The Battle of Neighbourhood Assignment-Report

Introduction:

A young lad has offered a job from a big company in the middle of the Downtown of city of Toronto and currently living with his parents. The lad wants to move to Downtown to live there and exploring the options of neighbourhoods. The lad's criteria to select a neighborhood as follows:

- use public transport to commute to/from work and spend no more than 10 minutes for travel to/from work. 1
- 0-15 minutes walking distance to venues such as gourmet fast food joints, pubs, gym, parks and so on.
- 5 minutes walking distance to public transport.

Data

For this project, the following publically available data links were used:

- Wikipedia page: https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M, in order to obtain the table of postal codes around city of Toronto.
- Geospatial Data link: http://cocl.us/Geospatial_data , in order to obtain the geographical coordinates of the postal codes that needed for this task.

Methodology

Foursquare API was used to explore neighbourhoods in city of Toronto using clustering algorithm.

Initially the requirements were identified and interpreted into a useful measure that can be used in Foursquare API.

The initial requirements are spend no more than 10 minutes travel time on public transport and 5 minutes walking to/from home/work. The second requirement is live close to popular venues such as gourmet fast food joints, pubs, gym, parks and able reach within 5 minutes of walking distance.

The first requirement was converted to distance in meters so that you can use this measure in Foursquare API. The following assumptions were used to calculate the radius parameter that can be used in Foursquare API: Average speed of a public transport is 60km/hr and walking speed is 6km/hr. This implies 10km by public transport and 1km by walk to/from work. In total 11000 meters (11km) radius from the work location. The aim here is first identified all the neighbourhoods within 11000 meters from the work location and then look at the venues around each neighbourhood and prioritise the neighbourhood list for the client.

The work place coordinate used for this project is as follows (43.655115 , -79.380219)

Result

Based on Foursquare API analysis the following table was produced. This table list all the neighbourhoods within 11000 meters radius of Downtown as well as top 10 most common venues the client is interested. This table only provide the first level of analysis for the client.

Neighborhood	Most Common Venue									
	1st	2nd	3rd	4th	5th	6th	7th	8th	9th Most	10th
Adelaide,King,Richmond	Coffee Shop	Café	Restaurant	Sandwich Place	Hotel	Farmers Market	Bakery	Mexican Restaurant	Gym	French Restaurant
Berczy Park	Coffee Shop	Hotel	Park	Café	Farmers Market	Sandwich Place	Restaurant	Pizza Place	Japanese Restaurant	Gym
CN Tower,Bathurst Quay,Island airport,Harbourf…	Bakery	Coffee Shop	Park	Pizza Place	Hotel	Italian Restaurant	Sandwich Place	Café	Sporting Goods Shop	Bar
Cabbagetown,St. James Town	Coffee Shop	Hotel	Café	Farmers Market	Park	Concert Hall	Restaurant	Sandwich Place	Bakery	Museum
Central Bay Street	Coffee Shop	Café	Italian Restaurant	Sandwich Place	Restaurant	Hotel	Concert Hall	Farmers Market	French Restaurant	Gastropub
Chinatown,Grange Park,Kensington Market	Café	Pizza Place	Coffee Shop	Bakery	Sandwich Place	Restaurant	Concert Hall	Bar	Italian Restaurant	Seafood Restaurant
Christie	Italian Restaurant	Café	Bar	Pizza Place	Bakery	Sandwich Place	Coffee Shop	Park	Dessert Shop	Art Gallery
Church and Wellesley	Coffee Shop	Café	Sandwich Place	Farmers Market	Hotel	Concert Hall	Restaurant	Mexican Restaurant	Park	Pizza Place
Commerce Court,Victoria Hotel	Coffee Shop	Café	Hotel	Bakery	Farmers Market	Sandwich Place	Restaurant	Pizza Place	Theater	Mediterranean Restaurant
Design Exchange,Toronto Dominion Centre	Coffee Shop	Café	Hotel	Farmers Market	Bakery	Restaurant	Sandwich Place	Gym	Mediterranean Restaurant	Mexican Restaurant
First Canadian Place,Underground city	Coffee Shop	Café	Sandwich Place	Hotel	Bakery	Farmers Market	Restaurant	Italian Restaurant	Gym	Pizza Place
Harbord,University of Toronto	Café	Italian Restaurant	Coffee Shop	Pizza Place	Sandwich Place	Bakery	Restaurant	Grocery Store	Bar	French Restaurant
Harbourfront East,Toronto Islands,Union Station	Coffee Shop	Café	Sandwich Place	Hotel	Farmers Market	Park	Pizza Place	Restaurant	Bakery	Italian Restaurant
Harbourfront,Regent Park	Coffee Shop	Park	Café	Sandwich Place	Hotel	Farmers Market	Pizza Place	Concert Hall	Mediterranean Restaurant	Baseball Stadium
Rosedale	Coffee Shop	Café	Farmers Market	Park	Restaurant	Grocery Store	Hotel	Historic Site	Concert Hall	Museum
Ryerson,Garden District	Coffee Shop	Café	Hotel	Park	Sandwich Place	Concert Hall	Farmers Market	Restaurant	Dessert Shop	French Restaurant
St. James Town	Coffee Shop	Hotel	Park	Café	Restaurant	Farmers Market	Sandwich Place	Gastropub	Concert Hall	Baseball Stadium
Stn A PO Boxes 25 The Esplanade	Coffee Shop	Café	Hotel	Sandwich Place	Farmers Market	Park	Restaurant	Theater	Gastropub	Mediterranean Restaurant

Discussion

If the client has priority on venues then a further analysis can be done. As an example if gourmet fast food joints is priority one then allocate ten points, pubs is priority two then allocate 5 points and gym is priority three then allocate 3 and parks is priority four then allocate 1, then a methodology can be used to short list the neighbourhood list. The following illustrates this methodology. Based on this analysis neighbourhood Christie and St James town are close to the client's requirement.

Neighborhood	Most Common Venue										fast food	pub	gym	park	Total Pts
	1st	2nd	3rd	4th	5th	6th	7th	8th	9th Most	10th	10	5	3	1	
Adelaide,King,Richmond	Coffee Shop	Café	Restaurant	Sandwich Place	Hotel	Farmers Market	Bakery	Mexican Restaurant	Gym	French Restaurant	10	0	3	0	13
Berczy Park	Coffee Shop	Hotel	Park	Café	Farmers Market	Sandwich Place	Restaurant	Pizza Place	Japanese Restaurant	Gym	10	0	3	1	14
CN Tower,Bathurst Quay,Island airport,Harbourf...	Bakery	Coffee Shop	Park	Pizza Place	Hotel	Italian Restaurant	Sandwich Place	Café	Sporting Goods Shop	Bar	10	5	0	0	15
Cabbagetown,St. James Town	Coffee Shop	Hotel	Café	Farmers Market	Park	Concert Hall	Restaurant	Sandwich Place	Bakery	Museum	10	0	0	0	10
Central Bay Street	Coffee Shop	Café	Italian Restaurant	Sandwich Place	Restaurant	Hotel	Concert Hall	Farmers Market	French Restaurant	Gastropub	10	5	0	0	15
Chinatown,Grange Park,Kensington Market	Café	Pizza Place	Coffee Shop	Bakery	Sandwich Place	Restaurant	Concert Hall	Bar	Italian Restaurant	Seafood Restaurant	10	0	0	0	10
Christie	Italian Restaurant	Café	Bar	Pizza Place	Bakery	Sandwich Place	Coffee Shop	Park	Dessert Shop	Art Gallery	10	5	0	1	16
Church and Wellesley	Coffee Shop	Café	Sandwich Place	Farmers Market	Hotel	Concert Hall	Restaurant	Mexican Restaurant	Park	Pizza Place	10	0	0	1	11
Commerce Court,Victoria Hotel	Coffee Shop	Café	Hotel	Bakery	Farmers Market	Sandwich Place	Restaurant	Pizza Place	Theater	Mediterranean Restaurant	10	0	0	0	10
Design Exchange,Toronto Dominion Centre	Coffee Shop	Café	Hotel	Farmers Market	Bakery	Restaurant	Sandwich Place	Gym	Mediterranean Restaurant	Mexican Restaurant	10	0	3	0	13
First Canadian Place,Underground city	Coffee Shop	Café	Sandwich Place	Hotel	Bakery	Farmers Market	Restaurant	Italian Restaurant	Gym	Pizza Place	10	0	3	0	13
Harbord,University of Toronto	Café	Italian Restaurant	Coffee Shop	Pizza Place	Sandwich Place	Bakery	Restaurant	Grocery Store	Bar	French Restaurant	10	0	0	1	11
Harbourfront East,Toronto Islands,Union Station	Coffee Shop	Café	Sandwich Place	Hotel	Farmers Market	Park	Pizza Place	Restaurant	Bakery	Italian Restaurant	10	0	0	1	11
Harbourfront,Regent Park	Coffee Shop	Park	Café	Sandwich Place	Hotel	Farmers Market	Pizza Place	Concert Hall	Mediterranean Restaurant	Baseball Stadium	10	0	0	1	11
Rosedale	Coffee Shop	Café	Farmers Market	Park	Restaurant	Grocery Store	Hotel	Historic Site	Concert Hall	Museum	10	0	0	1	11
Ryerson,Garden District	Coffee Shop	Café	Hotel	Park	Sandwich Place	Concert Hall	Farmers Market	Restaurant	Dessert Shop	French Restaurant	10	0	0	1	11
St. James Town	Coffee Shop	Hotel	Park	Café	Restaurant	Farmers Market	Sandwich Place	Gastropub	Concert Hall	Baseball Stadium	10	5	0	1	16
Stn A PO Boxes 25 The Esplanade	Coffee Shop	Café	Hotel	Sandwich Place	Farmers Market	Park	Restaurant	Theater	Gastropub	Mediterranean Restaurant	10	0	0	1	11

Conclusion

This report only address the first level analysis of the problem described, a detail analysis can be done if time and resources are available.