

Capstone Project

The Battle of Neighborhoods

Introduction: Events/Holiday/Travel plan details to neighborhoods of Toronto.

The report will provide details of Hotels (for stay), nearby restaurants, places to visit in the vicinity, places for shopping, cafes etc.

This will help any event management firm or a family to plan for a short trip providing them vital information of the neighborhood for their place of visit.

Detailed maps will be provided for the same.

Target audience here is either an Event Management firm or a family that may need details of the neighborhood, which would help them to plan their trips accordingly.

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Extracting, Filtering and Formatting the data

Three venues (Restaurants, shops and Hotels) were targeted. This would form the base of the report and help travelers plan their travel to this neighborhood.

Foursquare API was used to extract data.

```
# DataFrame  
hotel_dataframe = json_normalize(venues)  
hotel_dataframe.head()
```

		id	name	categories	referralId	hasPerk	location.address	location.crossStreet	location.lat	location.lng
0	51d212c3498ebf27dc469bc9	Chelsea Hotel	'4bf58dd8d48988d1fa931735', 'name': 'H...'	v-1564152944	False	33 Gerrard Street West		at Yonge St.	43.658498	-77.472154
1	4ab2d511f964a5209b6c20e3	Sheraton Centre Toronto Hotel	'4bf58dd8d48988d1fa931735', 'name': 'H...'	v-1564152944	False	123 Queen Street West		at York St.	43.651129	-77.472154
2	4b68aed1f964a520de862be3	The Rex Hotel Jazz & Blues Bar	'4bf58dd8d48988d1e7931735', 'name': 'U...'	v-1564152944	False	194 Queen St W	Queen & St. Patrick	43.650505		-77.472154
3	58b7d72dcc05d161570bd712	Sheraton Centre Toronto Hotel	'4bf58dd8d48988d1fa931735', 'name': 'H...'	v-1564152944	False	123 Queen Street West		NaN	43.651016	
4	4af96fbff964a520c01122e3	One King West Hotel & Residence	'4bf58dd8d48988d1fa931735', 'name': 'H...'	v-1564152944	False	1 King St W		at Yonge St.	43.649139	

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Extracting, Filtering and Formatting the data...

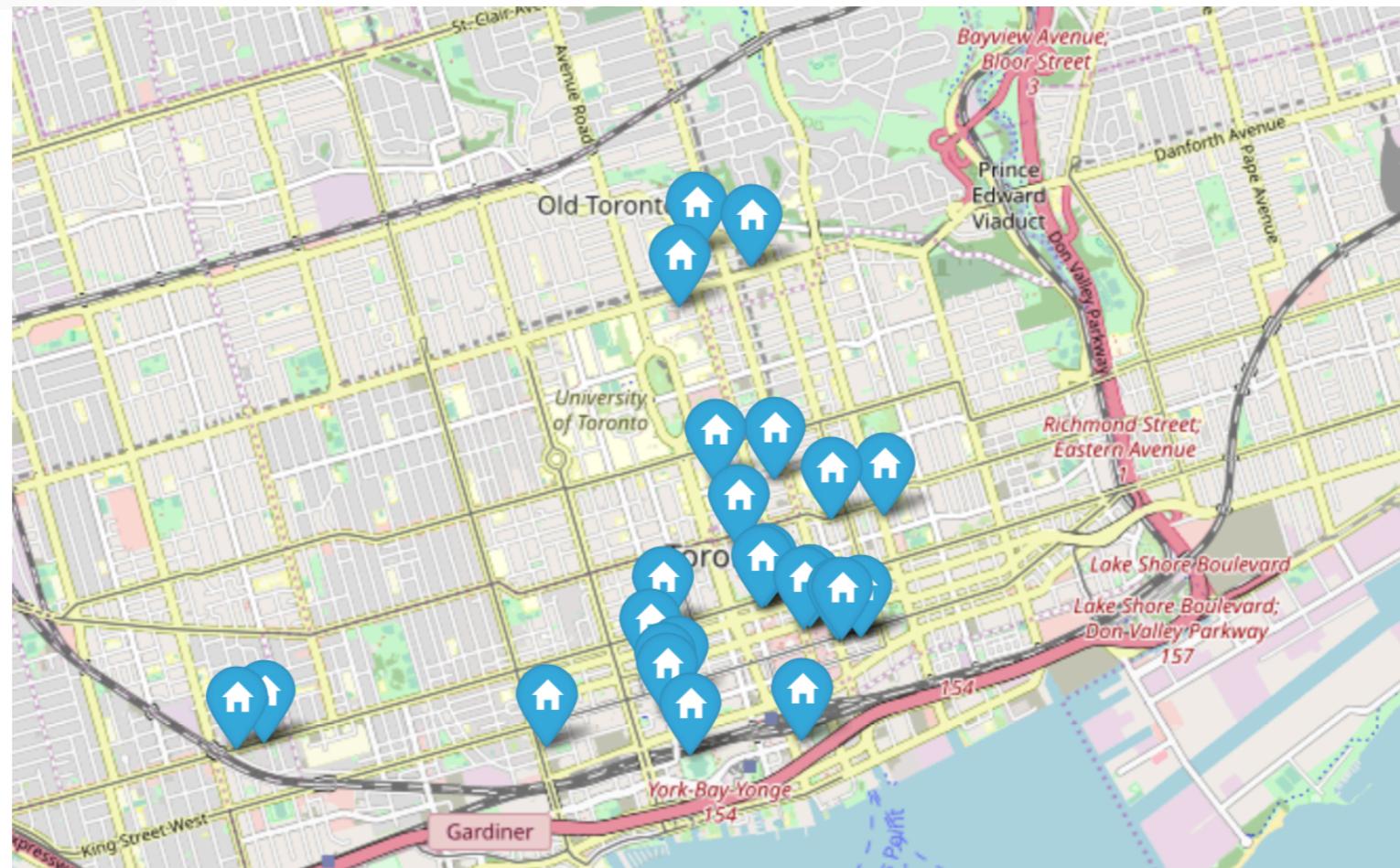
The extracted data needed to be formatted to ensure we get distinct categories to filter the data from. Once the data was filtered, it was easier to format the same by removing undesired columns and grouping based on categories.

	Name	Categories	Address	Latitude	Longitude	PostalCode	State
0	Chelsea Hotel	Hotel	33 Gerrard Street West	43.658498	-79.383097	M5G 1Z4	ON
1	Sheraton Centre Toronto Hotel	Hotel	123 Queen Street West	43.651129	-79.383829	M5H 2M9	ON
3	Sheraton Centre Toronto Hotel	Hotel	123 Queen Street West	43.651016	-79.384148	M5H 2M9	ON
4	One King West Hotel & Residence	Hotel	1 King St W	43.649139	-79.377876	M5H 1A1	ON
5	Le Germain Hotel Toronto Mercer	Hotel	30 Mercer St	43.645669	-79.391044	M5V 1H3	ON
6	The Grand Hotel & Suites Toronto	Hotel	225 Jarvis St.	43.656449	-79.374110	M5B 2C1	ON
7	SoHo Metropolitan Hotel	Hotel	318 Wellington Street West	43.644625	-79.391925	M5V 3T4	ON
8	Four Seasons Hotel Toronto	Hotel	60 Yorkville Avenue	43.671796	-79.389457	M4W 0A4	ON
9	Bond Place Hotel	Hotel	65 Dundas St E	43.656188	-79.378452	M5B 2G8	ON
10	DoubleTree by Hilton Hotel Toronto Downtown	Hotel	108 Chestnut Street	43.654608	-79.385942	M5G 1R3	ON
11	The Omni King Edward Hotel	Hotel	37 King Street East	43.649191	-79.376006	M5C 1E9	ON
12	Thompson Hotel	Hotel	550 Wellington St. W.	43.642753	-79.401558	M5V 2V4	ON
14	Beverley Hotel	Hotel	335 Queen Street West	43.649701	-79.392114	M5V 2A4	ON
17	Le Germain Hotel Toronto Maple Leaf Square	Hotel	75 Bremner	43.643125	-79.380918	M5J 0A1	ON

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Visualization

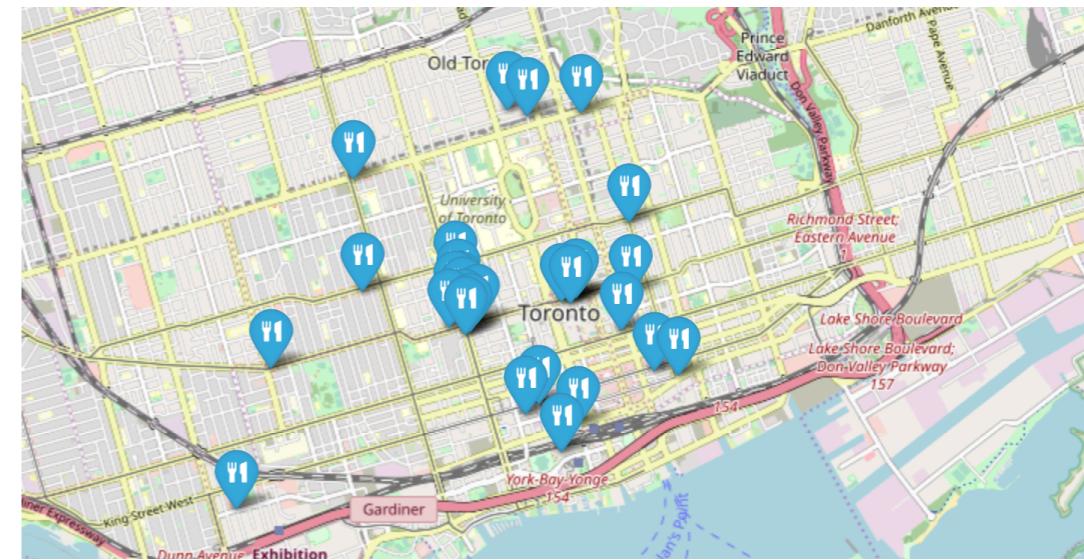
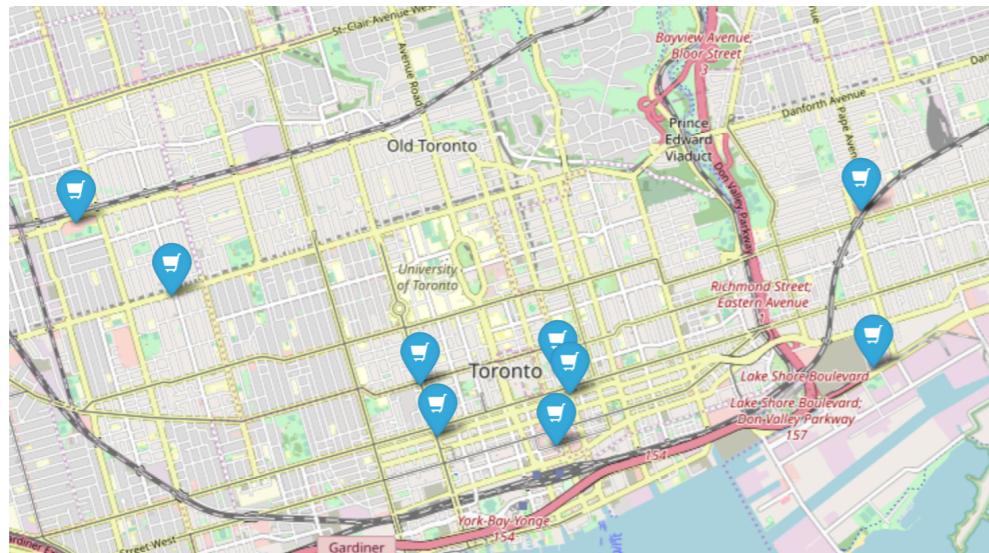
The formatted data would be of immense help to the travelers if it would be visualized in a map format. Using the folium API with markers and glyphicon icons, we obtained the following for Hotels.



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Visualization...

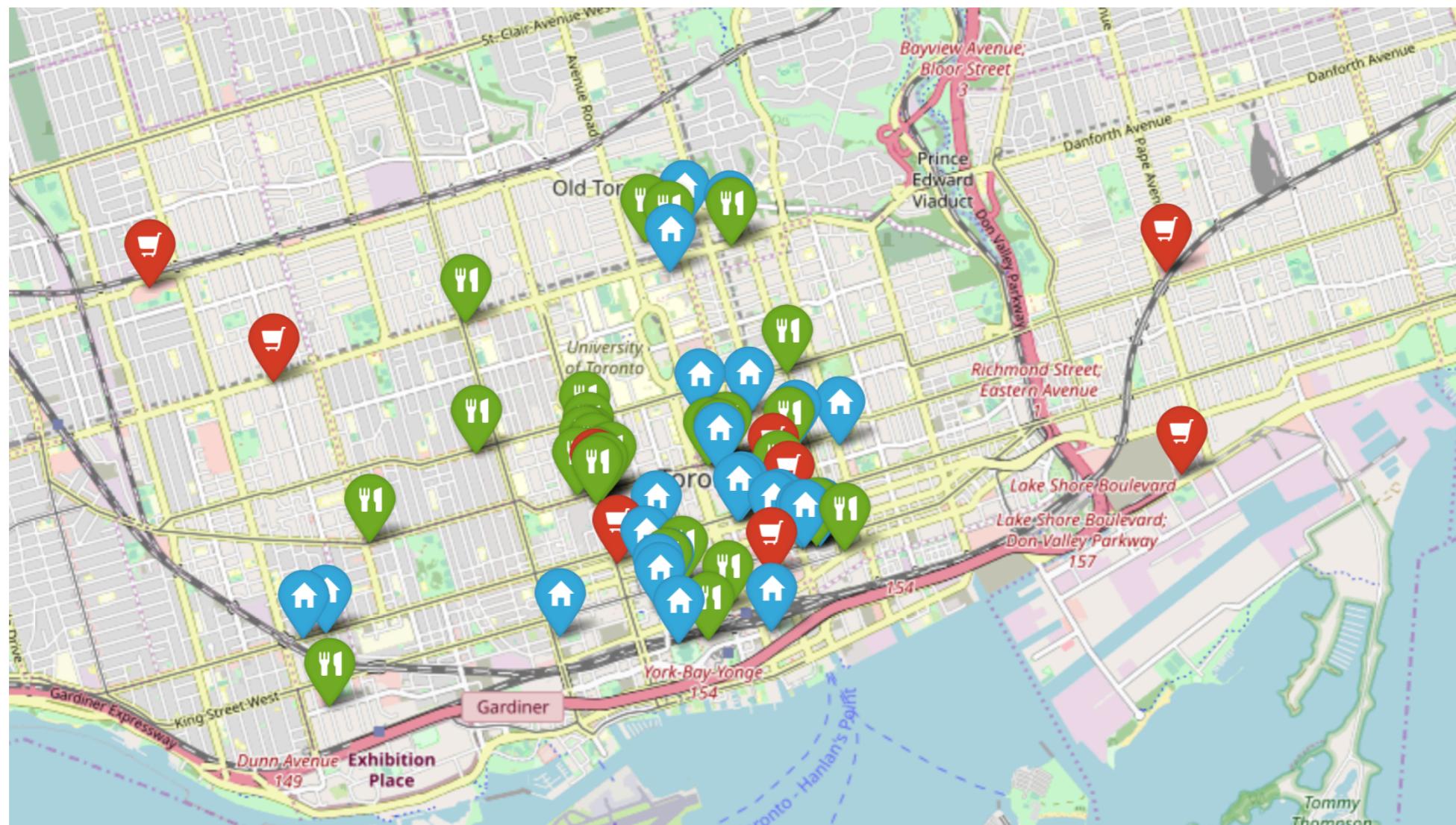
Similar maps (with different icons) were created for shops and restaurants.



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Visualization...

Consolidated maps for all venues.



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Analyze the data

There are a total of 10 restaurants catering to Asian cuisine (Chinese, Indian, Korean, Dim Sum etc) as compared to 5 catering to American cuisine. This implies that there are many Asian inhabitants in the neighborhood or travellers from Asia visiting the neighborhood.

Lets see the categories of Restaurants ¶

```
: rest_filtered_catg = rest_filtered_final.groupby(['categories']).size().to_frame(name='Count').reset_index()  
rest_filtered_catg
```

	categories	Count
0	American Restaurant	2
1	Bar	1
2	Breakfast Spot	3
3	Caribbean Restaurant	1
4	Chinese Restaurant	5
5	Dim Sum Restaurant	2
6	Diner	2
7	Event Space	1
8	Indian Restaurant	1
9	Korean Restaurant	1
10	New American Restaurant	3
11	Noodle House	1
12	Restaurant	6
13	Wine Bar	1

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Analyze the data...

The Shop map shows shops not interspersed like the Restaurants. Travellers would need to plan their shopping appropriately which is never good for a neighborhood and hence more sales would be made in the malls. Restaurants have enough variety of cuisine and travellers have plethora of options since the restaurants are fairly close to each other.

This is a proper business neighborhood with Hotels where one could spend time for meetings and use the restaurants for business lunches

There are very few stores competing with each other and there are distinct stores which reduces choices for travelers. We have 6 shopping malls indicating that people like to spend time in malls rather than individual stores. Malls may have similar stores within them.

Using the foursquare venue API, we could get data of remote neighborhoods like Toronto and help make plans for Event management companies and travelers.

We were able to analyze various categories of venues. More deep down analysis can be made and this was a great learning experience as a first time data science project

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Thank You!