Moving into a Toronto neighborhood

Introduction

- When looking for a new house to live in, choosing a new neighborhood to move into can be a quite difficult experience.
- There are many factors that should be considered: is it a quiet neighborhood? Are there nearby places to buy food, clothes, to go out? And those factors all differ from one person to another.

Data

- There were three steps to acquire the data necessary for the project:
- Scraping a Wikipedia page with a list of postal codes of Toronto with their respective Boroughs and Neighborhoods. The postal codes with no borough or neighborhood assigned where removed from the data.
- Merging the scraped data of the postal codes with the .csv file that contained their geographical coordinates.
- Using the Foursquare API to get the nearby venues in all the neighborhoods. The search was limited to 100 venues for each neighborhood, since there is a limited number of calls that can be made to the Foursquare API daily.

Methodology

- In order to find the most suitable neighborhood, I came up with four different cases:
- A family consisting of four people: the mother, the father and their two children, one of them a baby. Their neighborhood should have: baby store, pet store, shopping mall, convenience store and supermarket
- A travelling business person staying for some time in Toronto. His neighborhood should have: hotel, airport, café, pub and coworking space
- An art college student looking for a new place to live. Her neighborhood should have: college arts building, art gallery, arts and crafts store, yoga studio and Asian restaurant
- A recently graduated man also lookingfor a new neighborhood. His neighborhood should have: college gym, bar, video game store, park and concert hall.

Results

For the family:

Neighborhood	Baby Store	Pet Store	Shopping Mall	Convenience Store	Supermarket	Frequency
Weston	0.0	0.000	0.0	0.500000	0.0	0.500000
York Mills West	0.0	0.000	0.0	0.333333	0.0	0.333333
Runnymede, The Junction North	0.0	0.000	0.0	0.250000	0.0	0.250000
Eringate, Bloordale Gardens, Old Burnhamthorpe...	0.0	0.125	0.0	0.125000	0.0	0.250000
East Toronto, Broadview North (Old East York)	0.0	0.000	0.0	0.250000	0.0	0.250000

For the business person

Neighborhood	Hotel	Airport	Café	Pub	Coworking Space	Frequency
Bayview Village	0.0	0.0	0.25	0.00	0.0	0.25
Glencairn	0.0	0.0	0.00	0.25	0.0	0.25
Birch Cliff, Cliffside West	0.0	0.0	0.25	0.00	0.0	0.25
The Beaches	0.0	0.0	0.00	0.25	0.0	0.25
The Annex, North Midtown, Yorkville	0.0	0.0	0.15	0.05	0.0	0.20

Results

For the young man:

Neighborhood	College Gym	Bar	Video Game Store	Park	Concert Hall	Frequency
York Mills West	0.0	0.333333	0.0	0.333333	0.0	0.666667
Caledonia-Fairbanks	0.0	0.000000	0.0	0.500000	0.0	0.500000
East Toronto, Broadview North (Old East York)	0.0	0.000000	0.0	0.500000	0.0	0.500000
Parkwoods	0.0	0.000000	0.0	0.500000	0.0	0.500000
Rouge Hill, Port Union, Highland Creek	0.0	0.500000	0.0	0.000000	0.0	0.500000

For the young woman:

Neighborhood	College Arts Building	Art Gallery	Arts & Crafts Store	Yoga Studio	Asian Restaurant	Frequency
Little Portugal, Trinity	0.000000	0.021739	0.000000	0.021739	0.065217	0.217391
Don Mills	0.000000	0.041667	0.000000	0.000000	0.041667	0.166667
Queen's Park, Ontario Provincial Government	0.000000	0.000000	0.030303	0.030303	0.000000	0.121212
Business reply mail Processing Centre, South C...	0.000000	0.000000	0.000000	0.058824	0.000000	0.117647
University of Toronto, Harbord	0.028571	0.000000	0.000000	0.028571	0.000000	0.114286

Discussion

- Based on the results of the previous section, there are a few observations that can be noted:
- For the family, if we consider just the total frequency, the Weston neighborhood would be the best option, but it only has the convenience store. If the the family has a priority among the five venues, the results would be different.
- For the business person, also considering just the total frequency, the first four neighborhoods each have only one of the venues wanted, while the fifth one has two, both cafés and pubs. Though both of them have a lower frequency, The Annex could be a good choice.
- For the young man, York Mills West, the first neighborhood based on total frequency, seems like the best option since it has both bars and parks, while the other neighborhoods only have one of each venue.
- For the young woman, considering the total frequency, the Little Portugal/Trinity neighborhood is a very good option, since she can find art galleries, yoga studios and Asian restaurants. Though if she would like to live closest to the college, the Harbord neighborhood would be a better choice.
- As we can see, for each case there are many different ways the available data can be analysed in order to find the most suitable neighborhood. There's no right or wrong answer, it's all based on preferences, and the analysis can be adapted to work with all different cases.

Conclusion

- Overall, the project worked as intended. It was possible to use many of the content learnt throughout the data science course. Working with the Toronto neighborhood data and the Foursquare API made it possible to get all the information needed and analyse it.
- There are still a few points that could be improved, such as raising the limit of venues for each neighborhood, as it would allow an even better analysis. Unfortunately the daily calls limitation to the Foursquare API make it a little harder to do so. Still, with the 100 venues limit used, it was already possible to get some good insight into the neighborhoods and chose the best options for each case, whilst also being possible to expand the analysis for more cases.