Battle of Neighborhoods

A Data Science Project:

Olumide Jones

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Business Needs:

- To create a report for a client who is looking to open a specialized restaurant in Alberta.

- The report will analyze and recommend a neighborhood to start the business. Location of interest will be a *fairly densely populated area with few restaurants* to compete.

Data Acquisition and Cleaning

- **Data used are :**
  - Alberta Data : A Wikipedia page of Alberta Boroughs and its associated neighborhood together with their geo-coordinates.
  - Canada Population Data: Data showing Canada's neighborhood with their population.

Both links are found bellow:

- Alberta data: https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_T
- Canada Census Data : https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/hlt-fst/pd-pl/Table.cfm?Lang=Eng&T=1201&SR=1&S=22&O=A&RPP=9999&PR=0

Data Acquisition and Cleaning

- Some of the table scaped from the website contained some missing data point. Data cleaning operations were performed on the dataset and merged into one data frame.

- Resulting data frame shown here.

26	Calgary	Symons Valley	51.1793	-114.1333	15578.0
27	Calgary	Elbow Park, Britannia, Parkhill, Mission	51.0171	-114.0812	14637.0
28	Calgary	Inglewood, Burnsland, Chinatown, East Victoria...	51.0415	-114.0599	14370.0
29	Calgary	Brentwood, Collingwood, Nose Hill	51.0917	-114.1127	14214.0
30	Calgary	Connaught, West Victoria Park	51.0426	-114.0791	13879.0
31	Calgary	City Centre, Calgary Tower	51.0472	-114.0802	13056.0
32	Calgary	Northeast Calgary	51.1494	-114.0019	12483.0
33	Calgary	Highfield, Burns Industrial	50.9857	-114.0631	9372.0
34	Edmonton	West Jasper Place, West Edmonton Mall	53.5157	-113.6339	69914.0
35	Edmonton	East Mill Woods	53.4681	-113.4339	51562.0
36	Edmonton	Heritage Valley	53.4129	-113.4957	50904.0
37	Edmonton	Kaskitayo, Aspen Gardens	53.4822	-113.5269	47109.0
38	Edmonton	Horse Hill, East Lake District	53.6026	-113.3837	45947.0
39	Edmonton	Southgate, North Riverbend	53.4839	-113.5227	45145.0
40	Edmonton	East Castledowns	53.6072	-113.5183	41912.0

Fig. 5: Snapshot of Calgary_edmonton data frame – Full list in the notebook
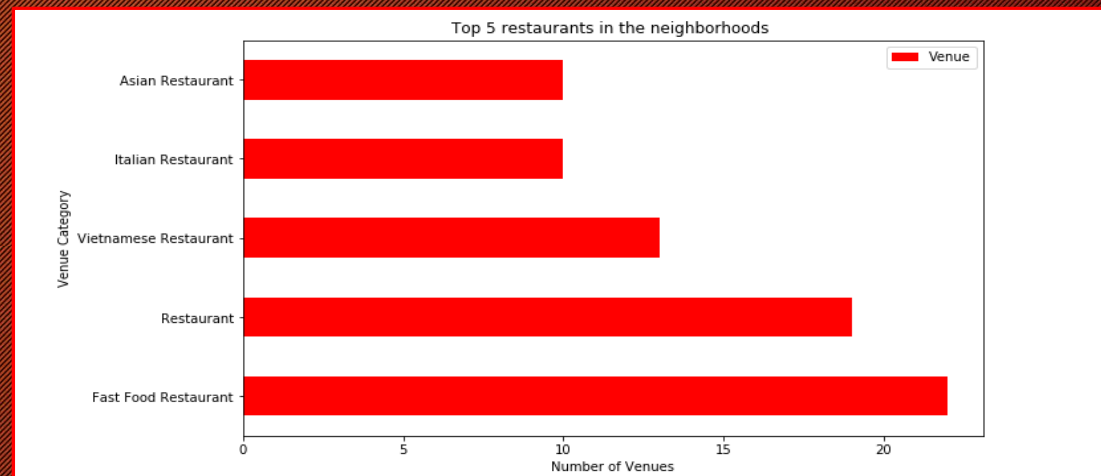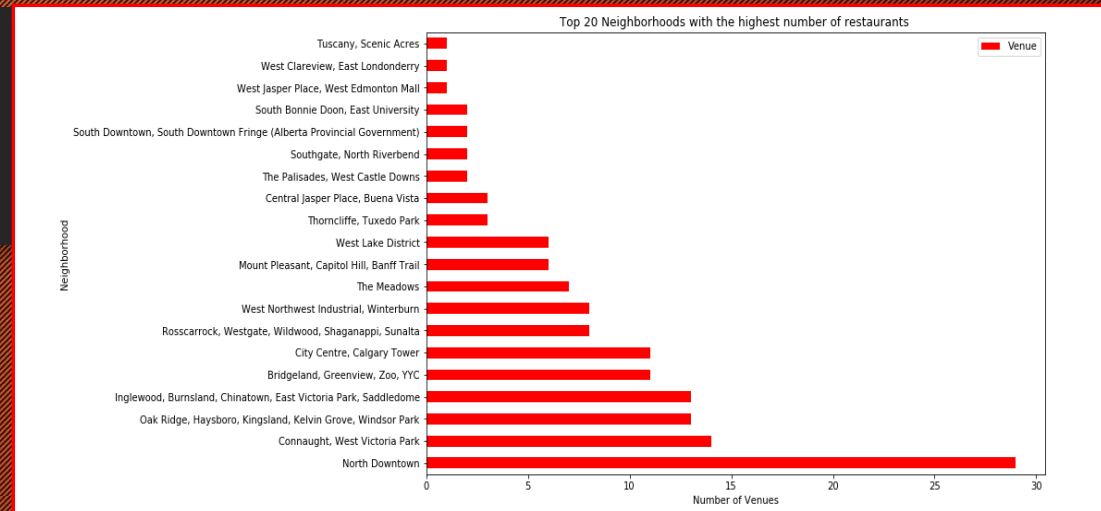
Data Analysis

- Used Foursquare API to extract the top 100 venues in each neighborhood

- Neighborhood with the highest number of venues is identified

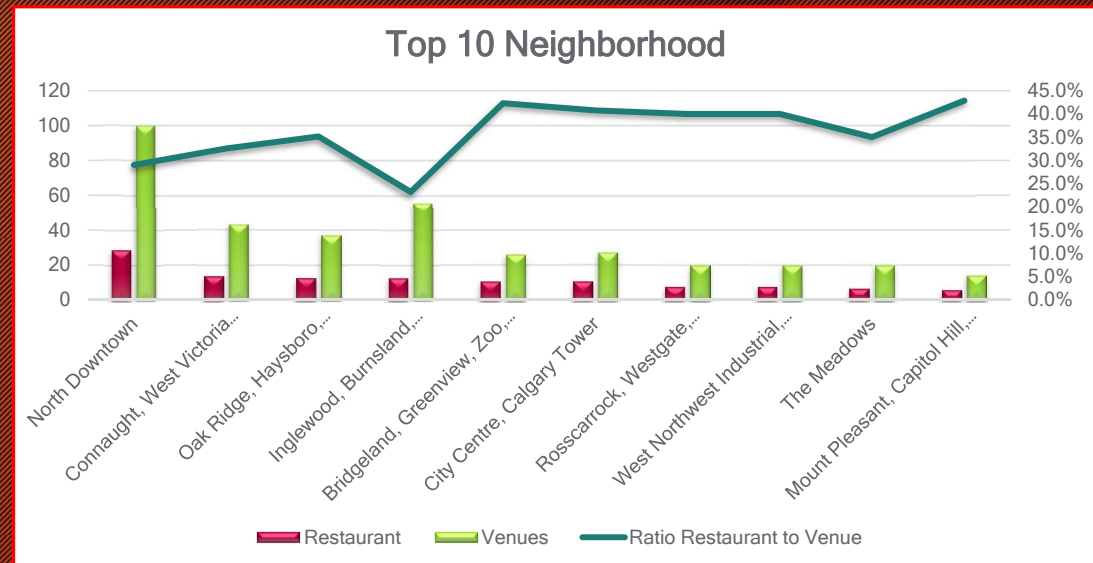| [34]: Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
North Downtown	100	100	100	100	100	100
Inglewood, Burnsland, Chinatown, East Victoria Park, Saddledome	56	56	56	56	56	56
Connaught, West Victoria Park	43	43	43	43	43	43
Oak Ridge, Haysboro, Kingsland, Kelvin Grove, Windsor Park	37	37	37	37	37	37
City Centre, Calgary Tower	27	27	27	27	27	27
Bridgeland, Greenview, Zoo, YYC	26	26	26	26	26	26
West Lake District	21	21	21	21	21	21
Rosscarrock, Westgate, Wildwood, Shaganappi, Sunalta	20	20	20	20	20	20
West Northwest Industrial, Winterburn	20	20	20	20	20	20
The Meadows	20	20	20	20	20	20
Millrise, Somerset, Bridlewood, Evergreen	16	16	16	16	16	16

Data Analysis

- Since we are interested in opening a restaurant, top 20 neighborhood with highest number of restaurant was identified

- Also, I determine the most common restaurants in the neighborhood – looked at top 5 restaurants in the neigborhood

Top 20 Neighborhoods with the highest number of restaurants

Top 5 restaurants in the neighborhoods

Data Analysis

- Top 10 Neighborhood restaurant to venue ratios were calculated as well.

- The neighborhood with the lowest ratio was chosen as a target.

- This implies the neighborhood is busy (venues count) but with fewer restaurants (restaurants count).

Top 10 Neighborhood

Data Analysis

- Top 10 common venues in the neighborhood was also explored and analysis narrowed down to chosen neighborhood of "Inglewood" where we don't have restaurants as one of the top 5 venues.

- This supports the fact that the probability for competition will be very minimal if a new restaurant come into play in the neighborhood.

	City	Neighborhood														
24	Calgary	Mount Pleasant, Capitol Hill, Banff Trail	51.0696	-114.0862	21086.0	0.0	Coffee Shop	American Restaurant	Sushi Restaurant	Comic Shop	Pizza Place	Pub	Chinese Restaurant	Fast Food Restaurant	Sandwich Place	Mediterranean Restaurant
25	Calgary	Lynnwood Ridge, Ogden, Foothills Industrial, G...	50.9878	-114.0001	20406.0	0.0	Pizza Place	Convenience Store	Diner	Clothing Store	Dessert Shop	Electronics Store	Food Truck	Food Court	Food & Drink Shop	Flower Shop
26	Calgary	Symons Valley	51.1793	-114.1333	15578.0	0.0	Home Service	Convenience Store	Eastern European Restaurant	Food Truck	Food Court	Food & Drink Shop	Flower Shop	Flea Market	Fast Food Restaurant	Falafel Restaurant
27	Calgary	Elbow Park, Britannia, Parkhill, Mission	51.0171	-114.0812	14637.0	0.0	Construction & Landscaping	Coffee Shop	Japanese Restaurant	Yoga Studio	Eastern European Restaurant	Food Truck	Food Court	Food & Drink Shop	Flower Shop	Flea Market
28	Calgary	Inglewood, Burnsland, Chinatown, East Victoria...	51.0415	-114.0599	14370.0	0.0	Coffee Shop	Pub	Theater	Performing Arts Venue	Hotel	Italian Restaurant	Restaurant	Deli / Bodega	New American Restaurant	Cocktail Bar
29	Calgary	Brentwood, Collingwood, Nose Hill	51.0917	-114.1127	14214.0	0.0	Electronics Store	Yoga Studio	French Restaurant	Food Truck	Food Court	Food & Drink Shop	Flower Shop	Flea Market	Fast Food Restaurant	Falafel Restaurant
30	Calgary	Connaught, West Victoria Park	51.0426	-114.0791	13879.0	0.0	Bar	Coffee Shop	Mediterranean Restaurant	French Restaurant	Restaurant	Pub	Brewery	Middle Eastern Restaurant	Park	Pharmacy

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4        Coffee Shop  0.17


----Inglewood, Burnsland, Chinatown, East Victoria Park, Saddledome----
                  venue  freq
0            Coffee Shop  0.09
1                    Pub  0.07
2                  Hotel  0.05
3                Theater  0.05
4    Performing Arts Venue  0.05

----Kaskitayo, Aspen Gardens----
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Results and Discussion

- Calgary and Edmonton are the top 2 Borough in terms of population
- North Downtown Edmonton has the highest number of venues and restaurant in our data set.
- Since , we are looking for a less competitive neighborhood, analysis using ratio of restaurant in a neighborhood to its reported venues were employed.
- The neighborhood of "*Inglewood, Burnsland, Chinatown, East Victoria Park and Saddledome*" has the lowest ratio.
- In that neighborhood, Vietnamese restaurants while it remains popular was not among top 10 venues.

Conclusion

- After considering top 20 neighborhoods with the highest number of restaurants in both boroughs of Calgary and Edmonton and the top 5 venues in each neighborhood, a neighborhood with the lowest restaurant top venue ratio was chosen as a good neighborhood to open a Vietnamese's restaurant. This neighborhood satisfies our conditions *of fairly densely populated with few restaurants to compete with.*

Recommendation

- I recommend my client to setup his new venture in "*Inglewood, Burnsland, Chinatown, East Victoria Park and Saddledome neighborhood*"

- *Further analysis with population demographics, household income and spending power might provide useful insight and impact this project.*