BATTLE OF THE NEIGHBORHOODS

COURSERA APPLIED DATA SCIENCE CAPSTONE

INTRODUCTION

- In this project, we will be looking to help PO LLC. find the optimal neighborhood to open up a new, modern bar in either Toronto or New York City.

- The business problem that we would like to figure out will be:

  - how can we use readily available data on the internet to determine where the best spot to open up such a bar would be?

- As these cities are highly populated and diverse, it will be interesting to figure out within these two cities where there will be the least competition (or a higher demand) for a bar.

INTRODUCTION (CONTINUED)

- After initial research, PO LLC. has decided that they would like to open up a bar in either the boroughs of Central Toronto, or Bronx.

- The goal of this presentation is to figure out which specific neighborhood will be best suited for the opening of this new restaurant.

- It is the firm's goal to find the most optimal spot for **profit** potential so that it will be relatively easy to convince potential stakeholders to invest in our new establishment.

WHO IS INTERESTED?

- As we have just discussed, it is going to be incredibly important for PO LLC. to have **financial backings** from our stakeholders.

- Furthermore, we must not forget who this new bar will impact the most, which will be residents of the neighborhood in which the bar will be opening.

- This poses some questions:

    - Will the neighborhood accept that a new, modern bar will be opening up in their area of residence?

    - Will this cause problems with the local authorities?

    - Will the local government allow for our establishment to open?

- All of these questions we will attempt to answer utilizing data and research.

DATA

- <u>List of Postal Codes of Canada from wikipedia</u>

  - This wiki webpage will allow for us to combine geographical data from Toronto with the data from the foursquare API essentially allowing us to look into potential spots to open up a bar in Central Toronto.

- <u>JSON file of NYC boroughs</u>

  - This JSON file will allow us to access geospatial data of the New York City boroughs and neighborhoods. Similarly to the Toronto wiki webpage, this well help us look into potential spots to open up a bar in the Bronx.

- <u>Foursquare API Data</u>

  - The Foursquare API data will allow us to navigate through the geospatial data of the boroughs/neighborhoods that we will be looking at. Specifically the foursquare API data will be intrinsic in finding spots where there may be high demand for a modern bar, as we will get to see specific venue types/locations in our areas of interest.

- <u>NYC Demographic Data</u>

  - The NYC Demographic Data will allow us to further dive into the needs of our target market for the Bronx. Specifically, we will need to know the population of certain neighborhoods in order to make an intelligent guess on where profit will be highest once we have narrowed down our search for the correct neighborhood.

METHODOLOGY

- How did we utilize our data to find the right neighborhood?

- Let's go over the important steps in our process:

- Looking at all the venues in the Bronx and Central Toronto

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Wakefield	40.894705	-73.847201	Lollipops Gelato	40.894123	-73.845892	Dessert Shop
1	Wakefield	40.894705	-73.847201	Carvel Ice Cream	40.890487	-73.848568	Ice Cream Shop
2	Wakefield	40.894705	-73.847201	Walgreens	40.896528	-73.844700	Pharmacy
3	Wakefield	40.894705	-73.847201	Rite Aid	40.896649	-73.844846	Pharmacy
4	Wakefield	40.894705	-73.847201	Shell	40.894187	-73.845862	Gas Station

- Top 10 most common venues per neighborhood
  - We did this to see which neighborhoods had either bars or pubs listed as a top 10 venue
  - This was beneficial, as we noticed that some neighborhoods had a lot of bars, so we were able to disregard these neighborhoods

|	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
0	Allerton	Pizza Place	Deli / Bodega	Supermarket	Cosmetics Shop	Donut Shop	Fried Chicken Joint	Food	Fast Food Restaurant	Bus Station	Chinese Restaurant
1	Baychester	Donut Shop	Men's Store	Supermarket	Pizza Place	Convenience Store	Discount Store	Other Great Outdoors	Sandwich Place	Electronics Store	Fast Food Restaurant
2	Bedford Park	Diner	Deli / Bodega	Pizza Place	Sandwich Place	Chinese Restaurant	Mexican Restaurant	Park	Bus Station	Pub	Pharmacy
3	Belmont	Italian Restaurant	Pizza Place	Deli / Bodega	Bakery	Donut Shop	Grocery Store	Bank	Mexican Restaurant	Dessert Shop	Coffee Shop
4	Bronxdale	Italian Restaurant	Gym	Performing Arts Venue	Chinese Restaurant	Paper / Office Supplies Store	Eastern European Restaurant	Spanish Restaurant	Mexican Restaurant	Supermarket	Bank

K MEANS CLUSTERING

- We utilized K-means clustering to figure out if there are groupings of neighborhoods that are more similar or less similar to one another.

- We plotted these clusters to get a visualization

- Did not get much information based off of our K-means clustering

Central Toronto

Bronx
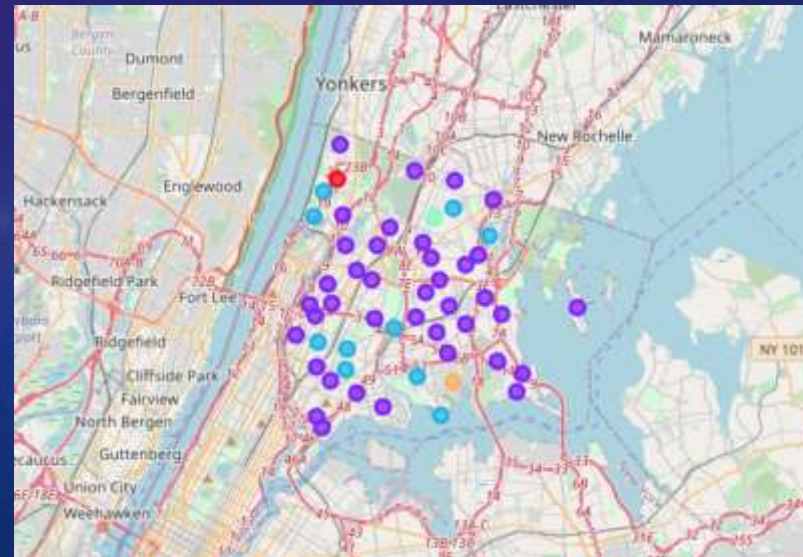
NUMBER OF BARS PER NEIGHBORHOOD

- We looked into the number of bars in each of the remaining neighborhoods to see if there are neighborhoods that we can get rid of for our search

	Neighborhood	# of Bars
0	Bedford Park	1
1	Belmont	2
2	City Island	1
3	Edgewater Park	3
4	Kingsbridge	7
5	Morris Park	2
6	Mount Eden	1
7	Pelham Bay	2
8	Schuylerville	1
9	Throgs Neck	2
10	Westchester Square	2
11	Williamsbridge	1
12	Woodlawn	4
13	Summerhill West, Rathnelly, South Hill, Forest...	3
14	The Annex, North Midtown, Yorkville	1

DEMOGRAPHICS AND POPULATION

- Joining the datasets of the remaining options for neighborhoods with the demographic dataset

- We chose the neighborhood with the largest population as the place to build our new bar!

	Borough	Neighborhood	Population
11	Bronx	University Heights-Morris Heights	54188.0
12	Bronx	Mott Haven-Port Morris	52413.0
13	Bronx	Mount Hope	51807.0
3	Bronx	Co-Op City	43752.0
4	Bronx	East Tremont	43423.0

RESULTS

- We will select the University Heights-Morris Heights of the Bronx as our neighborhood to create our new bar!

- This neighborhood has been selected as there are no bars listed in this neighborhood from the fourquare api data

  - and it also has the highest population of the remaining neighborhoods.

- These observations lead us to believe that there is a significant potential for profit in this area, thus, we will elect to establish our new, state of the art bar in University Heights-Morris Heights!

DISCUSSION (LIMITATIONS)

- Although PO LLC. is generally satisfied with our decision to select University Heights-Morris Heights in the Bronx as the location for our new bar, there are some limitations and observations the firm has noticed in the selection process:
  - Primarily, it has become apparent how difficult it was for the firm to locate essential data on the internet.
    - For instance, the firm was stuck when they attempted to find socioeconomic data of the neighborhoods.
      - A dataset with socioeconomic data would have been more beneficial for the firms selection process, as they could have looked at significant factors, such as: mean income, median income, GDP of the neighborhoods, etc.

DISCUSSION (THE DECISION)

- Given these limitations, this led PO LLC to make the important decision that they would have to settle for the remaining neighborhood with the largest population.

- This made most sense to the firm, as generally, more people in an area would mean more money overall.

- This is a controversial decision for the firm, but they believe this decision will pay off, and hope for success at their new bar.

CONCLUSION

- Although the decision to bring the hottest bar in NYC to University Heights-Morris Heights is a controversial one, PO LLC. is incredibly happy with their team of data scientists for finding the best possible spot to open their new bar.

- Thank you for reading this report, and we at PO LLC. hope to see you at our new bar soon!