I am moving out, what's next?

Introduction

• The aim of this project is to get a tool to find neighbourhoods with specific characteristics. When people move on to a different city there usually are some essencial venues and services they want on the new neighbourhood. For example, some people may want to have a train station, or scholls near their new home or, maybe, the only want to find a neighbourhood with similar characteristics than they actual neighbourhood. In this project we will try the Foursqare Api to explore the city of Toronto in order to find the more situable neighbourhood for someone moving from a specific place.

Data

• The data used to investigate Toronto neighbourhood is extracted from https://en.wikipedia.org/wiki/List of postal codes of Canada: M. and addapted to perform the experiment.

	Postal Code	Borough	Neighbourhood	Latitude	Longitude
0	МЗА	North York	Parkwoods	43.75188	-79.33036
1	M4A	North York	Victoria Village	43.73042	-79.31282
2	M5A	Downtown Toronto	Regent Park, Harbourfront	43.65514	-79.36265
3	МбА	North York	Lawrence Manor, Lawrence Heights	43.72321	-79.45141
4	M7A	Downtown Toronto	Queen's Park, Ontario Provincial Government	43.66449	-79.39302

Postal code, Borough and Neighbourhood are directly extracted from the webpage and the latitude and longitude is obtained by using the Goecoder Python library

Data

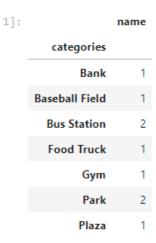
 Using the Foursquare API the venues information from every neighbourhood in Totoronto is extracted

:	Venue Category	Accessories Store	Airport	American Restaurant	Antique Shop	Aquarium	Art Gallery	Art Museum	Arts & Crafts Store	Asian Restaurant	Athletics & Sports	
	Neighborhood											
	Agincourt	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	
	Alderwood, Long Branch	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	1.0	
	Bathurst Manor, Wilson Heights, Downsview North	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	
	Bayview Village	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	
	Bedford Park, Lawrence Manor East	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	

Methodology

• To find similar neighbourhoods to an original one we first need to stablish the initial conditions. In this case, we assume that the user wants to move from the Riverdale neighbourhood in New York to another with similar characteristics in Toronto.

• The venues in Riverdale:



Methodology

• Select the same venues in every neighbourhood in Toronto

Venue Category	Bank	Baseball Field	Bus Station	Food Truck	Gym	Park	Plaza
Neighborhood							
Agincourt	NaN	NaN	NaN	NaN	NaN	1.0	NaN
Alderwood, Long Branch	NaN	NaN	NaN	NaN	1.0	NaN	NaN
Bathurst Manor, Wilson Heights, Downsview North	NaN	NaN	NaN	NaN	NaN	1.0	NaN
Bayview Village	NaN	NaN	NaN	NaN	NaN	1.0	NaN
Bedford Park, Lawrence Manor East	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Willowdale, Willowdale West	1.0	NaN	NaN	NaN	NaN	1.0	NaN
Woburn	NaN	NaN	NaN	NaN	NaN	1.0	NaN
Woodbine Heights	NaN	NaN	NaN	NaN	NaN	NaN	NaN
York Mills West	NaN	NaN	NaN	NaN	NaN	1.0	NaN
York Mills, Silver Hills	NaN	NaN	NaN	NaN	NaN	NaN	NaN

Methodology

 We have and array of venues for every neighbourhood in Toronto and we compute the euclidian distance for every of this array with the original Riverdale venues array:

categories Neighborhood	Bank	Baseball Field	Bus Station	Food Truck	Gym	Park	Plaza	Distance
Agincourt	0.0	0.0	0.0	0.0	0.0	1.0	0.0	3.162278
Alderwood, Long Branch	0.0	0.0	0.0	0.0	1.0	0.0	0.0	3.464102
Bathurst Manor, Wilson Heights, Downsview North	0.0	0.0	0.0	0.0	0.0	1.0	0.0	3.162278
Bayview Village	0.0	0.0	0.0	0.0	0.0	1.0	0.0	3.162278
Bedford Park, Lawrence Manor East	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.605551
Willowdale, Willowdale West	1.0	0.0	0.0	0.0	0.0	1.0	0.0	3.000000
Woburn	0.0	0.0	0.0	0.0	0.0	1.0	0.0	3.162278
Woodbine Heights	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.605551
York Mills West	0.0	0.0	0.0	0.0	0.0	1.0	0.0	3.162278
York Mills, Silver Hills	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.605551

Results

- Once the distance between the original neighbourhood and the Toronto neighbourhoods is computed we can obtain the neighbourhood with m
- ore similar venues than the original one.

categories	Bank	Baseball Field	Bus Station	Food Truck	Gym	Park	Plaza
Neighborhood							
Harbourfront West, Bathurst Quay, South Niagara, Island airport	1.0	0.0	0.0	0.0	2.0	2.0	0.0
Central Bay Street	1.0	0.0	0.0	0.0	1.0	1.0	2.0
Dufferin, Dovercourt Village	1.0	0.0	0.0	0.0	0.0	2.0	0.0
India Bazaar, The Beaches West	0.0	0.0	0.0	0.0	1.0	2.0	0.0
St. James Town	0.0	0.0	0.0	1.0	2.0	2.0	0.0
St. James Town, Cabbagetown	1.0	0.0	0.0	0.0	0.0	2.0	0.0

Conclusions

• In this project a tool for search similar neighbourhoods in different cities is presented. The project uses the Foursquare API and the Euclidian distance to select the neighbourhoods with more similar venues. This allows to the user to explore the new city and to search for different options taking into account his personal preferences.