Location for NYC's First Coffee Outlet in Toronto

Project Presentation

XYZ Consultancy Company

Introduction

- Nanyang Coffee Company (NYC) is a major supplier of the processed coffee beans used in the *Nanyang* style of coffee popularly drank by the people of Southeast Asia.

- NYC is keen to expand to North America
  - Identified Canada as a promising country for its maiden entry into the North American market

- NYC plan to set up specialty coffee retail outlet offering a range of roasted coffee products and take-away drinks.
  - Earmarked the city of Toronto as its first city in Canada to expand
  - Toronto largest Southeast Asian population in Canada

Goal and Objective

- <u>Goal</u> is to maximize the awareness and penetration of the *Nanyang* coffee among the coffee drinking consumers, measures in terms of sales of this first outlet.

- <u>Objective</u> of the study is to identify the neighborhood in Toronto to locate this first NYC outlet
  - Outlet should best maximize the awareness and sales of the Nanyang coffee among the targeted customer

- Key assumptions
  - Identify neighborhood based on relatively high concentration of coffee shops and cafes, and (2) ethnic Southeast Asian restaurants
  - indicative of a population of ethnic Southeast Asian customers who drinks coffee.
  - Based on NYC's understanding of customers in home region i.e. Southeast Asians often patronize coffee outlets to drink coffee and socialized as a post dinner activity

Data (1/2)

- Geographical Data: Comprises (1) postal codes of boroughs in Toronto, (2) boroughs and associated neighborhoods in Toronto and (3) latitudes and longitudes of the neighborhood
  - https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M.
  - http://cocl.us/Geospatial_data

Geographical Data Sample

	PostalCode	Borough	Neighborhood	Latitude_x	Longitude_x
0	M3A	North York	Parkwoods	43.753259	-79.329656
1	M4A	North York	Victoria Village	43.725882	-79.315572
2	M5A	Downtown Toronto	Regent Park / Harbourfront	43.654260	-79.360636
3	M6A	North York	Lawrence Manor / Lawrence Heights	43.718518	-79.464763
4	M7A	Downtown Toronto	Queen's Park / Ontario Provincial Government	43.662301	-79.389494

Data (2/2)

- <u>Venue Data</u>: Data on restaurants, ethnic Southeast Asian (SEA) restaurants and coffee outlet in each neighbourhood obtained from Foursquare.

- Venue data integrated with geographical data as master data for subsequent analysis

Geographical Data Sample

	Neighbourhood	Neighbourhood Latitude	Neighbourhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Parkwoods	43.753259	-79.329656	Allwyn's Bakery	43.759840	-79.324719	Caribbean Restaurant
1	Parkwoods	43.753259	-79.329656	Brookbanks Park	43.751976	-79.332140	Park
2	Parkwoods	43.753259	-79.329656	Tim Hortons	43.760668	-79.326368	Café
3	Parkwoods	43.753259	-79.329656	A&W	43.760643	-79.326865	Fast Food Restaurant
4	Parkwoods	43.753259	-79.329656	Bruno's valu-mart	43.746143	-79.324630	Grocery Store
5	Parkwoods	43.753259	-79.329656	High Street Fish & Chips	43.745260	-79.324949	Fish & Chips Shop
6	Parkwoods	43.753259	-79.329656	Food Basics	43.760549	-79.326045	Supermarket
7	Parkwoods	43.753259	-79.329656	Shoppers Drug Mart	43.745315	-79.325800	Pharmacy
8	Parkwoods	43.753259	-79.329656	Shoppers Drug Mart	43.760857	-79.324961	Pharmacy
9	Parkwoods	43.753259	-79.329656	Variety Store	43.751974	-79.333114	Food & Drink Shop
10	Parkwoods	43.753259	-79.329656	Pizza Pizza	43.760231	-79.325666	Pizza Place
11	Parkwoods	43.753259	-79.329656	DVP at York Mills	43.758899	-79.334099	Road
12	Parkwoods	43.753259	-79.329656	TTC Stop #09083	43.759655	-79.332223	Bus Stop
13	Parkwoods	43.753259	-79.329656	TTC Stop 9083	43.759251	-79.334000	Bus Stop
14	Parkwoods	43.753259	-79.329656	Sandover Park	43.760277	-79.333305	Park
15	Parkwoods	43.753259	-79.329656	TTC Stop #9075	43.757596	-79.338155	Train Station

Methodology (1/2)

Wrangling

- Extract the different type of restaurants i.e. 62 different types

- Extract the different type of SEA restaurants i.e. (1) Thai, (2) Vietnamese, (3) Indonesian, (4) Malay and (5) Filipino

- Extract the coffee outlets

- Sum the above for each neighborhood

- Clean and combine into data frame

Dataframe Sample

	index	Neighbourhood	Total Restaurant Count	SEA Count	Coffee Count
0	0	Agincourt	22	2	2
1	1	Alderwood / Long Branch	1	0	1
2	2	Bathurst Manor / Wilson Heights / Downsview North	4	0	2
3	3	Bayview Village	4	0	1
4	4	Bedford Park / Lawrence Manor East	13	1	4
5	5	Berczy Park	20	1	16
6	6	Birch Cliff / Cliffside West	2	1	1
7	7	Brockton / Parkdale Village / Exhibition Place	25	0	14
8	8	Business reply mail Processing CentrF	10	1	4

Methodology (1/2)

Analysis

- Basic statistics using the 'describe' method in panda
- Identify the neighbourhoods with highest number of SEA restaurants and coffee outlets
- Understand correlation between number of restaurants, number of SEA restaurants and number of coffee outlets in each neighbourhood
- K-Means Cluster the neighbourhoods based on number of restaurants, number of SEA restaurants and number of coffee outlets in each neighbourhood to identify patterns

Visualisation

- Visualise location of selected neighbourhoods to refine location
- Visualise distributions of clusters of neighbourhoods to identify patterns and enhance location of NYC outlet

Results (1/4)

- 'nlargest' method indicate the optimal neighbourhoods to site the NYC outlet could be
  - High Park/The Junction South
  - Studio District
  - Kensington Market/Chinatown/Grange Park
  - Summerhill West/Rathnelly/South Hill/Forest Hill SE/Deer Park.

nlargest result

```
#Top 5 Neighbourhood in terms of number of coffee outlets, among Top 5 neighbourhood in terms of total number of SEA restaurc
df1.nlargest(5,'SEA Count').nlargest(5,'Coffee Count')
```

	Neighbourhood	Total Restaurant Count	SEA Count	Coffee Count
62	High Park / The Junction South	21	5	15
49	Studio District	28	6	12
76	Kensington Market / Chinatown / Grange Park	31	5	12
78	Summerhill West / Rathnelly / South Hill / For...	24	5	10
37	Downsview	17	5	6

Results (2/4)

- Visualisation via Folium indicate the optimal neighbourhoods to site the NYC outlet could be Kensington Market/Chinatown/Grange Park
  - All (less Downsview) forms a cluster in downtown Toronto
  - Closest distance to the other neighbourhood in the cluster
- Most meet the criteria in hypothesis

Results (3/4)

- Moderate positive correlation between the number of ethnic Southeast Asian restaurant and number of coffee outlets in a neighbourhood.

Correlation Analysis

```
In [83]:   ▶|  df_absolute=df[['Total Restaurant Count','SEA Count','Coffee Count']]
               df_absolute.corr()

Out[83]:
```

	Total Restaurant Count	SEA Count	Coffee Count
Total Restaurant Count	1.00000	0.60722	0.81173
SEA Count	0.60722	1.00000	0.49119
Coffee Count	0.81173	0.49119	1.00000

Results (4/4)

- Three major clusters identified :
  - (1) low concentration of restaurants (of all sort) and coffee outlets
  - (2) high concentrations of restaurant and coffee outlets
  - (3) moderate concentration of restaurants (include SEA) and coffee outlets
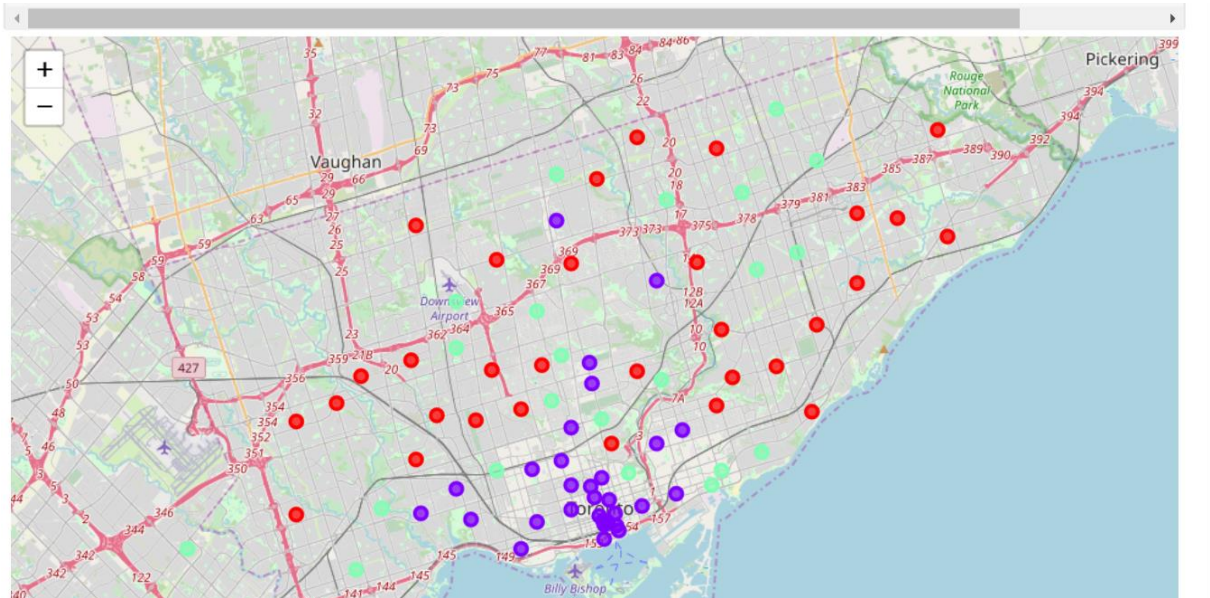
Kensington Market/Chinatown/Grange Park as the location for the NYC at the center where most of Cluster 2 is located i.e. downtown Toronto.

Discussion

- Recommends that the neighbourhood of Kensington Market/Chinatown/Grange Park as the location for the NYC outlet
  - Center of a cluster of neighbourhoods with relatively high concentration of restaurants (including SEA restaurants) and coffee outlets
  - Most advantageous in facilitating access to and exposure to the NYC outlet by potential customers.
- Further study the assumption that Southeast Asians like to go for coffee after meals and the relevance of this assumption to ethnic Southeast Asians consumers in the Canadian market
  - Moderate positive correlation between the number of Southeast Asian restaurants and coffee outlets in the neighbourhoods in Toronto.
  - More data needed for more robust modelling to ascertain strength of relations

Conclusion

- Recommends NYC to:
  - locate its first outlet in the neighbourhood of Kensington Market/Chinatown/Grange Park;
  - Undertake a deeper study on the behaviors and characteristics of its key targeted customer segments in the Canadian market.
- Follow on works that the company could undertake on behalf of NYC to better optimize its product and service offerings in its first NYC outlet in Toronto
  - Finer differentiation of its target customer segments in the Canadian market
  - Analysis of the spending and consumption habits of its targeted customer segment