

The Battle of the Neighborhoods

IBM CAPSTONE PROJECT

A Report by: Pushkar Patil

1.0 Introduction

1.1 Background

- **Alberta** is one of the thirteen provinces and territories of Canada. With an estimated population of 4,067,175 people as of the 2016 census, it is Canada's fourth most populous province and the most populous of Canada's three prairie provinces. Alberta's area is approximately 660,000 square kilometres (250,000 sq. mi). Alberta was named after Princess Louise Caroline Alberta, the fourth daughter of Queen Victoria. Alberta is one of three Canadian provinces and territories to border only a single U.S. State. Calgary and Edmonton anchor Alberta's two census metropolitan areas, which each have populations exceeding one million, while the province has 16 census agglomerations. Key economic sectors in Alberta include energy and clean technology, agriculture, and petrochemicals. Key economic sectors in Alberta include energy and clean technology, agriculture, and petrochemicals. About 81% of the population lives in urban areas and only about 19% in rural areas. Alberta has been a tourist destination from the early days of the twentieth century, with attractions including outdoor locales for skiing, hiking and camping, shopping locales such as West Edmonton Mall, Calgary Stampede, outdoor festivals, professional athletic events, international sporting competitions such as the Commonwealth Games and Olympic Games, as well as more eclectic attractions. Tourist destinations in the province include: Banff, Canmore, Drumheller, Jasper, Sylvan Lake and Lake Louise. Alberta is home to six UNESCO World Heritage Sites: The Canadian Rocky Mountain Parks, Dinosaur Provincial Park, the Head-Smashed-In Buffalo Jump, Waterton Glacier International Peace Park, Wood Buffalo National Park, and Writing-on-Stone.
- **Toronto** is the capital city of the Canadian province of Ontario. With a recorded population of approximately 2.7 million in 2016, it is the most populous city in Canada and the fourth most populous city in North America. The diverse population of Toronto reflects its current and historical role as an important destination for immigrants to Canada. More than 50 percent of residents belong to a visible minority population group, and over 200 distinct ethnic origins are represented among its inhabitants. Toronto is an international centre of business, finance, arts, and culture, and is recognized as one of the most multicultural and cosmopolitan cities in the world. Toronto covers an area of 630 square kilometres (243 sq. mi), with a maximum north-south distance of 21 km (13 mi). It has a maximum east-west distance of 43 km (27 mi) and it has a 46 kilometre (29 mi) long waterfront shoreline, on the north-western shore of Lake Ontario. Toronto encompasses a geographical area formerly administered by many separate municipalities. These municipalities have each developed a distinct history and identity over the years, and their names remain in common use among Torontonians. Former municipalities include East York, Etobicoke, Forest Hill, Mimico,

North York, Parkdale, Scarborough, Swansea, Weston and York. Throughout the city there exist hundreds of small neighbourhoods and some larger neighbourhoods covering a few square kilometres.

1.2. Problem Statement

As both selected locations as stated in section 1.1 are regarded as top spots of tourism in the world due to the richness of culture and livelihood as practiced in the two locations, both reputations in the tourism field can be studied and compared. Hence, the following case study is conducted with the motive of comparing the tourism characteristics of two major destinations, which are Alberta and Toronto. Such comparison study is prioritized to access the potentiality of both locations on tourism today and in the near future. The fields of comparison study include food spots (restaurants, cafes etc.), galleries, museums and so much more. But, for this study, I will be using restaurants, museums and galleries for the comparison study.

1.3. Interest

This study is intended for travel vloggers, influencers or someone migrating to different places due to change in the job/work location. This may present them with brief vision about the most distinctive places of the destination they are searching for.

2.0. Data acquisition and cleaning

2.1. Data resources

The targeted data of the two locations of interest, which are Alberta and Toronto selected for this study are listed as below, with the corresponding methods:

- * The number of restaurants in in Alberta and the Toronto.
- * The number of galleries in in Alberta and the Toronto.
- * The number of museums in Alberta and the Toronto.

Firstly, the data sources that explain the postal codes and corresponding neighborhoods/ boroughs of the two locations of interest are extracted from

['https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada: T'](https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_T) (Alberta) and

['https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada: M'](https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M) (Toronto). As follows, the geospatial data of the corresponding postal codes, restaurants, museums and galleries of both locations are extracted as explained below:

- The coordinates of the postal codes based on the borough/ neighbourhood of Alberta were already included in the above provided link and for Toronto extracted via ['http://cocl.us/Geospatial_data'](http://cocl.us/Geospatial_data).

- The geospatial data, numbers and other details of the restaurants, museums and galleries of both location of interest are extracted via Foursquare API.

2.2. Data cleaning

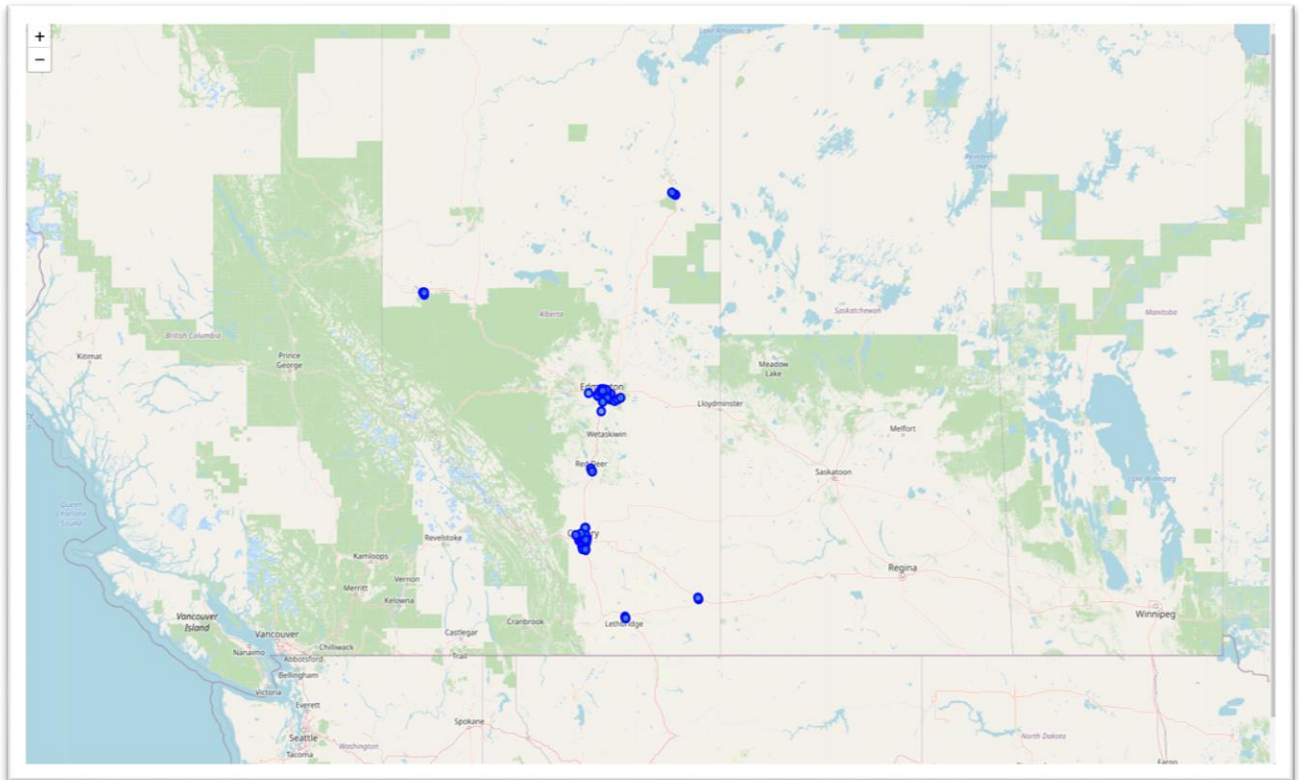
Data of both the locations was extracted and stored in respective tables. Both tables had some values missing in the observations which were easily dropped. Apart from this, nothing special processing was needed so it was directly carried further for analysis.

3.0. Data Exploration

3.1. Exploring 'Alberta'

- General visualization of the boroughs/ neighborhoods of Alberta.

	Postal Code	Borough	Neighborhood	Latitude	Longitude
0	T2A	Calgary	Penbrooke Meadows, Marlborough	51.0497	-113.964
1	T3A	Calgary	Dalhousie, Edgemont, Hamptons, Hidden Valley	51.1261	-114.143
2	T4A	Airdrie	East Airdrie	51.2724	-113.987
3	T5A	Edmonton	West Clare view, East Londonderry	53.5899	-113.441
4	T6A	Edmonton	North Capilano	53.5483	-113.408
...
161	T1Y	Calgary	Rundle, Whitehorn, Monterey Park	51.0759	-114.001
162	T2Y	Calgary	Mill rise, Somerset, Bridlewood, Evergreen	50.9093	-114.072
165	T5Y	Edmonton	Horse Hill, East Lake District	53.6026	-113.384
171	T2Z	Calgary	Douglas Glen, McKenzie Lake, Copperfield, East...	50.9023	-113.987
174	T5Z	Edmonton	West Lake District	53.5966	-113.488

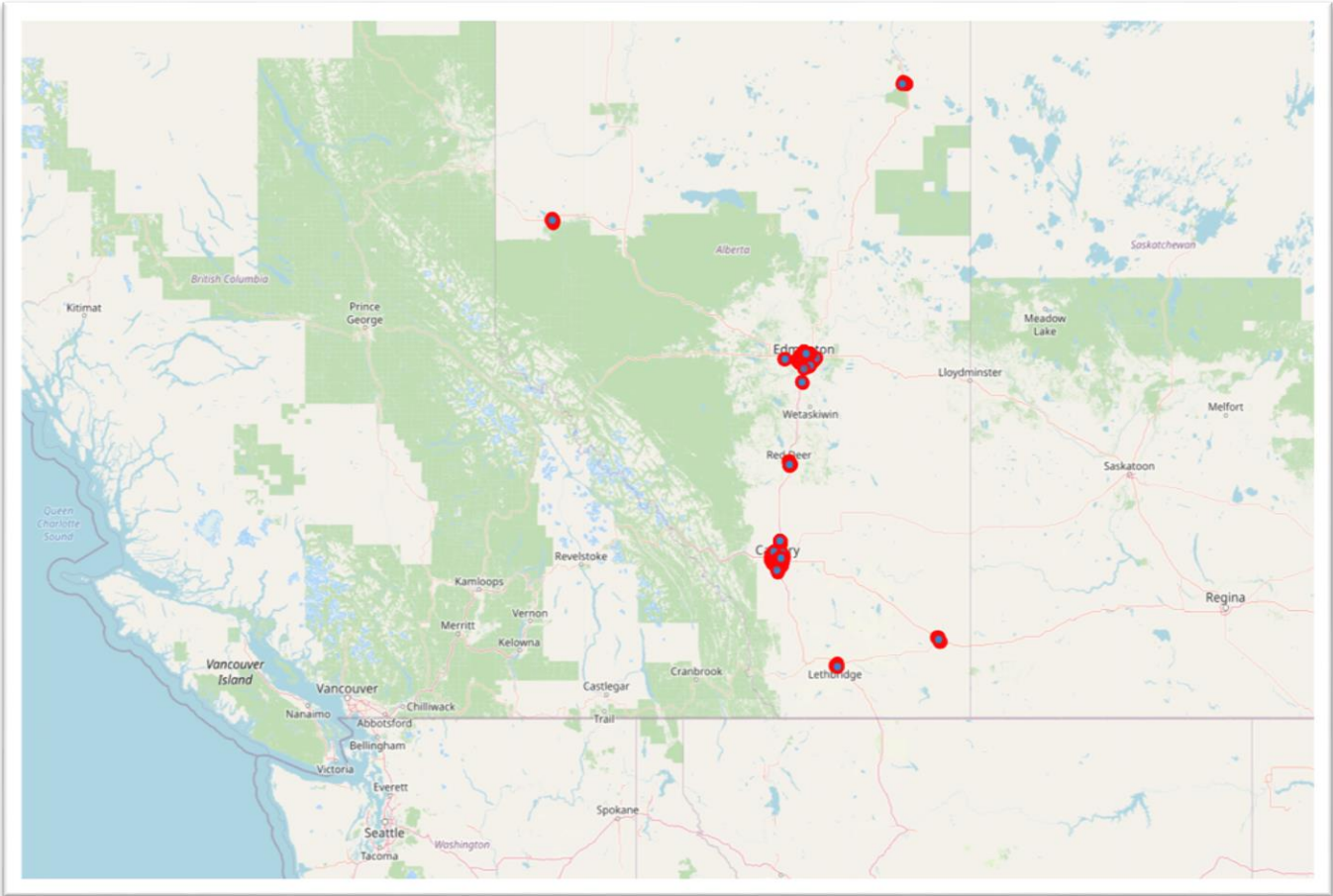


3.1.1. Geospatial data of Restaurants, Galleries and Museums (Foursquare API)

3.1.1.1. To find statistical patterns of restaurants, galleries and museums in Alberta.

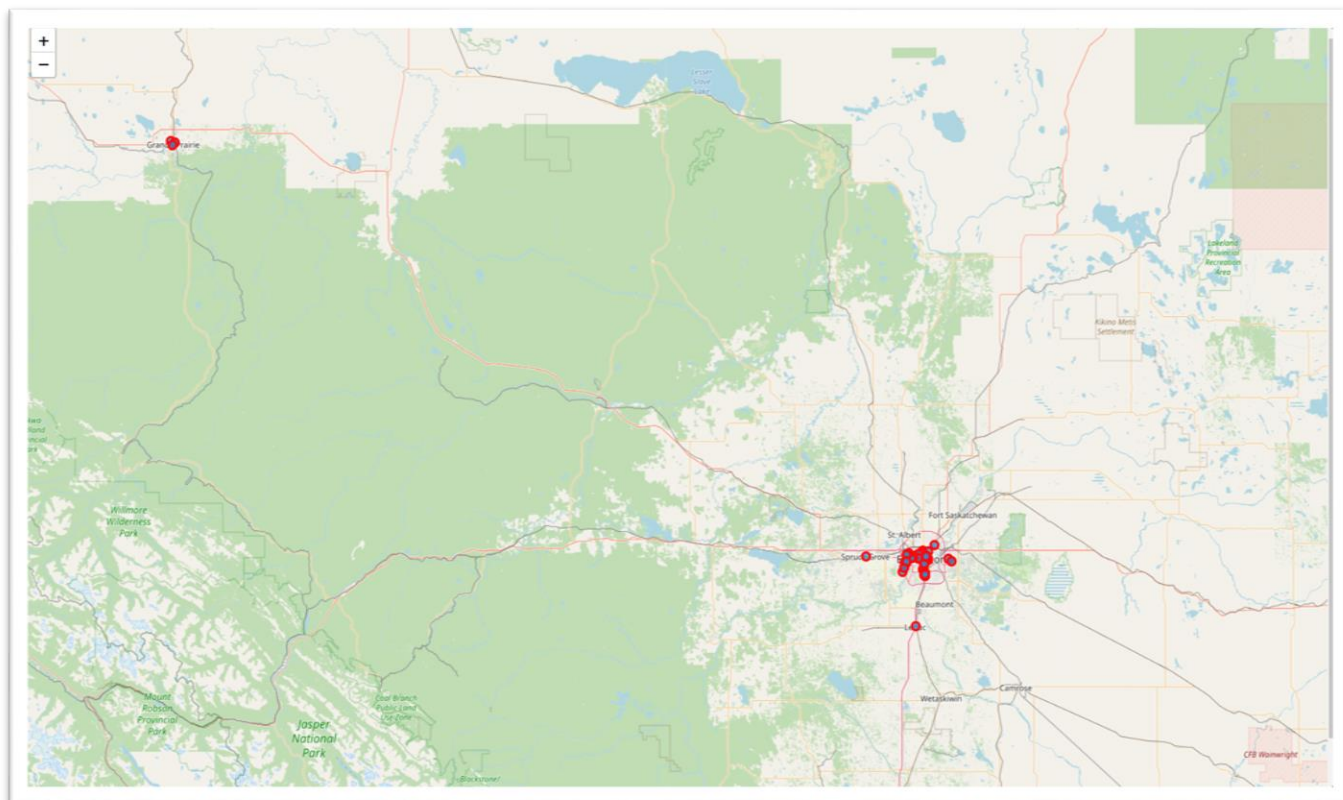
Restaurants

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude
0	Calgary	51.04968	-113.964320	Skylark Restaurant	51.037584	-113.956821
1	Calgary	51.12606	-114.143158	Raja Foods Restaurant & Sheesha Bar	51.059729	-113.974679
2	Airdrie	51.27245	-113.986980	Tawakal East African Restaurant & Catering	51.037844	-113.963972
3	Edmonton	53.58990	-113.441300	Joey's Seafood Restaurants	51.063994	-113.958027
4	Edmonton	53.54830	-113.408000	Le Da Vietnamese Restaurant	51.036634	-113.963590



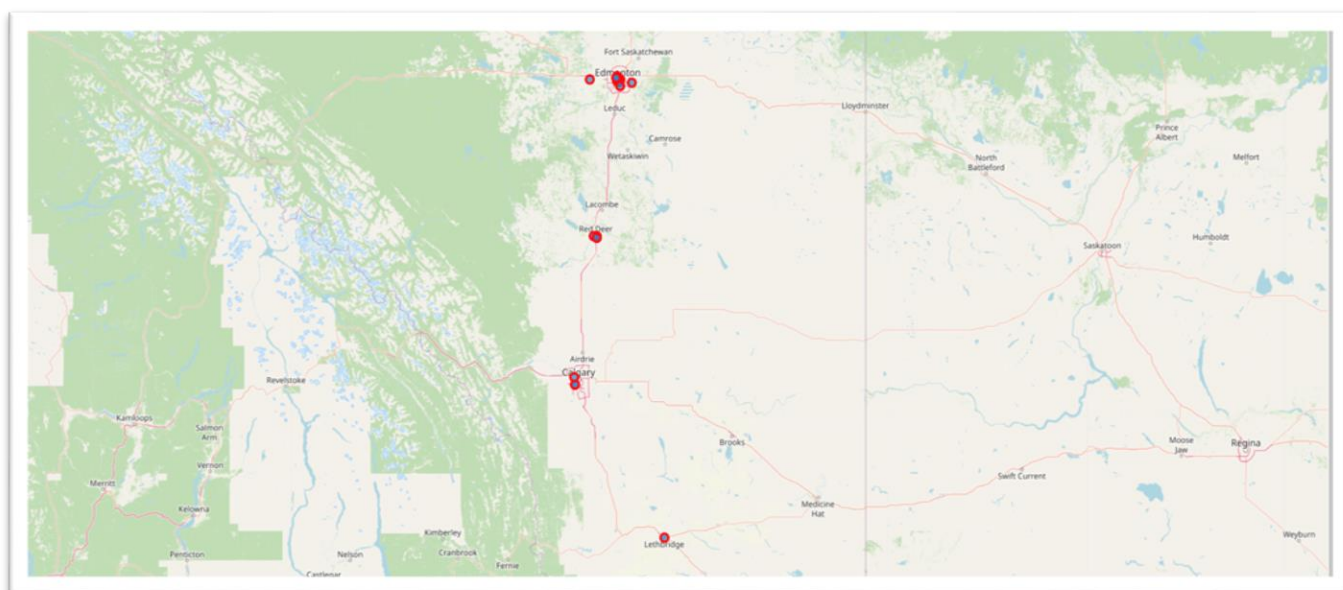
Galleries

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude
1	Calgary	51.12606	-114.143158	Flower Gallery	51.037822	-113.975469
2	Airdrie	51.27245	-113.986980	LoveCraft Gallery	51.036981	-113.948048
3	Calgary	51.04968	-113.964320	Black Earth Floral Gallery	51.136533	-114.161526
4	Calgary	51.12606	-114.143158	Accentric Hair Gallery	51.142575	-114.130870
5	Calgary	51.04968	-113.964320	Liquor Gallery	53.591675	-113.417674



Museums

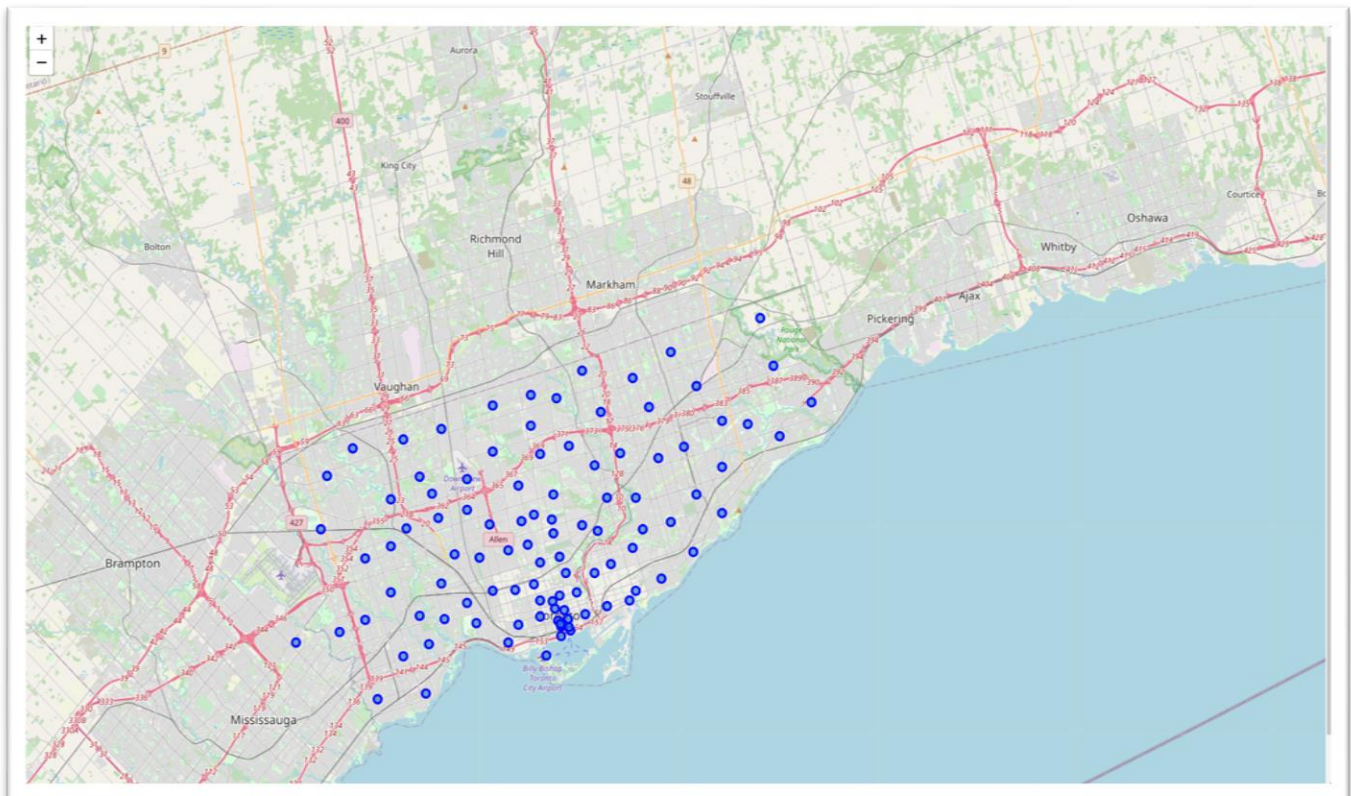
	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude
1	Calgary	51.04968	-113.964320	Strathcona County Museum & Archives	53.513052	-113.314517
5	Airdrie	51.27245	-113.986980	John Walter Museum	53.537302	-113.480622
6	Edmonton	53.58990	-113.441300	John Walter Museum	53.527379	-113.504700
9	Calgary	51.04968	-113.964320	Military Museums of Calgary	51.014282	-114.115463
10	Calgary	51.12606	-114.143158	The Military Museums	51.013866	-114.116351



3.2. Exploring 'Toronto'

- General visualization of the boroughs/ neighborhoods of Alberta.

	Postal Code	Borough	Neighbourhood	Latitude	Longitude
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
...
98	M8X	Etobicoke	The Kingsway, Montgomery Road, Old Mill North	43.653654	-79.506944
99	M4Y	Downtown Toronto	Church and Wellesley	43.665860	-79.383160
100	M7Y	East Toronto	Business reply mail Processing Centre, South C...	43.662744	-79.321558
101	M8Y	Etobicoke	Old Mill South, King's Mill Park, Sunny lea, Hu...	43.636258	-79.498509
102	M8Z	Etobicoke	Mimico NW, The Queensway West, South of Bloor, ...	43.628841	-79.520999

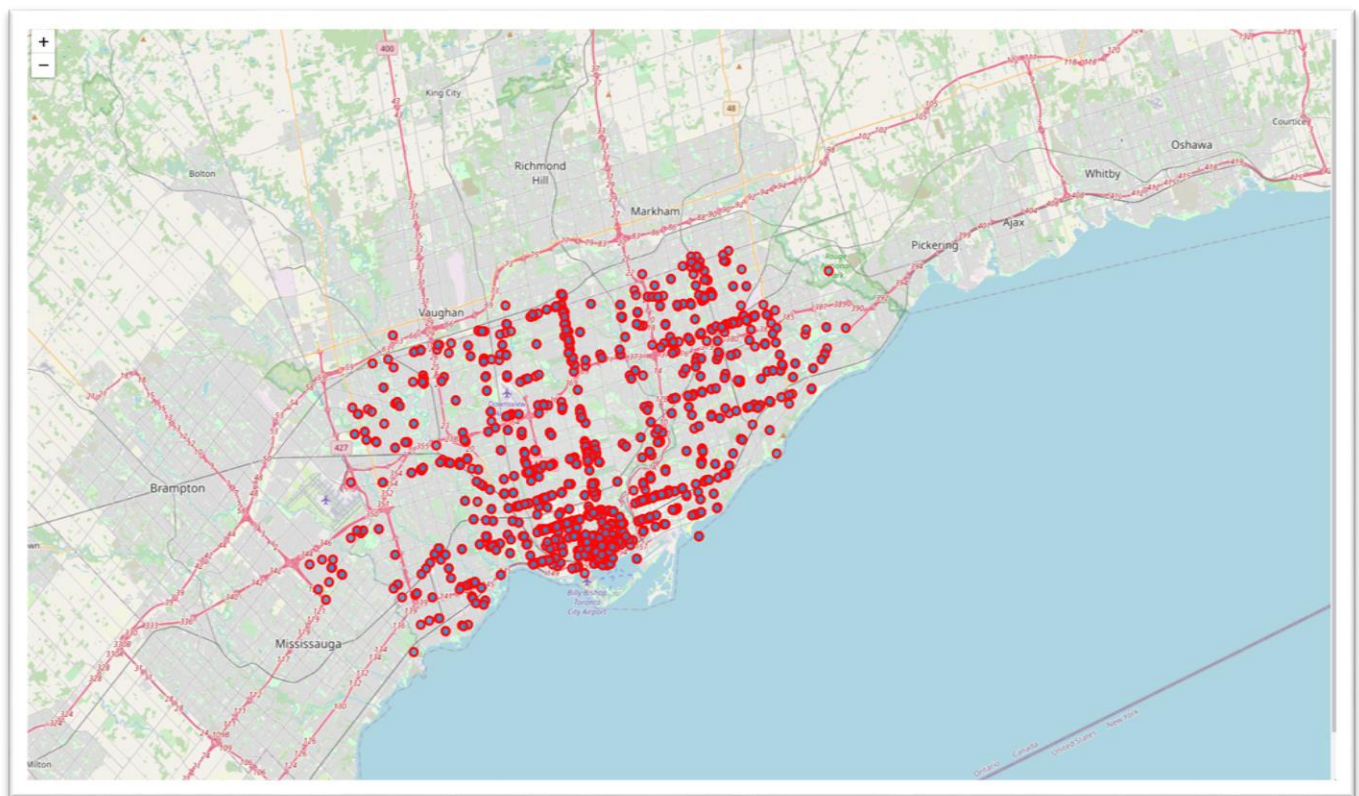


3.2.1. Geospatial data of Restaurants, Galleries and Museums (Foursquare API)

3.2.1.1. To find statistical patterns of restaurants, galleries and museums in Alberta.

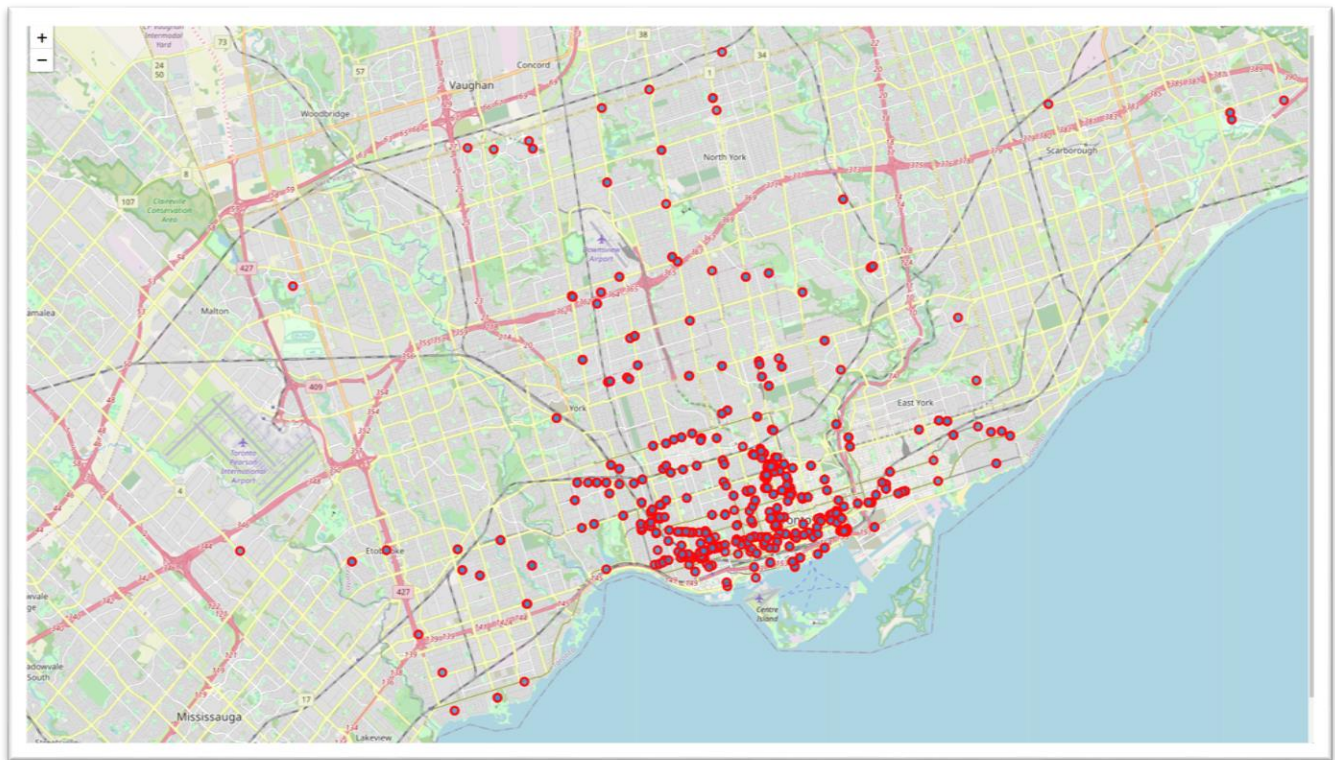
Restaurants

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude
2	Downtown Toronto	43.654260	-79.360636	Darband Restaurant	43.755194	-79.348498
3	North York	43.718518	-79.464763	Hakka No.1 Restaurant	43.756800	-79.312850
4	Downtown Toronto	43.662301	-79.389494	The Mill Restaurant	43.740700	-79.322400
5	Etobicoke	43.667856	-79.532242	Karibu Restaurant	43.759216	-79.311051
7	North York	43.745906	-79.352188	Valley Fields Family Restaurant	43.741452	-79.319633



Galleries

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude
0	North York	43.753259	-79.329656	Sandra Ainsley Gallery	43.719044	-79.308892
2	North York	43.725882	-79.315572	Rouge gallery	43.659070	-79.349182
3	Downtown Toronto	43.654260	-79.360636	Bottè Gallery	43.654110	-79.360976
4	North York	43.718518	-79.464763	Jane Roos Gallery	43.653962	-79.361090
6	Etobicoke	43.667856	-79.532242	Gallery Indigena	43.650080	-79.359980



Museums

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude
1	North York	43.725882	-79.315572	Aga Khan Museum	43.725105	-79.332076
2	North York	43.753259	-79.329656	Museum Of Illusions	43.650219	-79.369451
3	North York	43.725882	-79.315572	Museum Of The End Of The World	43.654061	-79.385452
4	Downtown Toronto	43.654260	-79.360636	Riverdale Farm Museum	43.667602	-79.360132
5	North York	43.718518	-79.464763	Cabbagetown Regent Park Museum	43.667732	-79.359980



4.0. Methodology

In Section 3.0, the relevant data comprises of the number of restaurants, galleries and museums in both location of interest (Alberta and Toronto) are collected using the search query function available in Foursquare API, with the respective baseline input search queries of 'Restaurant', 'Gallery' and 'Museum' and radius settings of 2000m for Alberta as well as Toronto. The radius settings are selected based on the distribution of borough in both location of interests.

In this following section, the data gathered from the previous section will be used to do exploratory data analysis, we will be looking into the data comparisons of both locations via data visualisation as explained below:

- * Total Number of Restaurants, Museums and Galleries per borough in both locations.
- * Total Number of Restaurants, Museums and Galleries in both locations.
- * Distribution of Restaurants, Museums and Galleries in both locations according to boroughs.

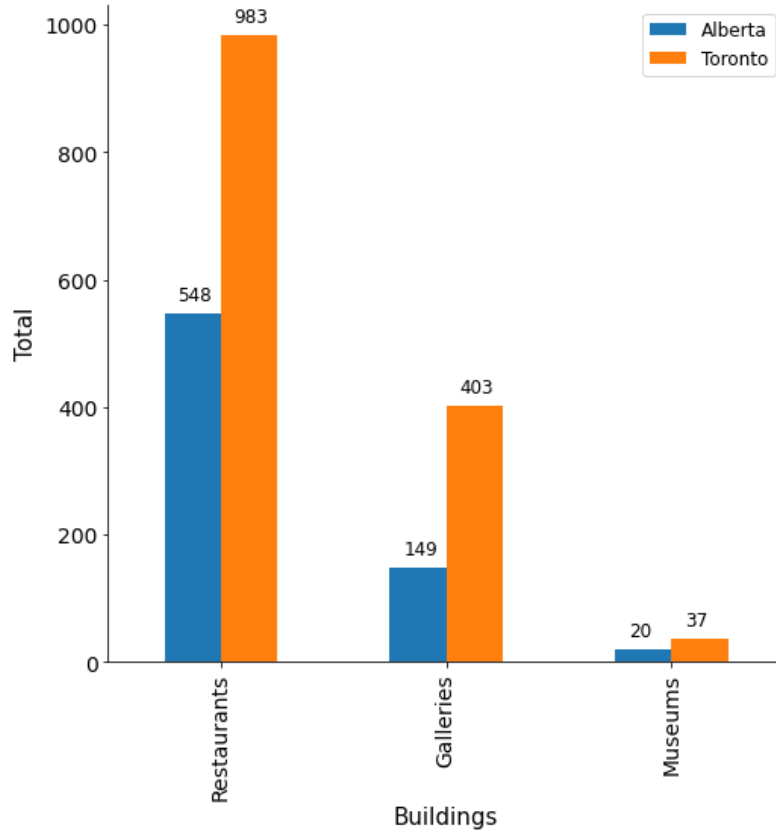
Then, the potentiality study of both locations on tourism will be accessed based on the analysed data.

5.0. Analysis

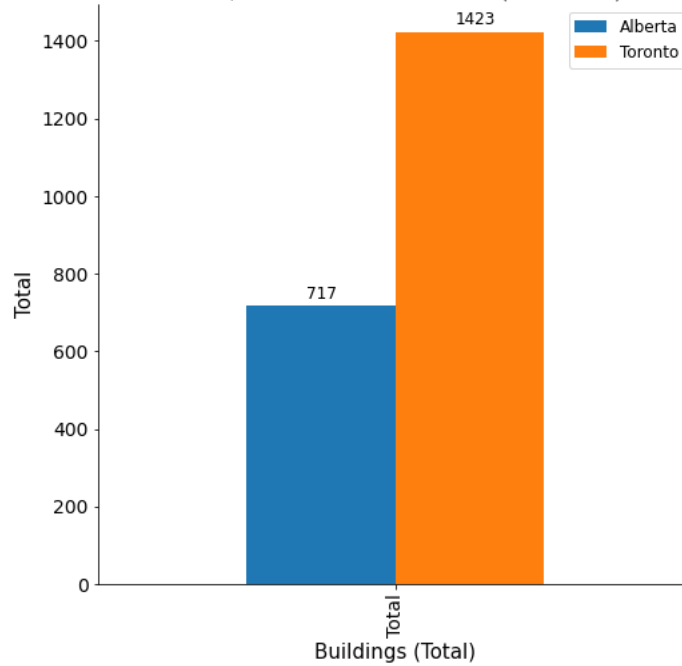
5.1. Study on the total number of Restaurants, Galleries and Museums in both

Location.

Total Number of Restaurants, Galleries and Museums in Alberta and Toronto

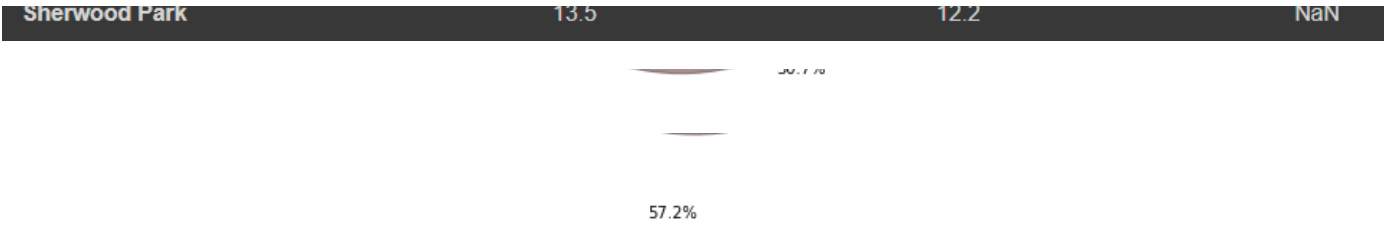


Total Number of Restaurants, Galleries and Museums (combined) in Alberta and Toronto



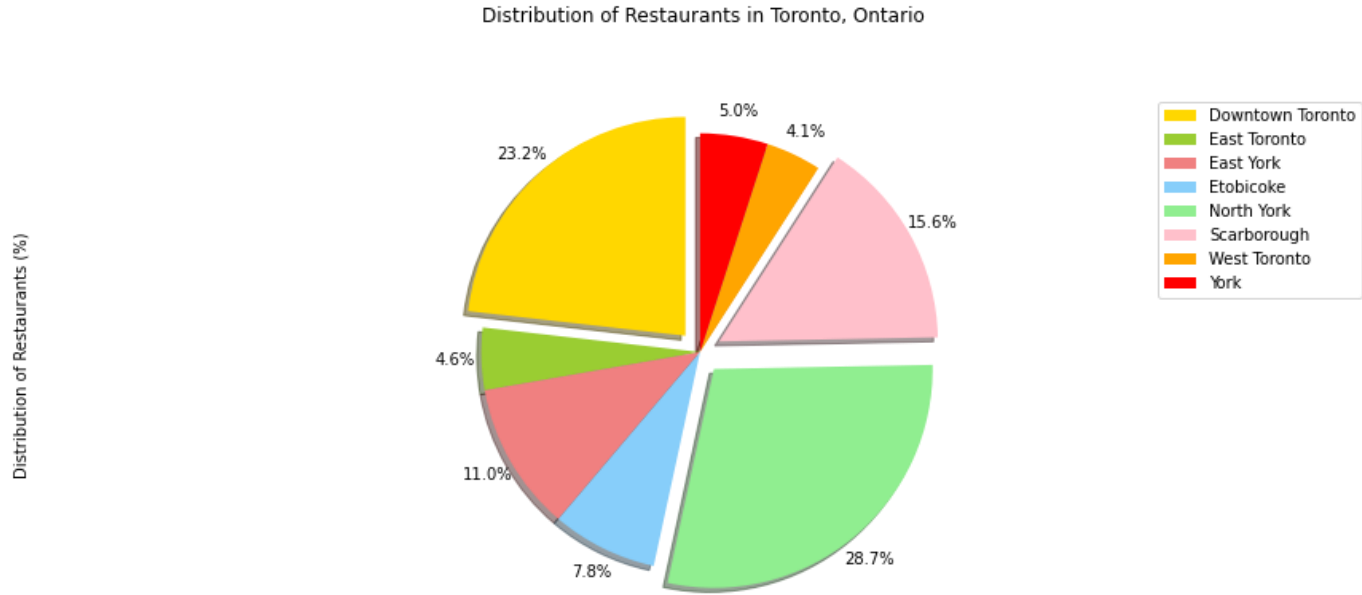
5.2. Study on the Distributions of Restaurants, Galleries and Museums in both Location (Borough).

5.2.1 Alberta



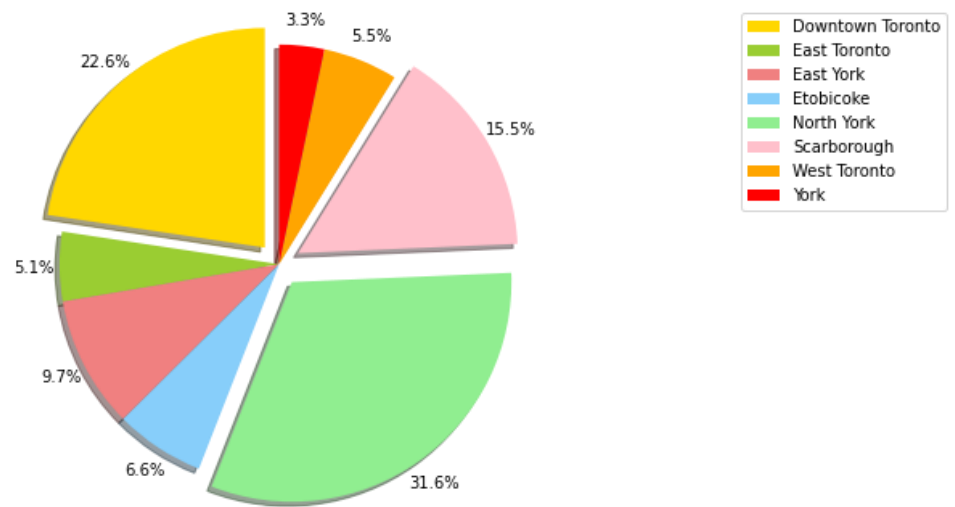
5.2.3. Toronto

Neighborhood	Restaurants	Galleries	Museums
Downtown Toronto	23.2	22.6	24.8
East Toronto	4.6	5.1	2.5
East York	11.0	9.7	10.9
Etobicoke	7.8	6.6	9.9
North York	28.7	31.6	23.8
Scarborough	15.6	15.5	19.3
West Toronto	4.1	5.5	1.0
York	5.0	3.3	7.9



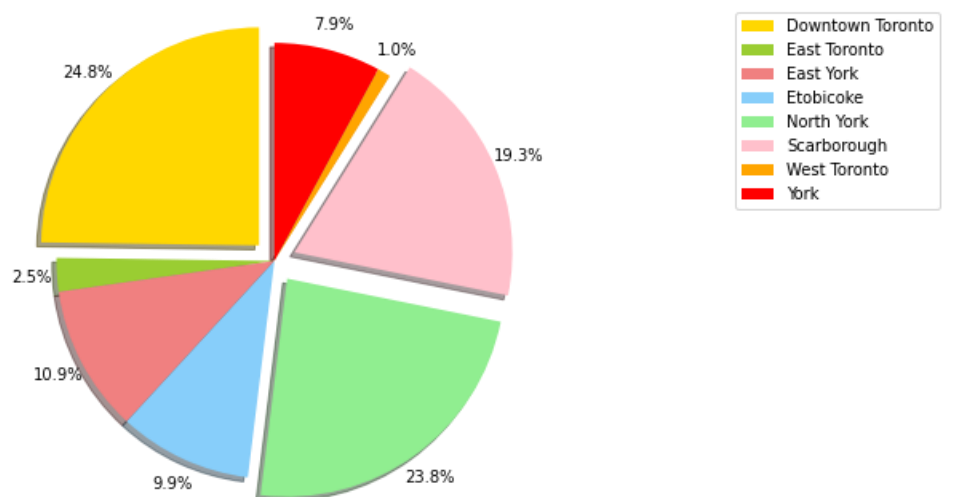
Distribution of Galleries (%)

Distribution of Galleries in Toronto, Ontario



Distribution of Museums (%)

Distribution of Museums in Toronto, Ontario



5.3. Study on the Total number of Restaurants, Galleries and Museums in both

Location (Borough).

5.3.1 Alberta

	Total Number of Restaurants	Total Number of Galleries	Total Number of Museums
Neighborhood			
Airdrie	48	18	5.0
Calgary	180	64	14.0
Edmonton	179	42	1.0
Fort McMurray	10	3	NaN
Leduc	10	2	NaN
Lethbridge	10	1	NaN
Medicine Hat	36	7	NaN
Sherwood Park	75	12	NaN

5.3.2 Toronto

	Total Number of Restaurants	Total Number of Galleries	Total Number of Museums
Neighborhood			
Downtown Toronto	220	86	10
East Toronto	42	18	1
East York	110	31	2
Etobicoke	77	27	3
North York	293	152	13
Scarborough	150	55	6
West Toronto	46	21	1
York	45	13	1

6.0 Results and Discussion

The analysed data obtained via exploratory data analysis in section 5.0 to 5.3 has given us the findings that the total numbers of restaurants, galleries and museums in Toronto significantly outweighs Alberta, (though we have considered only the city of Toronto compared to the province of Alberta), as visualized via bar charts in section 5.0.

By accessing the total number and distributions of restaurants, galleries and museums of both location of interest in section 5.1 and 5.2, we can see that the data trends of each distinctive boroughs for restaurants, galleries and museums are distinctive for Alberta, but equally distributed for. The boroughs of Calgary, Edmonton and Airdrie are the top 3 boroughs with high numbers of restaurants, galleries and museums. Whereas, the notable Boroughs of Toronto with fairly similar distributions and total numbers of restaurants, galleries and museums are Downtown Toronto, North York and Scarborough. Hence, these boroughs in both location of interest with higher numbers of restaurants, galleries and museums could be regarded as the respective tourist spots.

7.0. Conclusion

From our findings, it has come to a conclusion where Toronto has significantly higher number of restaurants, galleries and museums than that of the Alberta based on the study scope. Therefore, we can say that Toronto has a higher potentiality than Alberta as destination with higher welcoming rate in tourism.

Thank You!!!