

Identifying potential Business opportunities in Bronx Borough, New York City

I. Introduction to the Business idea

The business proposition I would like to take on will be in the realm of providing clients with information on potential business opportunities available in New York in general and Bronx Borough in particular. The information will be based on foursquare data on venues by category that and location by neighbourhood in food and tourism industry. The potential clients to be targeted will be those that are planning to establish ventures that deal in food and tourism related services in Bronx Borough of New York. To that end, my service will be tailored toward delivering background and general information to clients about potential neighbourhoods which potential clients will use as initial input into the decision process that will inform their feasibility studies related to establishing food and tourism related businesses in Bronx Borough of New York, USA.

II. Description of the dataset to use

To obtain information that will provide insights to potential clients, the project will use data to be obtained from foursquare application programming interface(API). The data is based on personal information that visitors of venues make that include what the venue has to offer, category in which the venues falls, personal impressions about the venue, whether the venue was liked or otherwise, tips for others interested in getting the best experience , among others. My main focus was on venues that fell into the food and tourism attraction categories.

III. Methodology

The approach used to glean insights from the data included but not limited to: importing packages and dependencies such as numpy, pandas (necessary to manipulate data for easier presentation in arrays and dataframes; json(since fpoursquare data is in json file format);geocoder application that was used to generate latitudes and longitudes (coordinates) based on addresses, request application which was used to scrape html data and transform it into text for analysis; matplotlib, which was used in plotting the insights gleaned from extracted data; and folium, which was used to draw maps of the locations using geographical coordinates. Insights were clustered into four potential segments using K means machine learning application which is part of sklearn library. Results were presented which later formed the basis of recommendations for potential clients.

IV. Results

a. schema

The first step was to import all the libraries deemed import in the downloading, processing, tabulating, mapping and clustering the data; presenting the results, followed by discussion of the results and drawing conclusions and recommendations. Report results include dataframes of the data, maps of the neighborhoods, and presentation of clusters.

Taking a glance at Bronx neighborhoods

Index	Borough	Neighborhood	Latitude	Longitude
0	Bronx	Wakefield	40.894705	-73.847201
1	Bronx	Co-op City	40.874294	-73.829939
2	Bronx	Eastchester	40.887556	-73.827806
3	Bronx	Fieldston	40.895437	-73.905643

4	Bronx	Riverdale	40.890834	-73.912585
5	Bronx	Kingsbridge	40.881687	-73.902818
6	Bronx	Woodlawn	40.898273	-73.867315
7	Bronx	Norwood	40.877224	-73.879391
8	Bronx	Williamsbridge	40.881039	-73.857446
9	Bronx	Baychester	40.866858	-73.835798
10	Bronx	Pelham Parkway	40.857413	-73.854756
11	Bronx	City Island	40.847247	-73.786488
12	Bronx	Bedford Park	40.870185	-73.885512
13	Bronx	University Heights	40.855727	-73.910416
14	Bronx	Morris Heights	40.847898	-73.919672
15	Bronx	Fordham	40.860997	-73.896427
16	Bronx	East Tremont	40.842696	-73.887356
17	Bronx	West Farms	40.839475	-73.877745
18	Bronx	High Bridge	40.836623	-73.926102
19	Bronx	Melrose	40.819754	-73.909422

A sneakpeek at venue categories in Bronx by name, category, and geographical location showed that based on Foursquare data , there were 2375 venues in all that ranged from dessert joints, restaurants, wine shops, fast food stalls, places serving Tacos, among others. Meanwhile the number of venues in Bronx based on neighborhood categorization are 8 in Clason point (the smallest number), 15 in claremont, 21 in Hnts point, 31 in Throgs Neck and Knightsbridge heights, 39 in City Island, 45 each in Wakefield and Riverdale, 46 each in Pelham Gardens and North Riverdale, 47 in West Frams and Fieldston, 49 in Soundview, and 50 venues each in the remaining neighborhoods (the largest number). However, based on the mean of the spread of 213 unique venues is concentrated in 52 neighborhoods in Bronx

Clustering the venues into four clusters

Cluster 1

	Neighborhood	Cluster	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
8	Wakefield	o	Pharmacy	Caribbean Restaurant	Fast Food Restaurant	Donut Shop	Supermarket	Fried Chicken Joint	Business Service	Mobile Phone Shop	Spanish Restaurant	Deli / Bodega
9	Baychester	o	Department Store	Clothing Store	Discount Store	Shopping Mall	Supermarket	Kids Store	Bakery	Bagel Shop	Italian Restaurant	Shoe Store
10	Pelham Parkway	o	Pizza Place	Donut Shop	Sandwich Place	Chinese Restaurant	Italian Restaurant	Supermarket	Bakery	Pharmacy	Cosmetics Shop	Coffee Shop
13	University Heights	o	Grocery Store	Pizza Place	Shoe Store	Supermarket	Spanish Restaurant	Donut Shop	Sandwich Place	Latin American Restaurant	Ice Cream Shop	African Restaurant
14	Morris Heights	o	Pharmacy	Food Truck	Deli / Bodega	Pizza Place	Fast Food Restaurant	Gym / Fitness Center	Ice Cream Shop	Grocery Store	Spanish Restaurant	Moving Target
15	Fordham	o	Pizza Place	Italian Restaurant	Diner	Latin American Restaurant	Deli / Bodega	Chinese Restaurant	Plaza	Shoe Store	Gym	Mobile Phone Shop

23	Hunts Point	o	Park	Seafood Restaurant	Construction & Landscaping	Grocery Store	Coffee Shop	Bus Stop	Nightclub	Farmers Market	Spanish Restaurant	Market
25	Soundview	o	Fast Food Restaurant	Supermarket	Breakfast Spot	Clothing Store	Chinese Restaurant	Park	Fried Chicken Joint	Bus Station	Bus Stop	Deli / Bodega
27	Throgs Neck	o	Italian Restaurant	Deli / Bodega	Pizza Place	Asian Restaurant	Donut Shop	Bookstore	Bar	Chinese Restaurant	Coffee Shop	Park
29	Parkchester	o	Pizza Place	Latin American Restaurant	Spanish Restaurant	Diner	Ice Cream Shop	Gym	Kids Store	Supermarket	Mexican Restaurant	Discount Store
30	Westchester Square	o	Pizza Place	Donut Shop	Bar	Fast Food Restaurant	Pharmacy	Sandwich Place	Restaurant	Diner	Supermarket	Indie Theater
32	Morris Park	o	Pizza Place	Italian Restaurant	Coffee Shop	Pharmacy	Supermarket	Bar	Restaurant	Gym	Sandwich Place	Deli / Bodega
33	Belmont	o	Italian Restaurant	Bakery	Deli / Bodega	Pizza Place	Dessert Shop	Bar	Food & Drink Shop	Café	Fast Food Restaurant	Park
41	Pelham Gardens	o	Pharmacy	Donut Shop	Sandwich Place	Pizza Place	Chinese Restaurant	Rental Car Location	Grocery Store	Bus Station	Caribbean Restaurant	Pet Store
45	Claremont Village	o	Discount Store	Ice Cream Shop	Donut Shop	Pizza Place	Fast Food Restaurant	Gym	Caribbean Restaurant	Park	Deli / Bodega	Sandwich Place
47	Mount Eden	o	Pizza Place	Pharmacy	Grocery Store	Donut Shop	Food Truck	Deli / Bodega	Ice Cream Shop	Spanish Restaurant	Gym	Bank
48	Mount Hope	o	Fast Food Restaurant	Grocery Store	Pizza Place	Supermarket	Pharmacy	Donut Shop	Food Truck	Shoe Store	Bank	Sandwich Place
49	Bronxdale	o	Pizza Place	Italian Restaurant	Coffee Shop	Chinese Restaurant	Park	Deli / Bodega	Bank	Donut Shop	Food Truck	Liquor Store
50	Allerton	o	Fast Food Restaurant	Pizza Place	Donut Shop	Sandwich Place	Bus Station	Pharmacy	Bank	Dessert Shop	Caribbean Restaurant	Food

Cluster 2

	Neighborhood	Cluster Labels	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
2	Eastchester	1	Caribbean Restaurant	Diner	Fast Food Restaurant	Shopping Mall	Donut Shop	Supplement Shop	Women's Store	Burger Joint	Discount Store	Asian Restaurant

5	Kingsbridge	1	Pizza Place	Mexican Restaurant	Bakery	Japanese Restaurant	Coffee Shop	Diner	Spanish Restaurant	Burger Joint	Bar	Donut Shop
6	Woodlawn	1	Deli / Bodega	Bar	Pub	Discount Store	Italian Restaurant	Rental Car Location	Liquor Store	Donut Shop	Pizza Place	Pharmacy
19	Melrose	1	Mexican Restaurant	Pizza Place	Gym	Italian Restaurant	Diner	Discount Store	Donut Shop	Mobile Phone Shop	Fried Chicken Joint	Bakery
20	Mott Haven	1	Pizza Place	Donut Shop	Mexican Restaurant	Discount Store	Supermarket	Grocery Store	Gym	Spanish Restaurant	Brewery	Steakhouse
39	Castle Hill	1	Bus Stop	Pizza Place	Bus Station	Baseball Field	Deli / Bodega	Wine Shop	Spanish Restaurant	Fried Chicken Joint	Liquor Store	Market
42	Concourse	1	Donut Shop	Pizza Place	Gym	Park	Sandwich Place	Fast Food Restaurant	Pharmacy	Diner	Discount Store	Grocery Store

Cluster 3

	Neighborhood	Cluster Labels	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
7	Norwood	2	Pizza Place	Pharmacy	Park	Donut Shop	Bank	Sandwich Place	Caribbean Restaurant	Diner	Mobile Phone Shop	Spanish Restaurant
8	Williamsbridge	2	Pizza Place	Caribbean Restaurant	Fast Food Restaurant	Discount Store	Bakery	Spa	Sandwich Place	Pharmacy	Supermarket	Seafood Restaurant

Cluster 4

	Neighborhood	Cluster Labels	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
1	Co-op City	3	Shoe Store	Shopping Mall	Mobile Phone Shop	Mattress Store	Bakery	Department Store	Pizza Place	Discount Store	Coffee Shop	Supermarket
3	Fieldston	3	Pizza Place	Chinese Restaurant	Deli / Bodega	Bar	Plaza	Mexican Restaurant	Bus Station	Sandwich Place	Donut Shop	Steakhouse
4	Riverdale	3	Pizza Place	Japanese Restaurant	Playground	Plaza	Park	Mexican Restaurant	Coffee Shop	Bar	Diner	Bank
11	City Island	3	Harbor / Marina	Seafood Restaurant	Boat or Ferry	Italian Restaurant	Bar	Thrift / Vintage Store	American Restaurant	Chinese Restaurant	Bank	Diner

12	Bedford Park	3	Park	Diner	Botanical Garden	Supermarket	Garden	Pizza Place	Mexican Restaurant	Donut Shop	Chinese Restaurant	Sandwich Place
16	East Tremont	3	Donut Shop	Pizza Place	Zoo Exhibit	Bank	Park	Sandwich Place	Shoe Store	Breakfast Spot	Discount Store	Fast Food Restaurant
17	West Farms	3	Zoo	Donut Shop	Fried Chicken Joint	Park	Pizza Place	Sandwich Place	Discount Store	Fast Food Restaurant	Lounge	Zoo Exhibit
18	High Bridge	3	Baseball Stadium	Lounge	Plaza	Sandwich Place	Smoke Shop	History Museum	Burger Joint	Liquor Store	Beer Bar	Steakhouse
21	Port Morris	3	Baseball Field	Pizza Place	Donut Shop	Restaurant	Optical Shop	Brewery	Mobile Phone Shop	Sporting Goods Shop	Spanish Restaurant	Burger Joint
22	Longwood	3	Fast Food Restaurant	Sandwich Place	Discount Store	Donut Shop	Pizza Place	Pharmacy	Grocery Store	Bakery	Latin American Restaurant	Mobile Phone Shop
24	Morrisania	3	Discount Store	Pharmacy	Donut Shop	Fast Food Restaurant	Mobile Phone Shop	Gym	Pizza Place	Grocery Store	Supermarket	Diner
26	Clason Point	3	Park	Bus Stop	Trail	Gym / Fitness Center	Discount Store	Bus Station	Deli / Bodega	Wings Joint	Fish & Chips Shop	Fast Food Restaurant
28	Country Club	3	Italian Restaurant	Pizza Place	Sandwich Place	Bakery	Pharmacy	Deli / Bodega	Dive Bar	Donut Shop	Bank	Fried Chicken Joint
31	Van Nest	3	Pizza Place	Supermarket	Italian Restaurant	Donut Shop	Zoo	Gym	Deli / Bodega	Park	Spanish Restaurant	Coffee Shop
34	Spuyten Duyvil	3	Park	Pizza Place	Pharmacy	Bank	Thai Restaurant	Japanese Restaurant	Café	Diner	Mexican Restaurant	Dog Run
35	North Riverdale	3	Pizza Place	Bus Station	Pool	Coffee Shop	Chinese Restaurant	Burger Joint	Sandwich Place	Gym	Sushi Restaurant	Italian Restaurant
36	Pelham Bay	3	Sandwich Place	Gym / Fitness Center	Convenience Store	Italian Restaurant	Donut Shop	Pharmacy	Pizza Place	Bank	Rental Car Location	Bakery
37	Schuylerville	3	Pizza Place	Italian Restaurant	Pharmacy	Bar	Supermarket	Sandwich Place	Diner	Donut Shop	Mexican Restaurant	Bus Station
38	Edgewater Park	3	Italian Restaurant	Pizza Place	Deli / Bodega	Bar	Donut Shop	Sushi Restaurant	Park	Coffee Shop	Restaurant	Diner
40	Olinville	3	Fast Food Restaurant	Donut Shop	Sandwich Place	Pizza Place	Bank	Pharmacy	Caribbean Restaurant	Supermarket	Dessert Shop	Diner

4	Unionport	3	Pizza Place	Diner	Donut Shop	Sandwich Place	Supermarket	Discount Store	Cosmetics Shop	Latin American Restaurant	Ice Cream Shop	Mexican Restaurant
3												
4	Edenwald	3	Supermarket	Fast Food Restaurant	Caribbean Restaurant	Fried Chicken Joint	Bakery	Donut Shop	Grocery Store	Pizza Place	Pharmacy	Other Nightlife
4			et									
4	Concourse	3	Deli / Bodega	Pizza Place	Mexican Restaurant	Gym	Clothing Store	Sports Bar	Smoke Shop	Italian Restaurant	Donut Shop	Caribbean Restaurant
6	Village											
51	Kingsbridge Heights	3	Coffee Shop	Diner	Supermarket	Gym	Latin American Restaurant	Pizza Place	Mexican Restaurant	Spanish Restaurant	Donut Shop	Discount Store

V. Discussion

The list of unique venue categories included : Zoo Exhibit, Accessories Store, African Restaurant , Airport Tram, American Restaurant, Arcade Arepa Restaurant, Art Gallery, Art Museum, Arts & Crafts Store, Asian Restaurant, Athletics & Sports, Auto Dealership, Auto Workshop, BBQ Joint, Bagel Shop, Bakery Bank Bar, Baseball Field, Baseball Stadium, Basketball Court, Beach Beer, Bar Beer, Garden Boat or Ferry, Bookstore, Border Crossing, Botanical Garden, Bowling Alley, Breakfast Spot, Brewery Bridge, Buffet Burger Joint, Burrito Place, Bus Line, Bus Station, Bus Stop, Business Service, Café Candy Store, Caribbean Restaurant, Check Cashing Service, Cheese Shop, Chinese Restaurant, Clothing Store, Cocktail Bar, Coffee Shop, Comfort Food Restaurant, Construction & Landscaping, Convenience Store, Cosmetics Shop, Cuban Restaurant, Cupcake Shop, Dance Studio, Deli / Bodega, Dentist's Office, Department Store, Dessert Shop, Diner Discount Store, Distillery Dive Bar, Dog Run, Donut Shop, Dumpling Restaurant, Eastern European Restaurant, Electronics Store, Empanada Restaurant, Farmers Market, Fast Food Restaurant, Fish & Chips Shop, Fish Market, Food, Food & Drink Shop, Food Stand, Food Truck, French Restaurant, Fried Chicken Joint, Frozen Yogurt Shop, Fruit & Vegetable Store, Furniture / Home Store, Garden, Gas Station, Gift Shop, Golf Course, Gourmet Shop, Greek Restaurant, Grocery Store, Gym / Fitness Center, Harbor / Marina, Hardware Store , Health & Beauty Service, Health Food Store, Historic Site, History Museum, Hobby Shop, Home Service, Hookah Bar, Hot Dog Joint, Hotel, Ice Cream Shop, Indian Restaurant, Indie Theater, Intersection, Italian Restaurant, Japanese Restaurant, Jewelry Store, Juice Bar, Kids Store, Kitchen Supply Store, Latin American Restaurant, Laundromat Lingerie Store, Liquor Store, Lounge Mac & Cheese Joint, Market, Martial Arts, Dojo Mattress Store, Medical Center, Men's Store, Metro Station, Mexican Restaurant, Middle Eastern Restaurant, Miscellaneous Shop, Mobile Phone Shop, Motel, Movie Theater, Moving Target, Music Store, Music Venue, Nature Preserve Neighborhood, New American Restaurant, Nightclub, Nightlife Spot, Optical Shop, Other Great Outdoors, Other Nightlife, Paella Restaurant, Paper / Office Supplies Store, Park Performing Arts Venue , Peruvian Restaurant, Pet Store, Pharmacy, Photography Studio, Pizza Place, Playground Plaza Pool, Pool Hall Pub, Public Art, Rental Car Location, Restaurant River Salon / Barbershop, Sandwich Place , Scenic Lookout , School Sculpture, Garden Seafood, Restaurant, Shipping Store, Shoe Store, Shopping Mall, Shopping Plaza, Smoke Shop, Snack Place, Soccer Field, Soup Place, Southern / Soul Food Restaurant, Spa, Spanish Restaurant, Sporting Goods Shop, Sports Bar, State / Provincial Park, Steakhouse, Supermarket, Supplement Shop, Sushi Restaurant, Tapas Restaurant, Tattoo Parlor, Tennis Court, Tennis Stadium, Thai Restaurant, Theater Theme Park, Theme Park Ride / Attraction Theme Restaurant , Thrift / Vintage Store, Toll Plaza, Track Stadium, Trail , Train Station, Travel & Transport, Tunnel, Vegetarian / Vegan Restaurant, Video Game Store, Video Store, Vietnamese Restaurant, Volleyball Court, Warehouse Store, Waste Facility, Wine Shop, Wings Joint, Women's Store, Yoga Studio and Zoo.

Meanwhile , based on the count of venues in Bronx by neighborhood, in Clason point has the smallest number (8), while claremont has 15 there were 21 in Hunts point, 31 in Throgs Neck and Knightsbridge heights, 39 in City

Island, 45 each in Wakefield and Riverdale, 46 each in Pelham Gardens and North Riverdale, 47 in West Farms and Fieldston, 49 in Soundview, and 50 venues each in the remaining neighborhoods (the largest number). Based on ten most unique venues in the 52 neighborhoods, while most are good for food related business, some are not that much. This includes Coop city, Claremont village, Morris heights, Morrisania, high bridge, University heights, and Baychester. Meanwhile as relates to tourism development, all the 52 neighborhoods have the potential to become very good food , shopping, exercising, walking and jogging, and travelling tourist attractions. Based on the results, prospective operators of food and tourism attraction related businesses are likely to face a big challenge if they establish their ventures in neighborhoods that already have popular venues which is most of Bronx neighborhoods. Nonetheless, not all is lost, for there are some neighborhoods that have relatively based on personal impressions of visitors, which therefore can be entry points for entrants to make forays into this lucrative but local capital intensity sector.

VI. Conclusion

Bronx Borough is bustling location for food and tourism industry. Its 213 unique venues are spread in 52 neighborhoods with most of which have the potential to become vibrant locations for food and tourism related businesses. Based on clusters generated, it is apparent that cluster one can be described as 'tribal' or exotic cuisine food cluster; cluster two, the shopping and food cluster, cluster three has the credentials of being a hefty food and entertainment segment, while cluster four deserves to become Asian and Mexican food and tourism attraction segment. There is need to identify key factors that explain the relatively small number of unique venues in Clason point (8), Claremont (15) and Huntspoint(21) compared to the average of 50 venues in most neighborhoods. This could be potential entry point for new food and tourism attraction related business if the problem is lack of facilities that support the two related and interdependent sectors. Nonetheless, it could also shed light on obstacles that have prevented the establishment of vibrant and popular food and tourism attraction venues in such neighborhoods which could save potential investors from investing in neighborhood that have the potential to generate low return in investment.