

# The Battle of Neighbourhoods

Business in Toronto



# Problem background

- Nowadays, people tend to search online before they make decisions.
- There are many websites summarizing the most popular business types that one can consider to develop in a city.
- It is always good to know where in the city is the best place to start.



# Web ranking

- The top three business investment opportunities that one may go for in Toronto are shown in the table at the right.
- The target group of this project will be individuals or companies who are looking for potential small business opportunities in Toronto. This project will provide suggestions on potential business types and where to develop them in Toronto

Rank	Profitable venture	OPSTART*	Business Insider
1	Gluten-free restaurants and bakeries	Real Estate	Alcohol delivery service
2	Daily-care and Babysitting Services	Pet Services	Café dining
3	Patient Advocacy	Financial Consulting	Fitbit

# Data sources

NO.	Data	Type	Source
1	Top 20 Small Business Investment Opportunities in Toronto	Exploratory	<a href="https://www.profitableventure.com/toronto-ontario/">https://www.profitableventure.com/toronto-ontario/</a>
2	The Most Promising Business Opportunities In Canada	Exploratory	<a href="https://www.opstart.ca/promising-business-opportunities-canada/">https://www.opstart.ca/promising-business-opportunities-canada/</a>
3	The 21 Coolest Small Businesses In Toronto	Exploratory	<a href="https://www.businessinsider.com/coolest-small-businesses-in-toronto-2014-7?IR=T">https://www.businessinsider.com/coolest-small-businesses-in-toronto-2014-7?IR=T</a>
4	List of postal codes of Canada: M	Exploratory	<a href="https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M">https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M</a>
5	Geospatial data of the neighbourhoods	Geo-data	<a href="http://cocl.us/Geospatial_data">http://cocl.us/Geospatial_data</a>
6	Toronto exploring	Request	Foursquare



# Methodology

- Neighbourhood information is first extracted from source 4 (refer to the table in data description) through a python library “Beautifulsoup”. Second bullet point here
- With the location of each neighbourhood, it is no ready to make request to Foursquare to get the business information with a searching radius of 500 m.
- To find the optimal area in Toronto to develop a specific business, one must first know how many areas there are and what the business environment is in each area. Hence, the city area should be divided into neighbourhoods with characteristics which are distinct to each other to some extents. To do so, clustering, one of the machine learning techniques will be useful.
- These clustering results are then compared against the findings on the three websites. Excel and python coding are used wherever necessary.

Step 1 Data collection



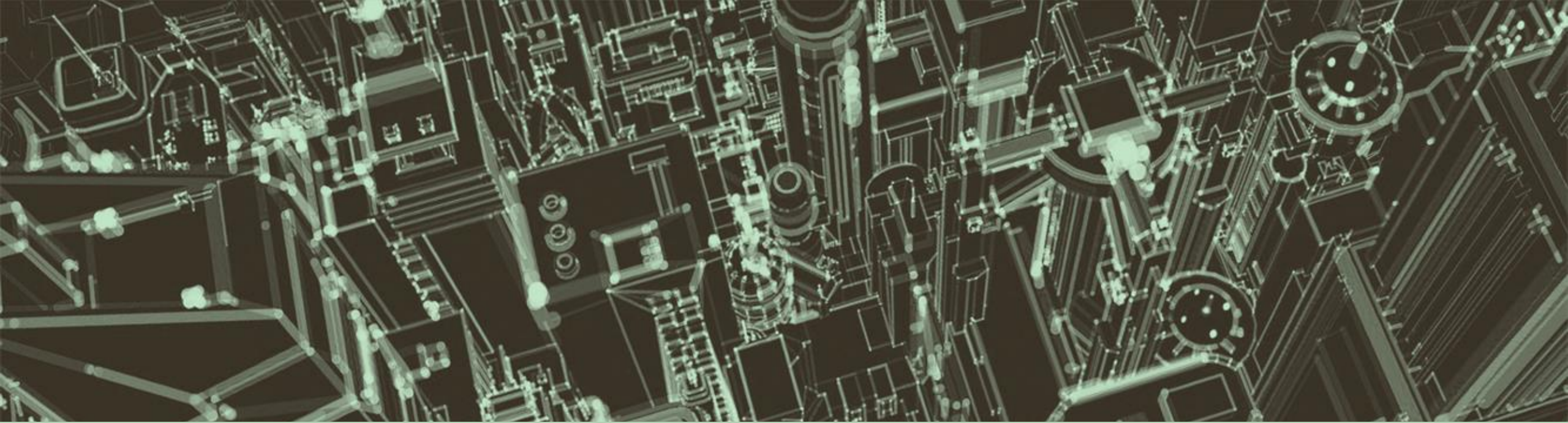
Step 2 Data mining



Step 3 K-means **Clustering**



Step 4 Post analysis



# Results



# Sorted neighborhoods in Toronto

	PostalCode	Borough	Neighborhood	Latitude	Longitude
0	M1B	Scarborough	Rouge,Malvern	43.806686	-79.194353
1	M1C	Scarborough	Highland Creek,Rouge Hill,Port Union	43.784535	-79.160497
2	M1E	Scarborough	Guildwood,Morningside,West Hill	43.763573	-79.188711
3	M1G	Scarborough	Woburn	43.770992	-79.216917
4	M1H	Scarborough	Cedarbrae	43.773136	-79.239476
5	M1J	Scarborough	Scarborough Village	43.744734	-79.239476
6	M1K	Scarborough	East Birchmount Park,Ionview,Kennedy Park	43.727929	-79.262029
7	M1L	Scarborough	Clairlea,Golden Mile,Oakridge	43.711112	-79.284577



# Clustered neighborhood map in Toronto





# Summary of results

Cluster	1 <sup>st</sup> popular business	2 <sup>nd</sup> popular business	3 <sup>rd</sup> popular business
0	Restaurant /Bank	Restaurant /Golf course	Restaurant/Donut shop
1	Coffee shop	Cafe	Grocery store
2	Baseball field/construction & landscaping	Baseball field/Women's store	Drug store/Donut shop
3	Bar/rental car location	Women's store/bar	Drug store/Donut shop
4	Park	Restaurant /construction & landscaping/bank	Women's store

Rank	Profitable venture	Recommended developing zone in Toronto	OPSTART	Recommended developing zone in Toronto	Business Insider	Recommended developing zone in Toronto
1	Gluten-free restaurants and bakeries	Cluster 0	Real Estate	Cluster 2	Alcohol delivery service	Cluster 3
2	Daily-care and Babysitting Services	Cluster 1	Pet Services	Cluster 1*	Café dinning	Cluster 1
3	Patient Advocacy	Cluster 2 or 3	Financial Consulting	Cluster 0	Fitbit	Cluster 4

# Conclusion

For the most popular business types ranked on these three websites, namely Profitableventure, OPSTART and Business Insider, the recommended developing areas in Toronto are summarized in the table at left. Note that the conclusion of this paper is purely based on appearing frequency of various business types, without considering other factors like business competition or financing limit. It can only serve as a preliminary research. A more complex study is needed to provide high-quality recommendations to business developers.