

# New York vs Toronto

## Introduction

New York City is the largest city in the USA, with a total population of about 8.3 million (estimated in 2020) inhabitants distributed in 302.6 square miles ( $784 \text{ km}^2$ ) <sup>[1]</sup>. USA has 328.2 million people. Canada, a north neighbor of the USA, has 37.6 million people, almost 9 less more than USA. Toronto is the largest city and the capital of Canada, where the total population of the city is 2.7 million inhabitants <sup>[2]</sup>. Toronto and New York are the four largest cities in the North America. In this capstone, I am analyzing the cities according to the neighborhoods and the venues categories, obtained by foursquare <sup>[3]</sup>. Specifically, I am checking what venues mainly exist in the city and the neighborhoods.

## Results and discussion

### New York

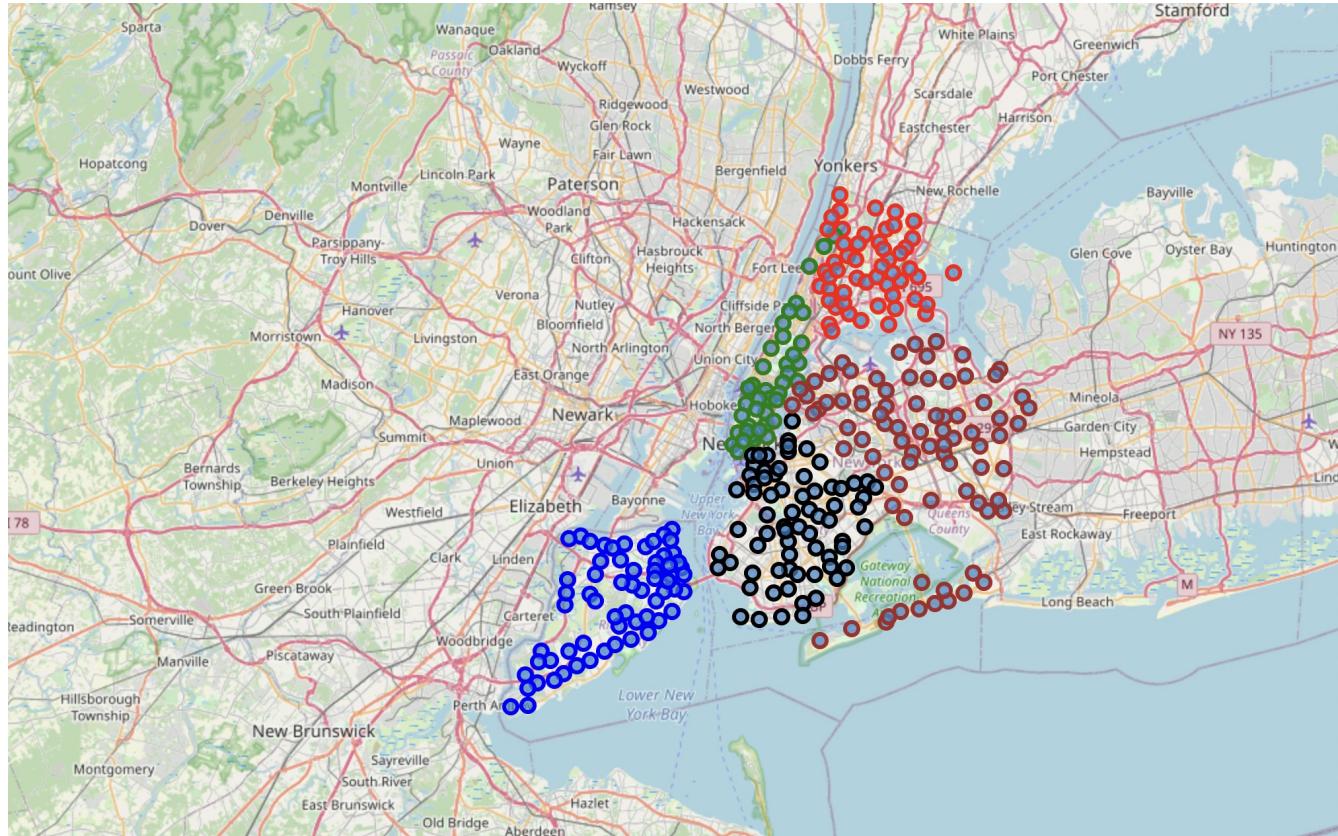


Figure 1: The different boroughs in New York City. The different colors correspond to the different boroughs (Table 1) and the different points to the neighborhoods.

Borough	Color
Bronx	red
Manhattan	green
Brooklyn	black
Queens	brown
Staten Island	blue

Table 1: The colors for each borough of New York City.

Figure 1 shows the different boroughs in New York City, which are listed in Table 1. The different points correspond to a neighborhood of a borough. Thus, it is clear that each borough has a different number of neighborhoods. This is shown in Figure 2.

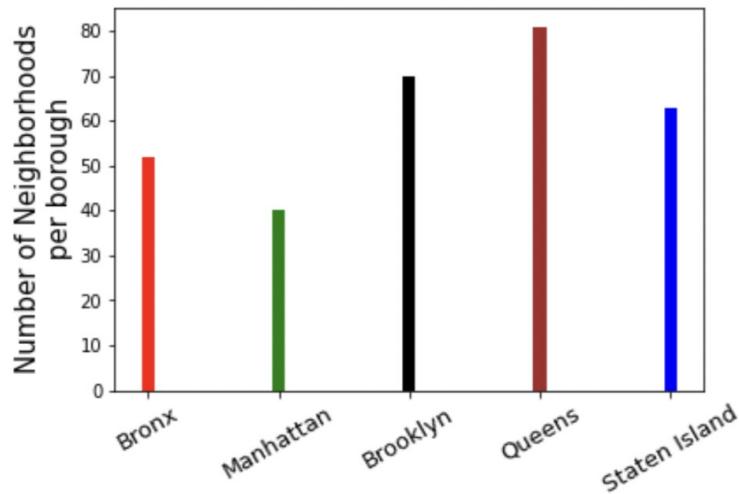


Figure 2: Number of neighborhoods per borough in New York City.

From Fig. 2 it is clear that the borough of Queens is the largest in terms of neighborhoods.

Next, for each borough I select the top three venue options. It is possible that for a borough there could be venue not in the top three, whereas for another it has the highest ranking. Figure 3 shows the top options. One can easily find a coffee shop in Manhattan and Brooklyn, while many pizza places are in Brooklyn, Bronx and Queens.

Pizza is traditional Italian food, although it has been categorized separately. There are a lot of Italian restaurants in Manhattan (>120) and Brooklyn (>60).

Interestingly, one cannot find any Bus station in Staten Island, which means that people are using other transportation for their daily moves.

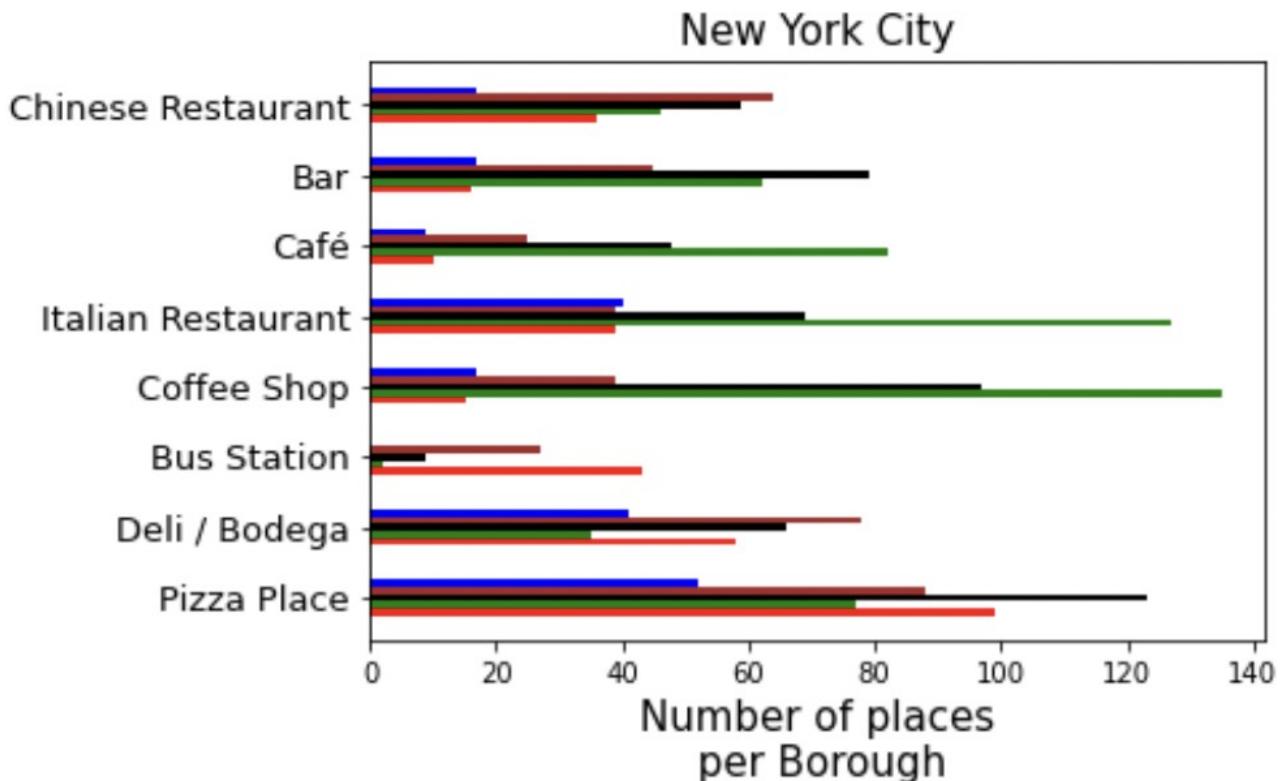
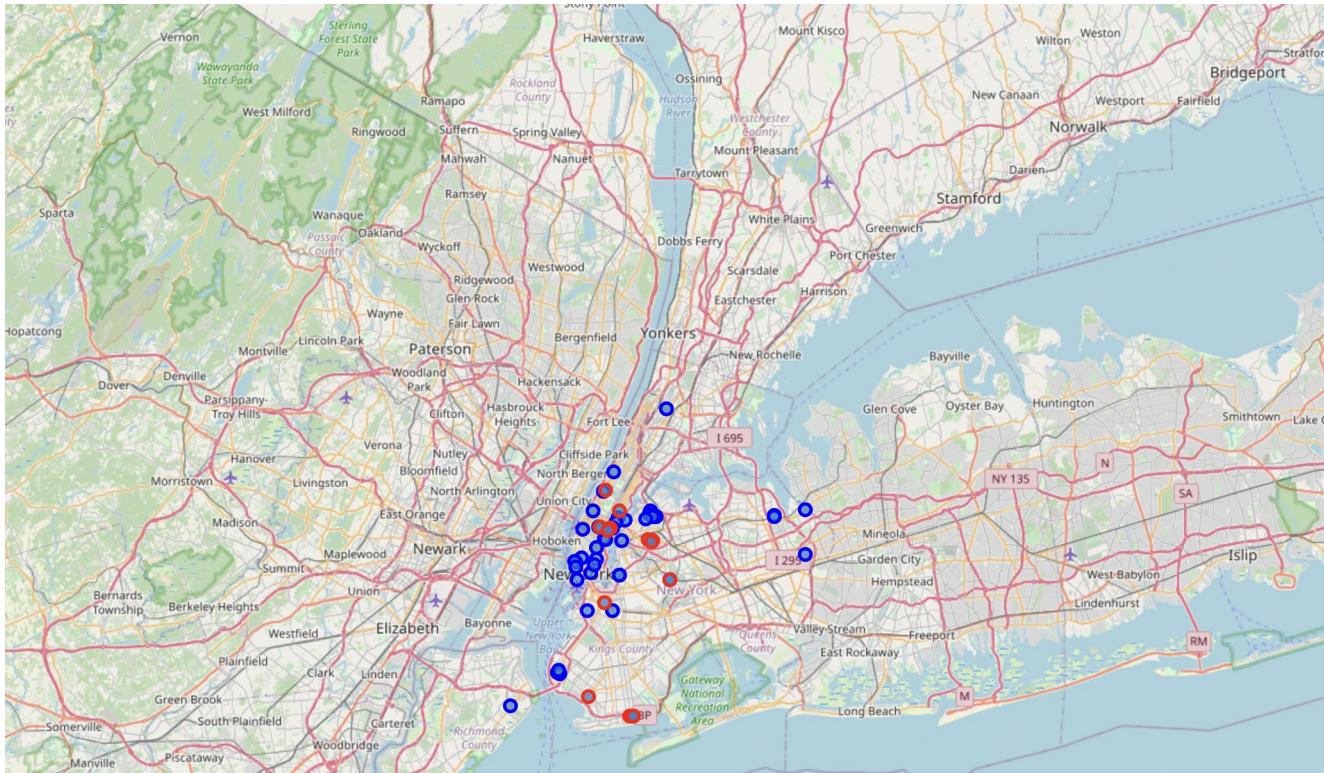


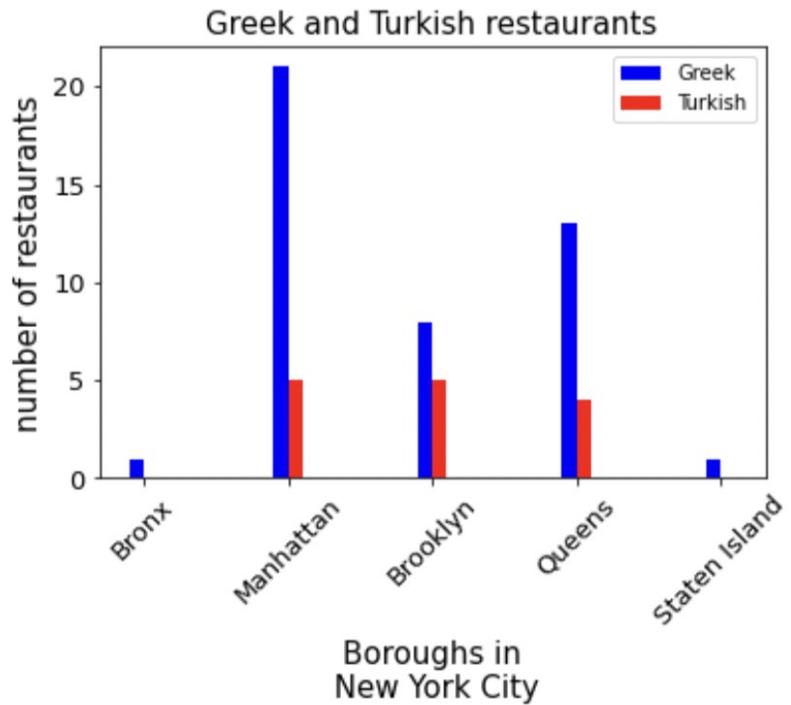
Figure 3: Top venue options per Borough in New York. Colors are according to different boroughs (Table 1).

Before I end up with New York City, I am just making a comparison between the Greek and Turkish food (I am Greek and my girlfriend is Turkish).

Figure 4(a) shows the location for each Greek (blue) and Turkish (red) restaurant. In Fig. 4(b) a bar-plots comparison has been done, showing for each borough how many Greek and Turkish restaurants are there. The Greek restaurants are more than the Turkish. Only in Manhattan there are 21 Greek vs 5 Turkish restaurants.



(a)



(b)

Figure 4: Number of Greek (blue) and Turkish (red) restaurants for each borough of New York City. (a) Map visualization and (b) bar-plots comparison.

# Toronto

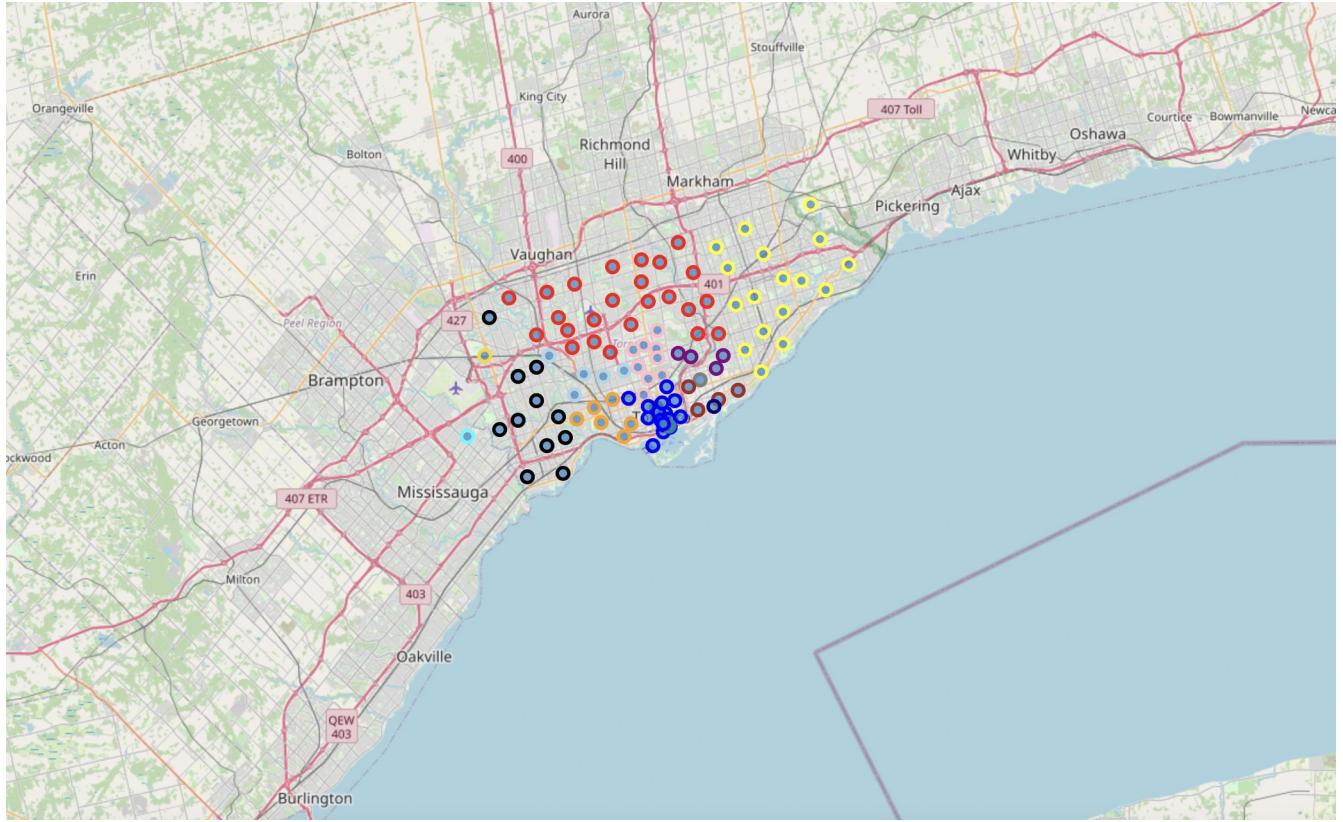


Figure 5: The different boroughs in Toronto. The different colors corresponds to the different boroughs (Table 2) and the different points to the neighborhoods.

Borough	Color
North York	red
Downtown Toronto	blue
Queen's Park	green
Etobicoke	black
Scarborough	yellow
East York	purple
York	light-blue
East Toront	brown
West Toronto	orange
East York/East Toronto	grey
Central Toronto	pink
Mississauga	cyan
Downtown Toronto Stn A	dark-cyan
Etobicoke Northwest	gold
East Toronto Business	navy

Table 2: The colors for each borough of Toronto

Figure 5 shows the different boroughs in Toronto, which are listed in Table 2. The different points correspond to a neighborhood of a borough. Compare to New York, here there are many boroughs while the population is more than 3 times larger in New York than in Toronto. Figure 6 shows how many neighborhoods there are per borough in Toronto.

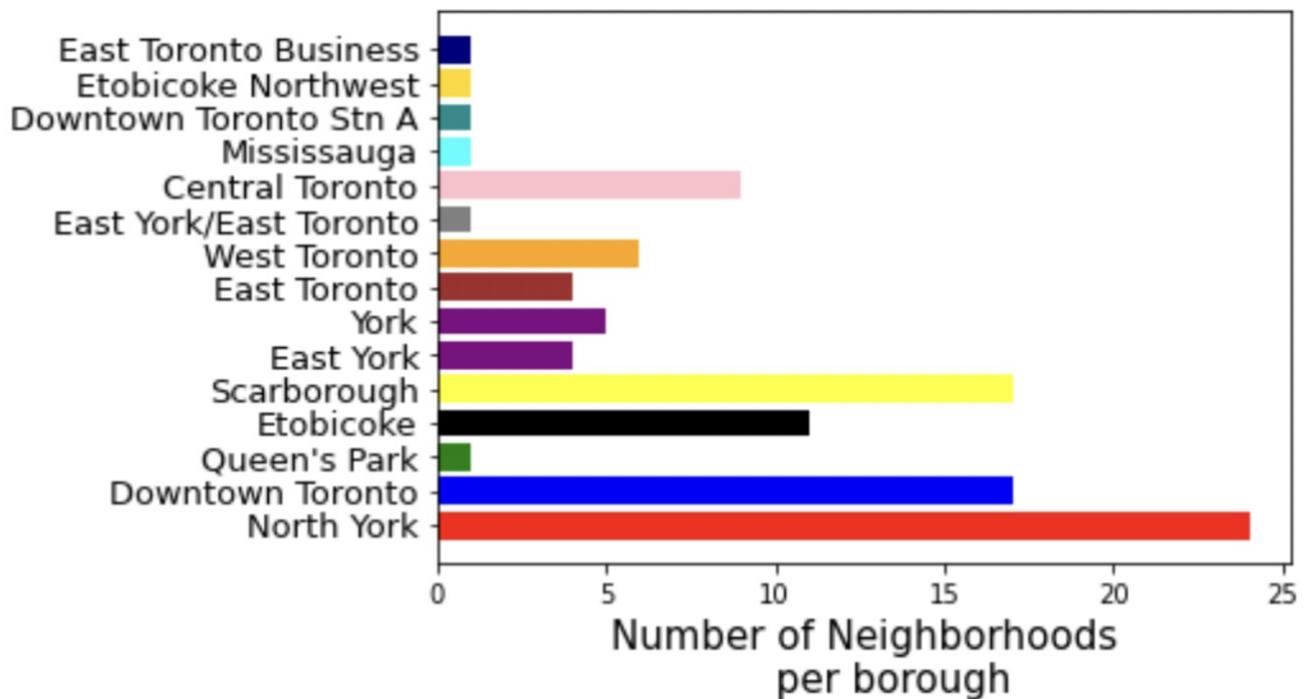


Figure 6: Number of neighborhoods per borough in Toronto.

The largest borough is North York in Toronto, having 24 neighborhoods.

Next, for each borough I select the top three venue options. It is possible that for a borough there could be venue not in the top three, whereas for another it has the highest ranking. I have split the analysis into the Boroughs which include the word York and the some other boroughs, such as Downtown Toronto, Queen's Park, East Toronto, West Toronto, Central Toronto.

Figure 7(a) shows the top options for the boroughs with York. One can easily find a coffee shop in North York. In East York, the number of coffee shops and banks is the same.

Figure 7(b) shows the top options for the other boroughs. One can easily find a coffee shop and cafe in Downtown Toronto.

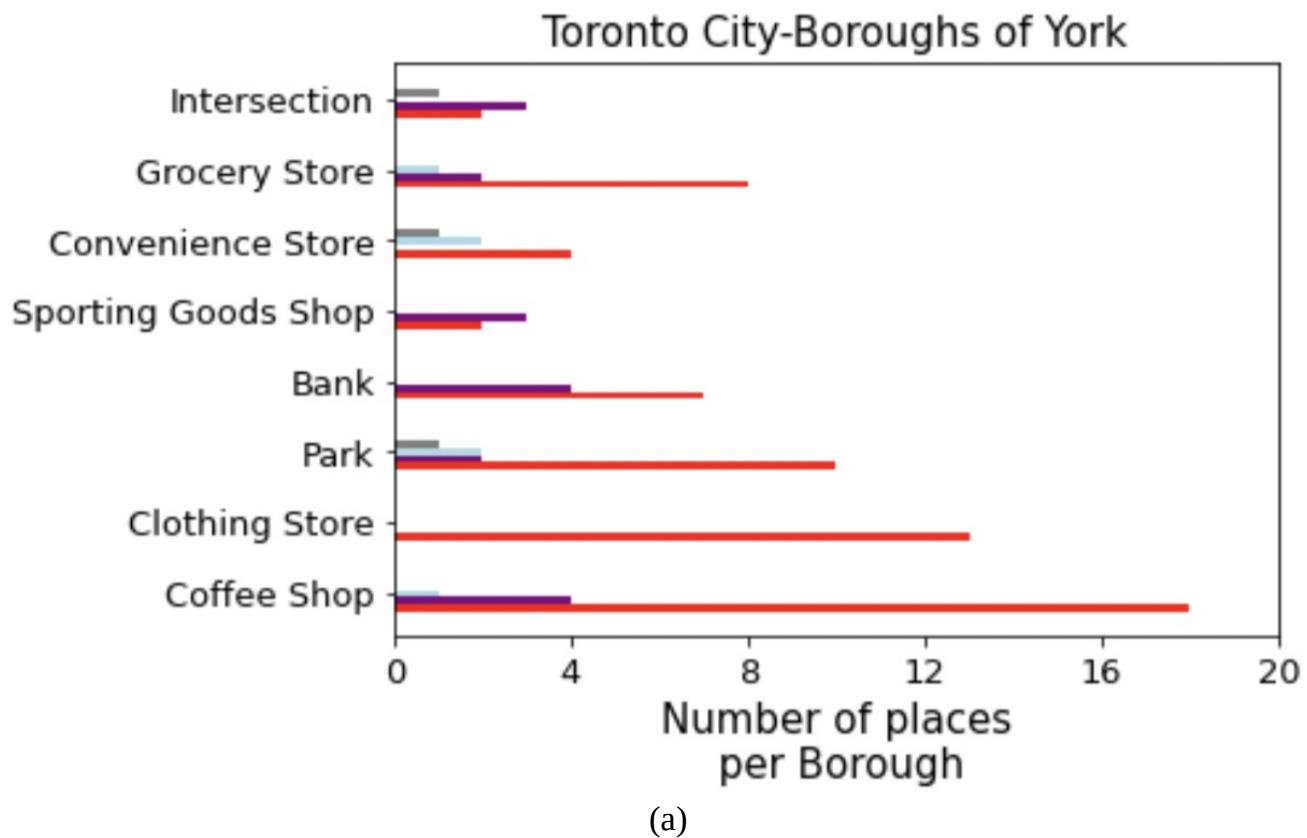


Figure 7: Top venue options for specific boroughs in Toronto: (a) North York, Eat York, York, East York/East Toronto, (b) Downtown Toronto, Queen's Park, East Toronto, West Toronto, Central Toronto.

In Fig. 7(b) the option of Greek restaurant is selected because there are many in East Toronto.

## Conclusions

To conclude, an analysis based on the venues has been done for New York City and Toronto. New York is more than 3 times larger than Toronto, although it has only 5 boroughs compare to Toronto which has 15 (3 times more). You can easily find Coffee shop, especially in boroughs with the largest number of neighborhoods.

## References

- [1] [https://en.wikipedia.org/wiki/New\\_York\\_City](https://en.wikipedia.org/wiki/New_York_City)
- [2] <https://en.wikipedia.org/wiki/Toronto>
- [3] <https://foursquare.com/>