SEPTEMBER 2, 2018

THE BATTLE OF NEIGHBORHOODS REPORT

COURSERA – CAPSTONE PROJECT

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BUSINESS PROBLEM

EXECUTIVE SUMMARY

There are many existing venues in neighborhoods in New York as well as Toronto city. How can we know which venue by category and city have the most interesting from people as we as have the most number of users checked-in? Then how can we know the competition of the venues of the same category in a city or between neighborhoods in a city bases on the statistic number of users, visits, checked-ins, likes, rating?

Through by answering this questions, we can have insight about the competition between venues of the same category in a city or in a neighborhood, then we can find out the reasons could make these venues to be attractive to the people.

Finally, after we know reasons, and have the accurate statistic data about the existing competitors, the behavior of users, the user culture, the demands are not served, or are not served well, the needs in future, we will develop strategies for changes in the market, sustainable growth as well as expansion business to new market.

DATA - STATISTICS & REPORTS

The data used in these statistics and reports was resources retrieved from:

- Toronto data: Wikipedia (Toronto postal code) combined with neighborhoods, venues data by using Foursquare APIs.

- New York data: included neighborhoods, venues data gathered from https://ibm.box.com/shared/static/fbpwbovar7lf8p5sgddm06cgipa2rxpe.json

Before using Foursquare APIs to get neighborhoods, venues data, I used Geocoder library to get coordinates (latitude, longitude) for each neighborhood, instead of Google Geoencoding APIs.

Then I combined 2 data frames Toronto and New York together in order to perform comparison, statistic and create reports.

TOP 20 VENUES RECOMMENDED BY CATEGORY IN CITY, NEIGHBORHOODS

TABLE 1 TOP 20 CATEGORIES HAS THE MOST VENUES IN NEW YORK, TORONTO

	New York	Toronto	Total
Pizza Place	434.0	49.0	483.0
Coffee Shop	264.0	198.0	462.0
Italian Restaurant	322.0	48.0	370.0
Deli / Bodega	274.0	18.0	292.0
Bakery	231.0	48.0	279.0
Café	164.0	103.0	267.0
Bar	223.0	41.0	264.0
Chinese Restaurant	204.0	25.0	229.0
Sandwich Place	186.0	41.0	227.0
Park	171.0	45.0	216.0
American Restaurant	176.0	31.0	207.0
Grocery Store	179.0	24.0	203.0
Mexican Restaurant	170.0	19.0	189.0
Pharmacy	169.0	18.0	187.0
Donut Shop	168.0	2.0	170.0
Gym / Fitness Center	144.0	21.0	165.0
Ice Cream Shop	141.0	20.0	161.0
Restaurant	87.0	61.0	148.0
Sushi Restaurant	113.0	30.0	143.0
Hotel	96.0	45.0	141.0

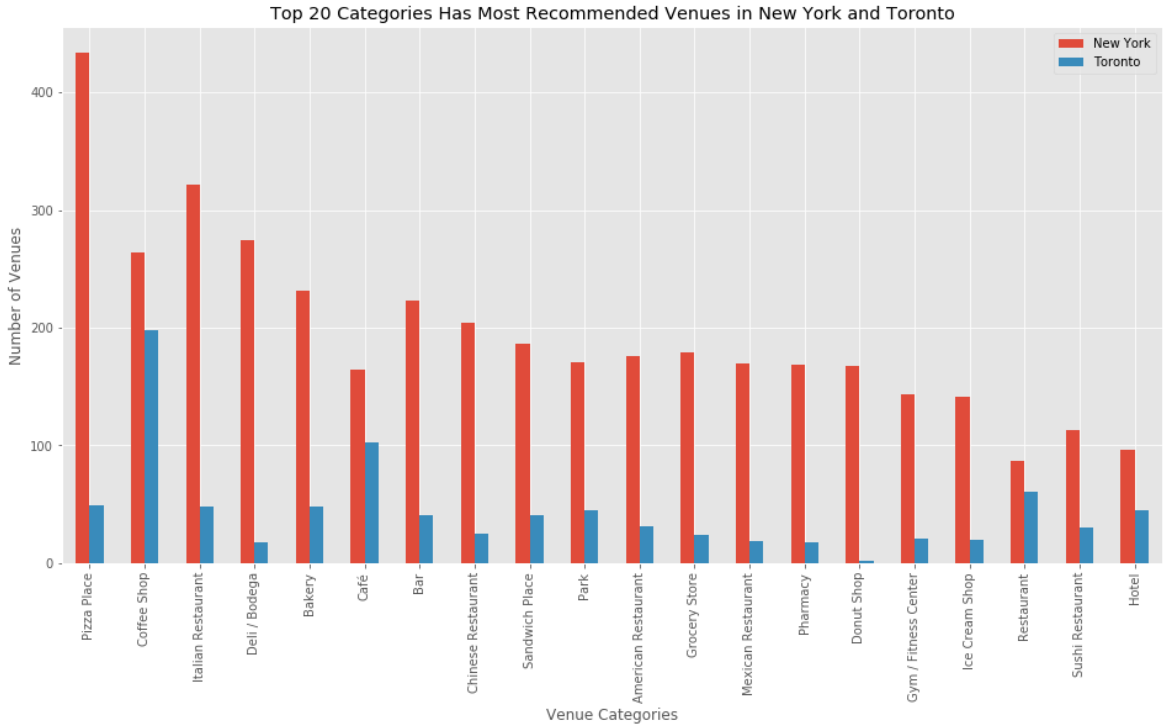
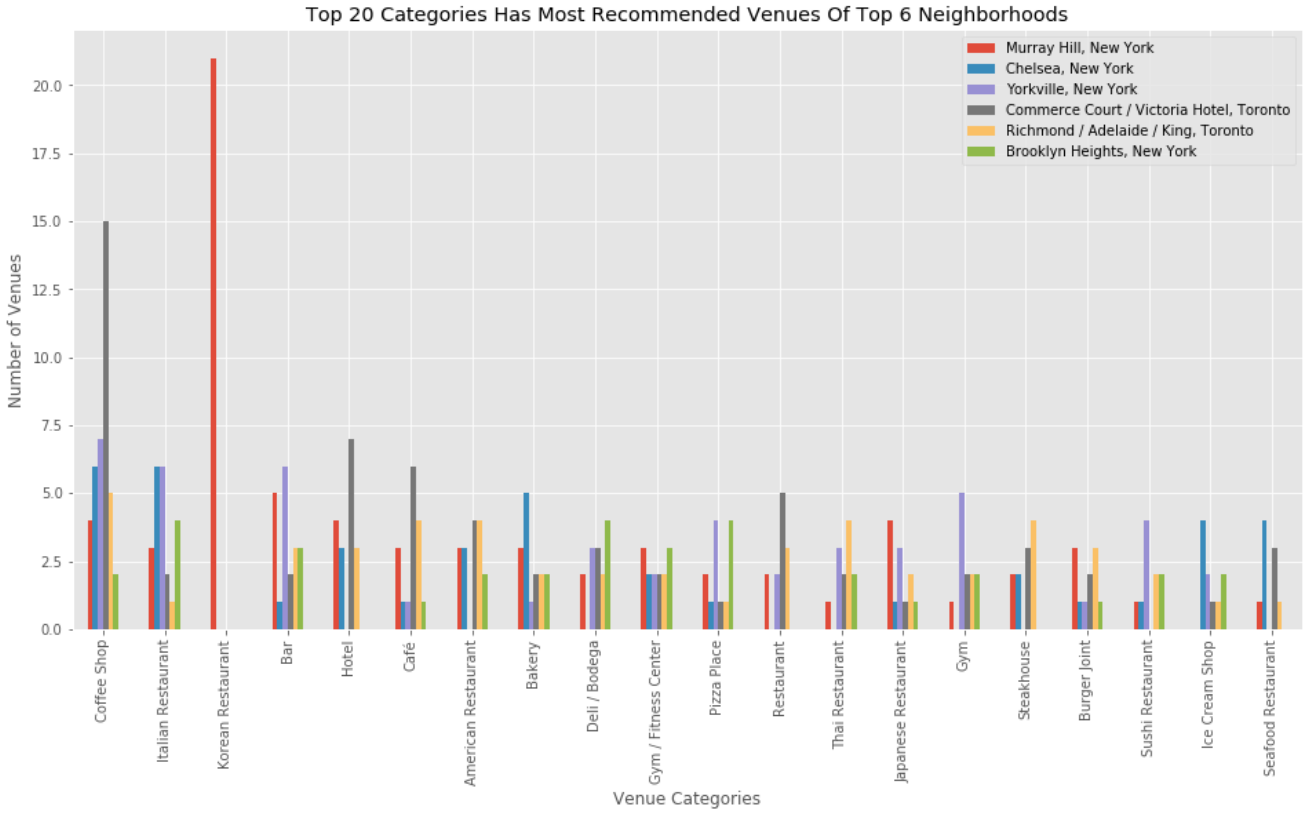


TABLE 2 TOP 20 CATEGORIES HAVE THE MOST VENUES IN 6 NEIGHBORHOODS

	Murray Hill, New York	Chelsea, New York	Yorkville, New York	Commerce Court / Victoria Hotel, Toronto	Richmond / Adelaide / King, Toronto	Brooklyn Heights, New York	Total
Coffee Shop	4	6	7	15	5	2	39
Italian Restaurant	3	6	6	2	1	4	22
Korean Restaurant	21	0	0	0	0	0	21
Bar	5	1	6	2	3	3	20
Hotel	4	3	0	7	3	0	17
Café	3	1	1	6	4	1	16
American Restaurant	3	3	0	4	4	2	16
Bakery	3	5	1	2	2	2	15
Deli / Bodega	2	0	3	3	2	4	14
Gym / Fitness Center	3	2	2	2	2	3	14
Pizza Place	2	1	4	1	1	4	13
Restaurant	2	0	2	5	3	0	12
Thai Restaurant	1	0	3	2	4	2	12
Japanese Restaurant	4	1	3	1	2	1	12
Gym	1	0	5	2	2	2	12
Steakhouse	2	2	0	3	4	0	11
Burger Joint	3	1	1	2	3	1	11
Sushi Restaurant	1	1	4	0	2	2	10
Ice Cream Shop	0	4	2	1	1	2	10
Seafood Restaurant	1	4	0	3	1	0	9


Top 20 Categories Has Most Recommended Venues Of Top 6 Neighborhoods
Murray Hill, New York
Chelsea, New York
Yorkville, New York
Commerce Court / Victoria Hotel, Toronto
Richmond / Adelaide / King, Toronto
Brooklyn Heights, New York
Number of Venues
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0
Coffee Shop
Italian Restaurant
Korean Restaurant
Bar
Hotel
Café
American Restaurant
Bakery
Deli / Bodega
Gym / Fitness Center
Pizza Place
Restaurant
Thai Restaurant
Japanese Restaurant
Gym
Steakhouse
Burger Joint
Sushi Restaurant
Ice Cream Shop
Seafood Restaurant
Venue Categories

TOP 10 VENUES HAVE THE MOST INTERESTING (LIKES) BY CATEGORY IN CITY, NEIGHBORHOODS

From above data, I'm going to use FOURSQUARE API get detail information of venues such as likes, rating, the number of users, etc… However, because API endpoint Details of FOURSQUARE is PREMIUM, this endpoint limits only 50 calls per day. It certainly doesn't adapt for my above data set with 12,374 different venues in New York and Toronto. Thus, I decided to use API endpoint Likes as an alternative method to get the number of likes.

Besides, because the limitation of Foursquare Regular Accounts as well as the number of venues of categories in New York is more than in Toronto, I also decided to get data frame of venues by top 10 categories and in New York only. This filtering helped me to decrease the size of data set to 3916 records (venues).

In this project, I only retrieve the number of User Likes from Foursquare for first 500 venues in my data set.

TABLE 3 TOP 10 CATEGORIES HAVE THE MOST TOTAL USER LIKES IN NEW YORK CITY

	Category Name	Likes
0	Italian Restaurant	1134
1	Pizza Place	1040
2	Bar	816
3	Donut Shop	551
4	Mexican Restaurant	449
5	Deli / Bodega	376
6	Pharmacy	368
7	American Restaurant	346
8	Bakery	297
9	Park	293

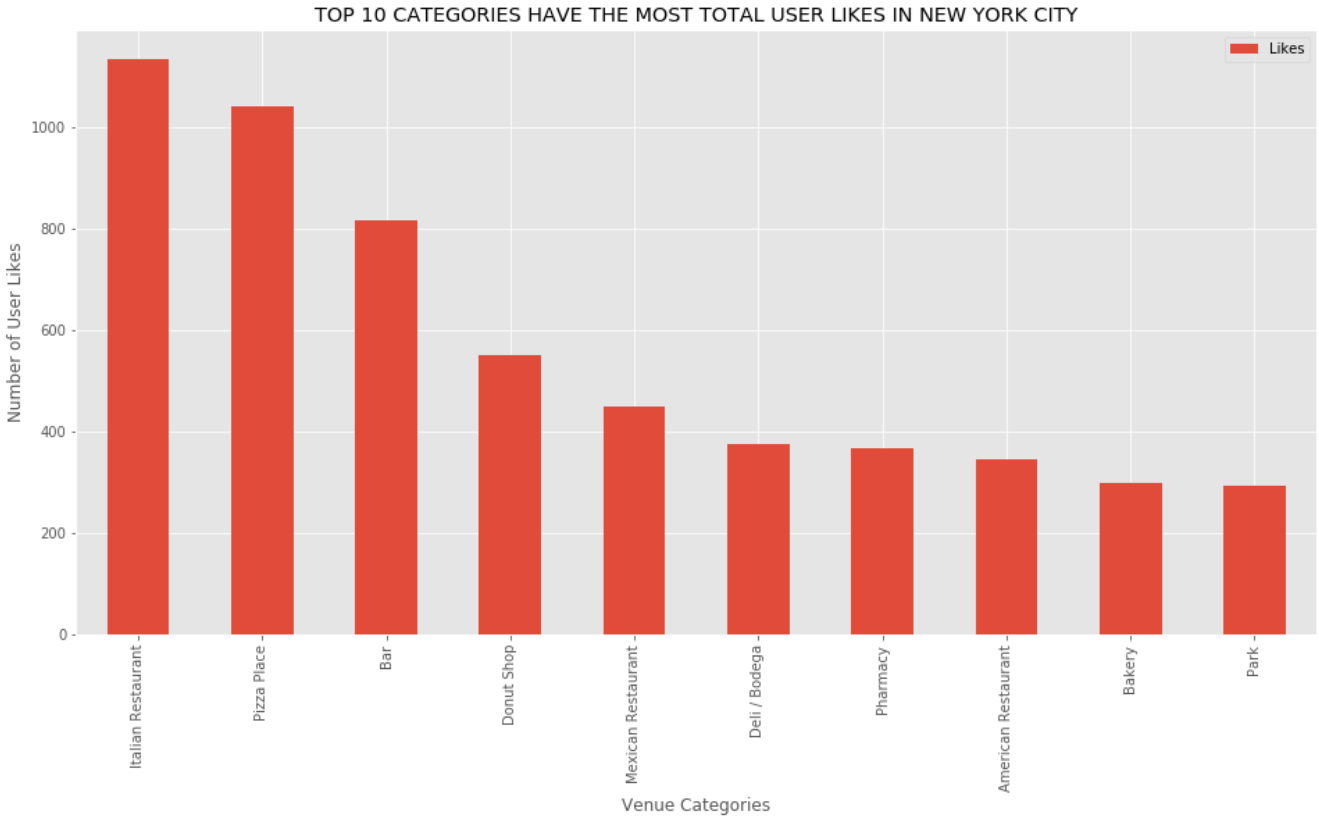
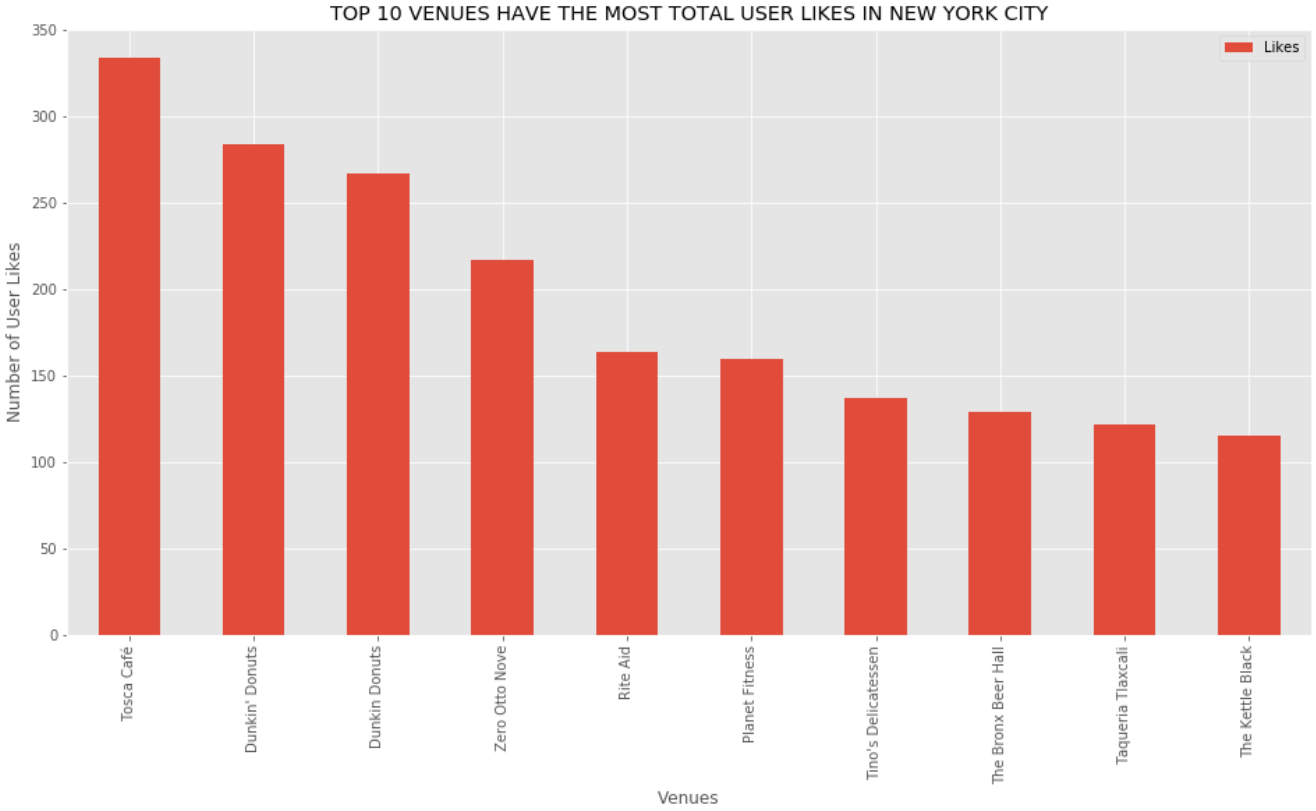


TABLE 4 TOP 10 VENUES HAVE THE MOST TOTAL USER LIKES IN NEW YORK CITY

	Venue Name	Likes
0	Tosca Café	334
1	Dunkin' Donuts	284
2	Dunkin Donuts	267
3	Zero Otto Nove	217
4	Rite Aid	164
5	Planet Fitness	160
6	Tino's Delicatessen	137
7	The Bronx Beer Hall	129
8	Taqueria Tlaxcali	122
9	The Kettle Black	115


TOP 10 VENUES HAVE THE MOST TOTAL USER LIKES IN NEW YORK CITY
Likes
Number of User Likes
0
50
100
150
200
250
300
350
Tosca Café
Dunkin' Donuts
Dunkin Donuts
Zero Otto Nove
Rite Aid
Planet Fitness
Tino's Delicatessen
The Bronx Beer Hall
Taqueria Tlaxcali
The Kettle Black
Venues

TOP 5 VENUES HAVE THE HIGHEST RATING BY CATEGORY IN CITY, NEIGHBORHOODS

TOP 5 VENUES HAVE THE MOST VISITS, USERS BY CATEGORY IN CITY, NEIGHBORHOODS

TOP 10 CATEGORIES HAVE THE MOST VISITS, USERS BY CITY, NEIGHBORHOODS

DATA SETS WAS GATHERED & BACKUP

https://github.com/timbake/TheBattleOfNeighborhoods

- NewYorkRVenues.csv: was from IBM https://ibm.box.com/shared/static/fbpwbovar7lf8p5sgddm06cgipa2rxpe.json combined with venues info retrieved from Foursquare using API endpoint Explore.
- TorontoRVenues.csv: was scrapped coordinates form Wikipedia https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M , then also combined with venues info retrieved Foursquare.
- RecommendedVenues.csv: was merged from 2 data set dfNewYorkRVenues (NewYorkRVenues.csv) and dfTorontoRVenues (TorontoRVenues.csv).
- 500NewYorkFilteredRVenues.csv
- 20NewYorkRVenuesDetail.csv

SOURCE CODE – CAPSTONE PROJECT

https://github.com/timbake/data-science-capstone-coursera/blob/master/The_Battle_Of_Neighborhoods.ipynb