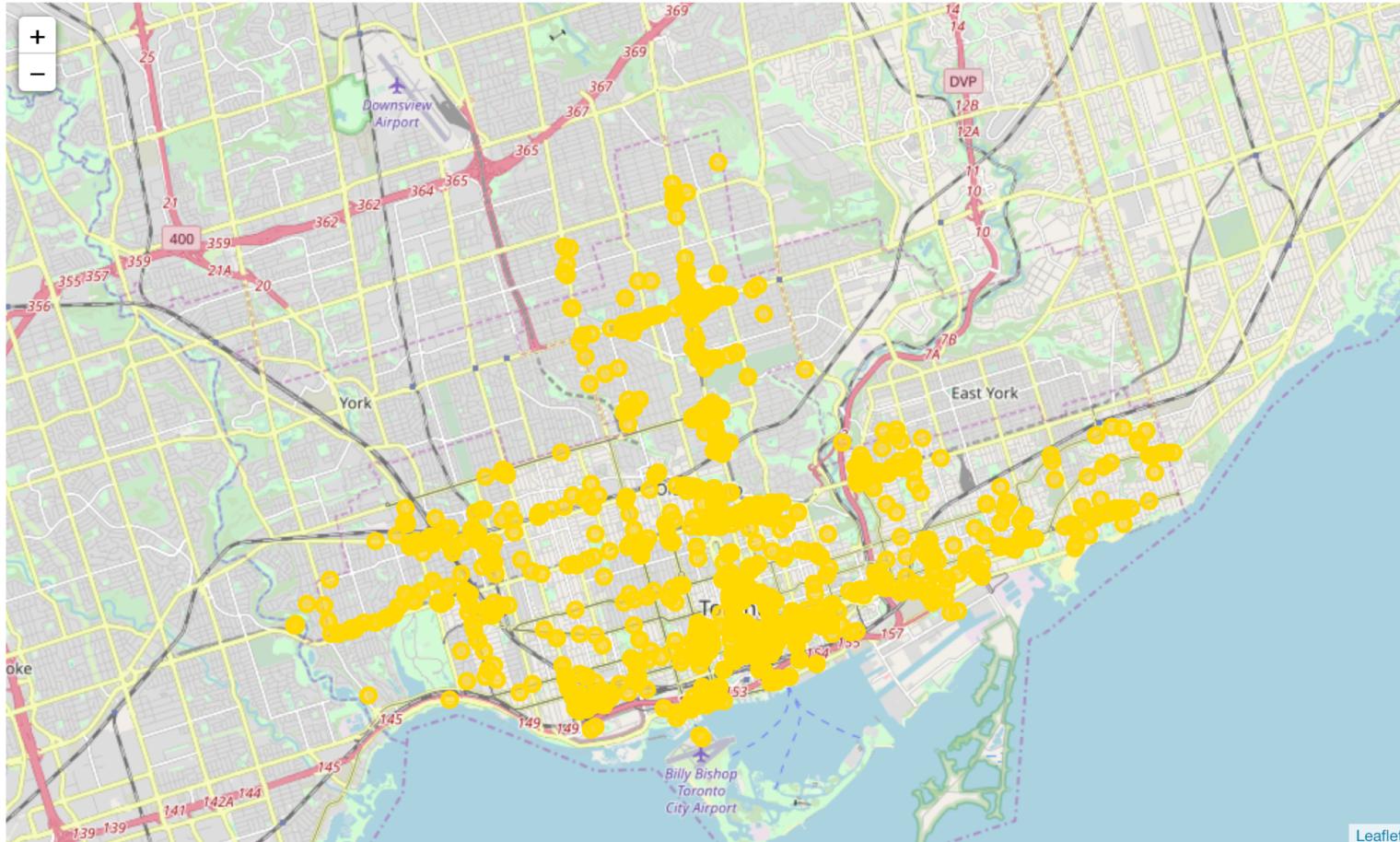
High schools in Toronto



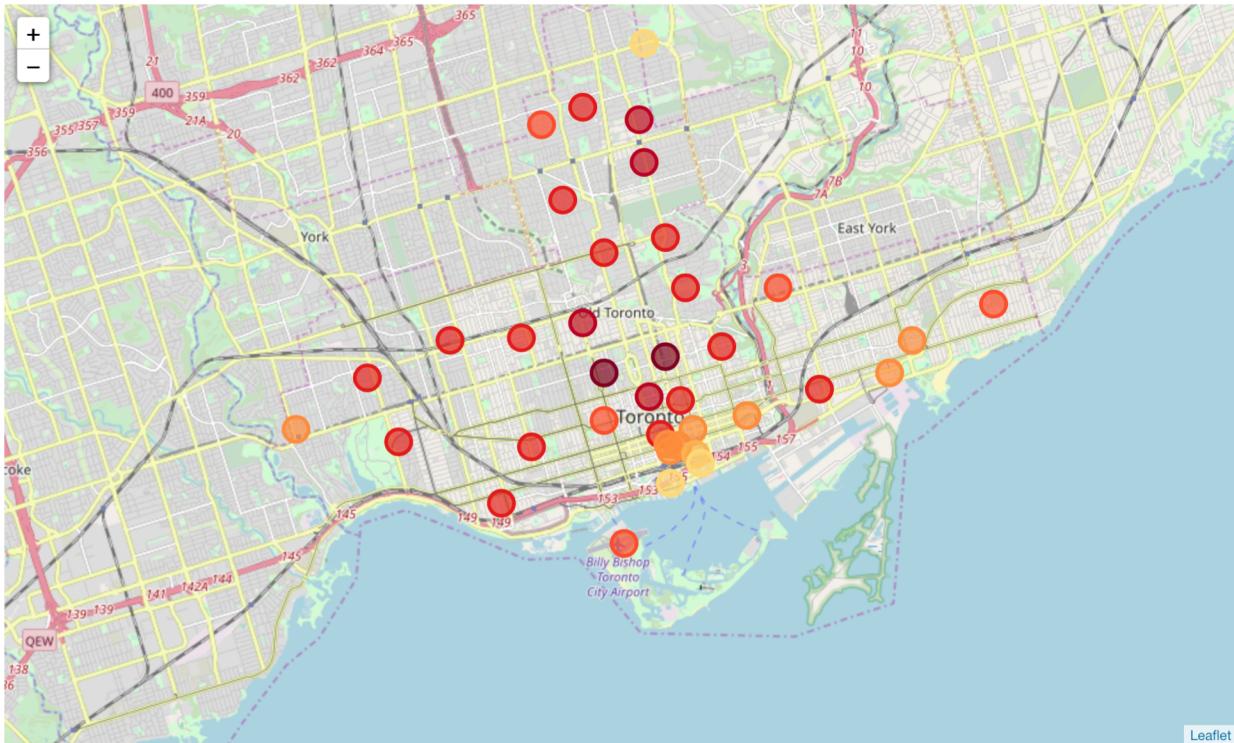
Universities/ Colleges in Toronto



Offices in Toronto



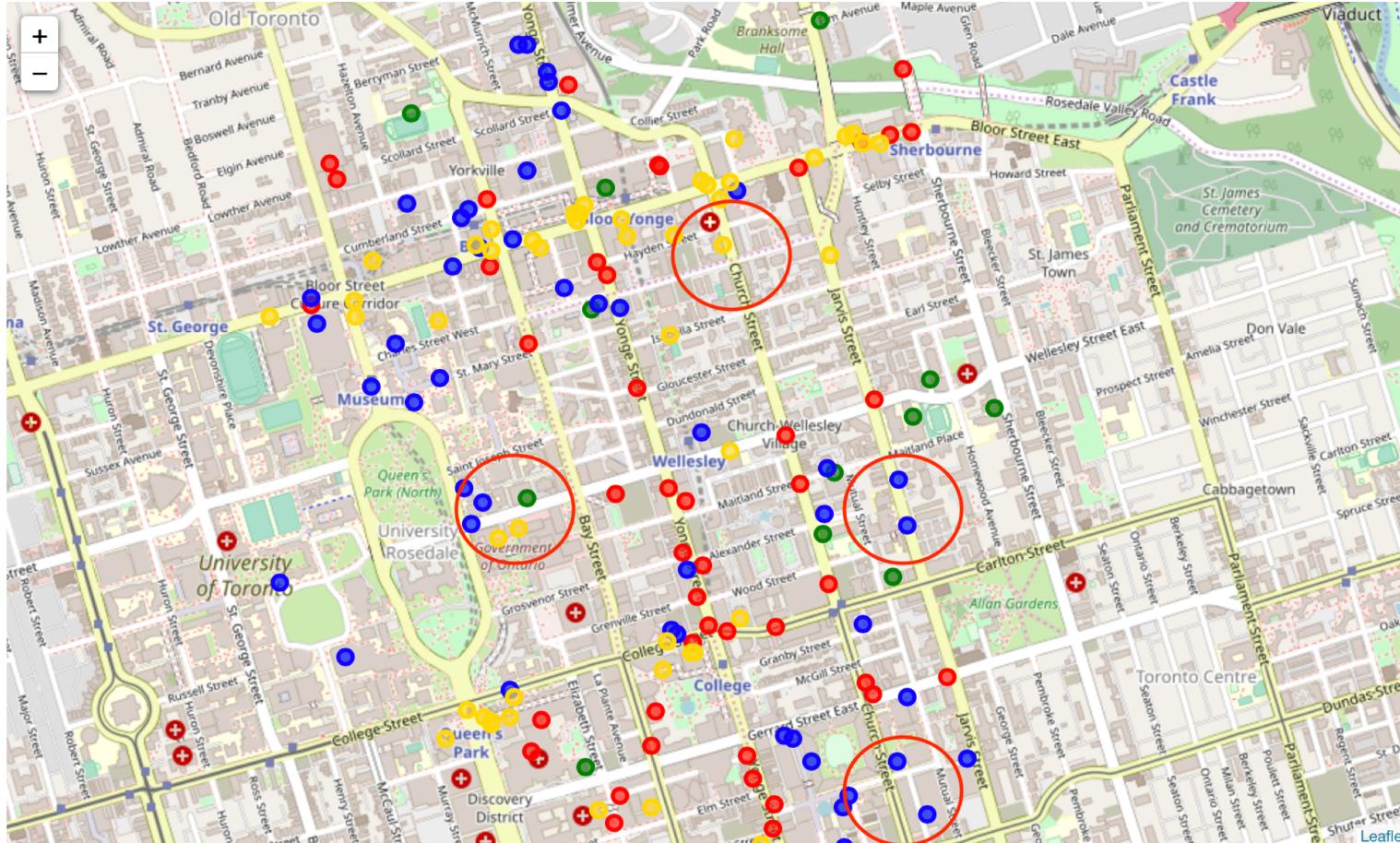
Result



The map demonstrates the scores of all the areas, darker color means a higher score. We can notice that the best locations are near Church and Wellesley (M4Y).

	Postcode	Neighbourhood	Fast Food Restaurants	High Schools	Universities	Offices	Score
52	M4Y	Church and Wellesley	48.0	12.0	47.0	50.0	110.0
66	M5S	Harbord, University of Toronto	44.0	11.0	43.0	49.0	107.0
57	M5G	Central Bay Street	50.0	13.0	45.0	50.0	103.0
65	M5R	The Annex, North Midtown, Yorkville	24.0	7.0	25.0	47.0	103.0
47	M4S	Davisville	17.0	6.0	15.0	47.0	96.0
45	M4P	Davisville North	15.0	5.0	12.0	46.0	91.0
50	M4W	Rosedale	9.0	2.0	4.0	49.0	90.0
51	M4X	Cabbagetown, St. James Town	14.0	9.0	9.0	45.0	89.0
49	M4V	Deer Park, Forest Hill SE, Rathnelly, South Hi...	9.0	3.0	3.0	48.0	87.0
46	M4R	North Toronto West	9.0	10.0	6.0	41.0	86.0

A closer look at the best area



The red circles indicate the potential good locations for the new store

Discussion

- We may obtain a more accurate estimation of the best location by making the following changes:
 - Instead of using postcode to identify the area, we may also try to use the neighbourhood as well.
 - When ranking the areas, we may take more factors into consideration. For example, the population densities, rental cost and average income levels of different areas.

Conclusion

- By utilizing the venues data from Foursquare, we have found that Church and Wellesley (Postalcode M4Y) is the best area to open a new fast food restaurant based on the customer requirement. This area is close to many schools and offices which are great potential sources of customers. It is not recommended to open the new fast food restaurant in the CBD area, because a large number of fast food chains already existed in the CBD area.