

EXPLORING TORONTO FOR NEW BUSINESS

DATA SCIENCE CAPSTONE

NEW PIZZA BUSINESS IN TORONTO

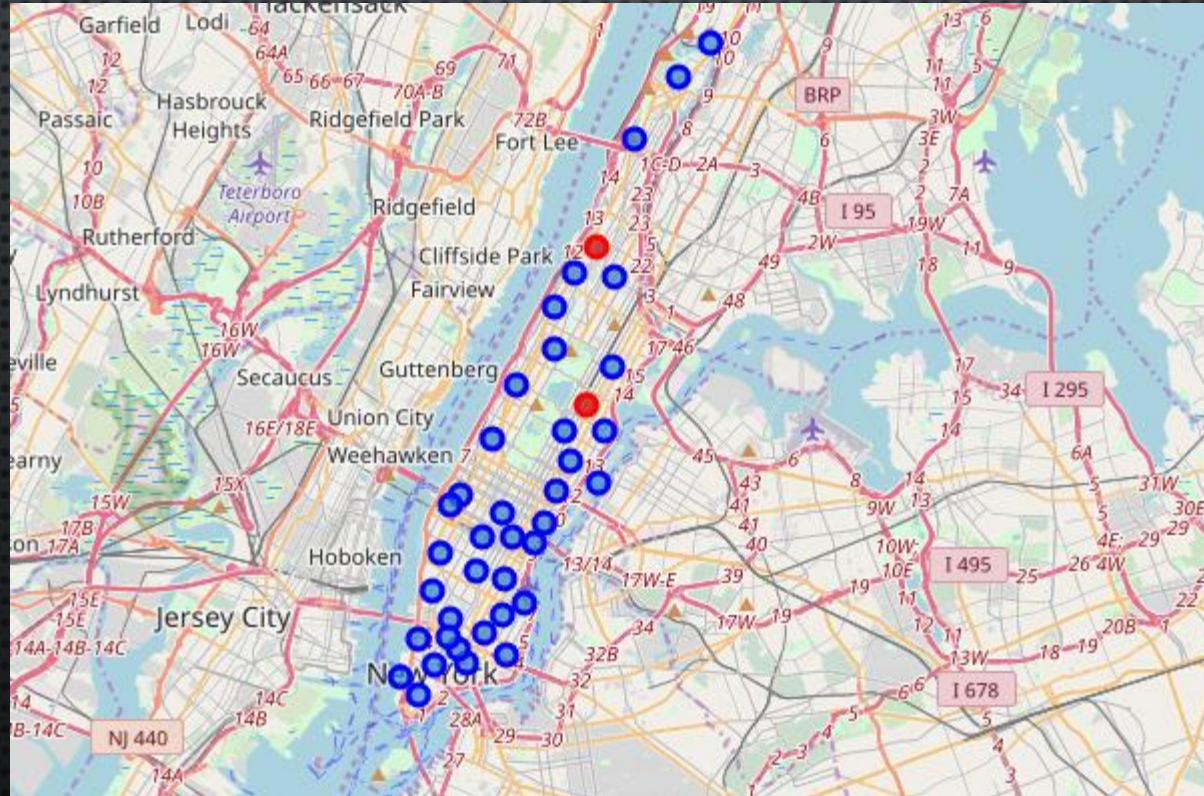
- A PIZZA RESTAURANT OWNER HAS TWO RESTAURANTS LOCATED IN MANHATTAN, IN THE CARNEGIE HILL AND HAMILTON HEIGHTS NEIGHBORHOODS, AND HE WANTS TO OPEN A NEW RESTAURANT IN TORONTO. HE IS MAKING A RESEARCH ABOUT THE NEIGHBORHOODS WHERE HIS RESTAURANTS ARE LOCATED, IN ORDER TO HAVE A PROFILE OF THE NEIGHBORHOOD HE IS LOOKING FOR IN TORONTO. WHAT THE OWNER NEEDS IS TO FIND SIMILAR NEIGHBORHOODS IN TORONTO WHERE HE CAN OPEN HIS NEW RESTAURANT.

DATA ACQUISITION AND CLEANING

- NEW YORK NEIGHBORHOOD INFORMATION CAN BE FOUND ON THE FOLLOWING LINK ON THE INTERNET, IN JSON FORMAT: [HTTPS://GEO.NYU.EDU/CATALOG/NYU_2451_34572](https://geo.nyu.edu/catalog/nyu_2451_34572)
- TORONTO NEIGHBORHOODS CAN BE FOUND ON WIKIPEDIA:
[HTTPS://EN.WIKIPEDIA.ORG/WIKI/LIST_OF_POSTAL_CODES_OF_CANADA: M](https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M)
- THE PLACES WE ARE LOOKING FOR NEIGHBORHOOD PROFILE WILL BE OBTAINED USING FOURSQUARE API, AND TO PERFORM THIS WE WILL NEED THE COORDINATES OF EACH NEIGHBORHOOD.

MANHATTAN NEIGHBORHOODS

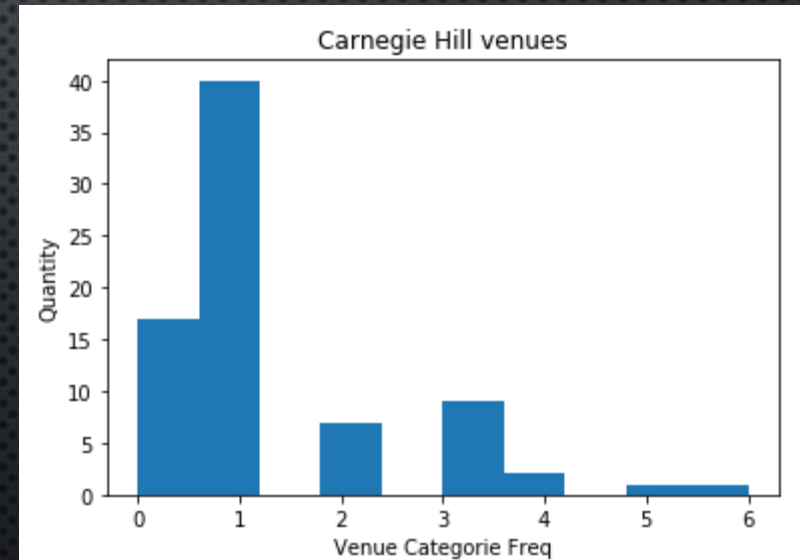
- Pizza Restaurant locations



CARNEGIE HILL

- CARNEGIE HILLS VENUES: FROM FOURSQUARE API TOP 100 VENUES ARE EXTRACTED AND THEN THE DISTRIBUTION IS SHOWED IN A HISTOGRAM SHOWING ABOUT THE MOST COMMON VENUES, AND ALSO TOP 10 VENUES ARE EXTRACTED IN ORDER TO TELL MORE ABOUT THE NEIGHBORHOOD BASED ON VENUES

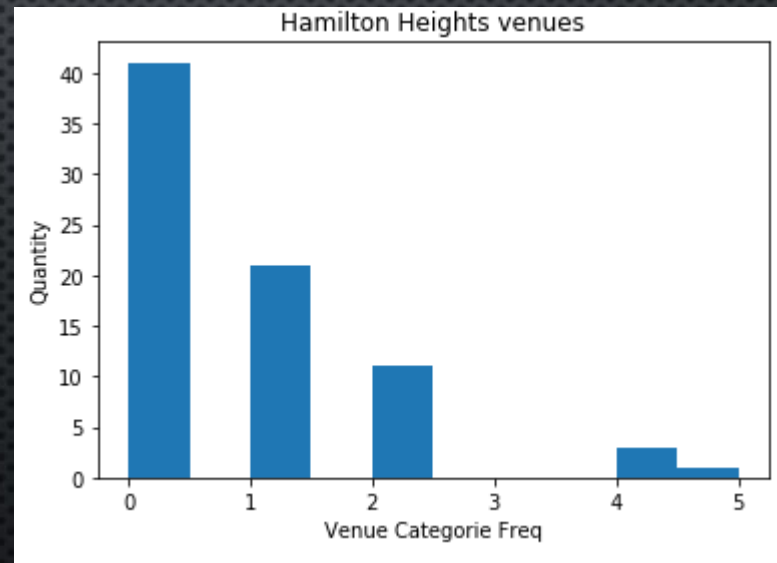
----Carnegie Hill----		
	venue	freq
0	Pizza Place	6.0
1	Coffee Shop	5.0
2	Café	4.0
3	Cosmetics Shop	4.0
4	Yoga Studio	3.0
5	Grocery Store	3.0
6	Gym	3.0
7	Japanese Restaurant	3.0
8	French Restaurant	3.0
9	Bookstore	3.0



HAMILTON HEIGHTS

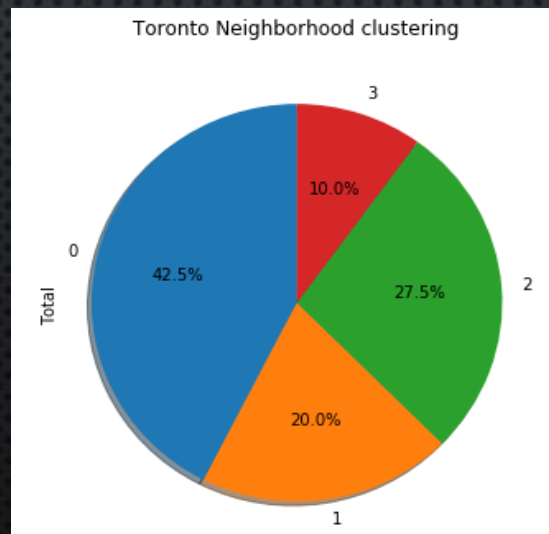
- HAMILTON HEIGHT VENUES: FROM FOURSQUARE API TOP100 VENUES ARE EXTRACTED AND THEN THE DISTRIBUTION IS SHOWED IN A HISTOGRAM SHOWING ABOUT THE MOST COMMON VENUES, AND ALSO TOP10 VENUES ARE EXTRACTED IN ORDER TO TELL MORE ABOUT THE NEIGHBORHOOD BASED ON VENUES

----Hamilton Heights----		
	venue	freq
0	Mexican Restaurant	5.0
1	Pizza Place	4.0
2	Coffee Shop	4.0
3	Café	4.0
4	Indian Restaurant	2.0
5	Chinese Restaurant	2.0
6	Sushi Restaurant	2.0
7	School	2.0
8	Sandwich Place	2.0
9	Liquor Store	2.0



TORONTO NEIGHBORHOODS

- NOW THAT WE KNOW MORE ABOUT THE MANHATTAN NEIGHBORHOODS, WE ADD THEM TO THE LIST OF NEIGHBORHOODS OF TORONTO IN ORDER TO BE CLUSTERED USING K-MEANS CLUSTER ALGORITHM WITH OTHER SIMILAR NEIGHBORHOODS.
- K-MEANS ALGORITHM IS AN UNSUPERVISED MACHINE LEARNING ALGORITHM THAT WILL CLUSTER NEIGHBORHOODS THAT HAS SIMILAR VENUES. AFTER CLUSTERING THE RESULTS ARE AS FOLLOWING (INTERESTED NEIGHBORHOODS HAS CLUSTER LABEL 3)



RESULTS

- K-MEANS ALGORITHM RECOMMENDS TWO NEIGHBORHOODS TO OPEN THE NEW RESTAURANT IN TORONTO.

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
9	Ryerson, Garden District	Coffee Shop	Clothing Store	Café	Cosmetics Shop	Middle Eastern Restaurant	Japanese Restaurant	Tea Room	Sporting Goods Shop	Fast Food Restaurant	Restaurant
84	Chinatown, Grange Park, Kensington Market	Café	Vegetarian / Vegan Restaurant	Bar	Coffee Shop	Bakery	Mexican Restaurant	Dumpling Restaurant	Chinese Restaurant	Vietnamese Restaurant	Burger Joint
0	Hamilton Heights	Mexican Restaurant	Coffee Shop	Pizza Place	Café	Cocktail Bar	Indian Restaurant	Liquor Store	Deli / Bodega	Yoga Studio	Chinese Restaurant
1	Carnegie Hill	Pizza Place	Coffee Shop	Cosmetics Shop	Café	Yoga Studio	Bookstore	Japanese Restaurant	Spa	Gym	Grocery Store

CONCLUSIONS

- K-MEANS RECOMMENDED NEIGHBORHOODS ARE BASED ON VENUES IN NEIGHBORHOODS.
- WHAT WE WERE TRYING ON THIS PROBLEM WAS TO UNDERSTAND THE DATA OF EACH NEIGHBORHOOD BASED ON VENUES IN NEIGHBORHOOD. THIS COULD BE ONE VALUABLE RESOURCE FOR MAKING RECOMMENDATIONS FOR THE OWNER, BUT IS NECESSARY TO REMEMBER THAT NOT ONLY THE PLACES AROUND MATTER SINCE THE CULTURE OF EACH COUNTRY CAN IMPACT IN THE DEVELOPMENT OF NEW BUSINESS

----Chinatown, Grange Park, Kensington Market----

	venue	freq
0	Café	8.0
1	Vegetarian / Vegan Restaurant	6.0
2	Bar	5.0
3	Bakery	4.0
4	Mexican Restaurant	4.0
5	Dumpling Restaurant	4.0
6	Coffee Shop	4.0
7	Vietnamese Restaurant	3.0
8	Chinese Restaurant	3.0
9	Burger Joint	2.0

----Ryerson, Garden District----

	venue	freq
0	Coffee Shop	8.0
1	Clothing Store	7.0
2	Cosmetics Shop	4.0
3	Café	4.0
4	Middle Eastern Restaurant	3.0
5	Fast Food Restaurant	2.0
6	Theater	2.0
7	Bubble Tea Shop	2.0
8	Sporting Goods Shop	2.0
9	Japanese Restaurant	2.0