The Battle of Neighborhoods (Week 2)

In this notebook we will be exploring Cities of Canada to start new Japanese restaurant.

1. Introduction

   The Project the Japanese restaurant chain is looking for an expansion in Canada. They have targeted major cities Toronto", 'Ottawa', 'Montreal', 'Calgary', 'Victoria' in Canada and now they are interested in looking for market analysis The problem we aim to solve is to analyze the Japanese Restaurants locations in the major Canadian cities and find the best place for investment.

2. Data section

   I will use the FourSquare API to collect data about locations of Japanese Restaurants in 5 major Canadian cities which are: Toronto", 'Ottawa', 'Montreal', 'Calgary', 'Victoria'. These are one of the most populated Canadian cities, where this analysis will help to get clear insight of perfect business opportunity.

3. Methodology section

   I. Foursquare API Call to get locations of Japanese restaurants on five cities of Canada

[3]:
```
# type your answer here
LIMIT = 500 # Maximum is 100
cities = ["Toronto", 'Ottawa', 'Montreal', 'Calgary', 'Victoria']
results = {}
for city in cities:
    url = 'https://api.foursquare.com/v2/venues/explore?&client_id={}&client_secret={}&v={}&near={}&limit={}&categoryId={}'.
        CLIENT_ID,
        CLIENT_SECRET,
        VERSION,
        city,
        LIMIT,
        "4bf58dd8d48988d111941735") # Japanese restaurant CATEGORY ID
    results[city] = requests.get(url).json()
```

[4]:
```
df_venues={}
for city in cities:
    venues = json_normalize(results[city]['response']['groups'][0]['items'])
    df_venues[city] = venues[['venue.name', 'venue.location.address', 'venue.location.lat', 'venue.location.lng']]
    df_venues[city].columns = ['Name', 'Address', 'Lat', 'Lng']
```

Foursquare API Call

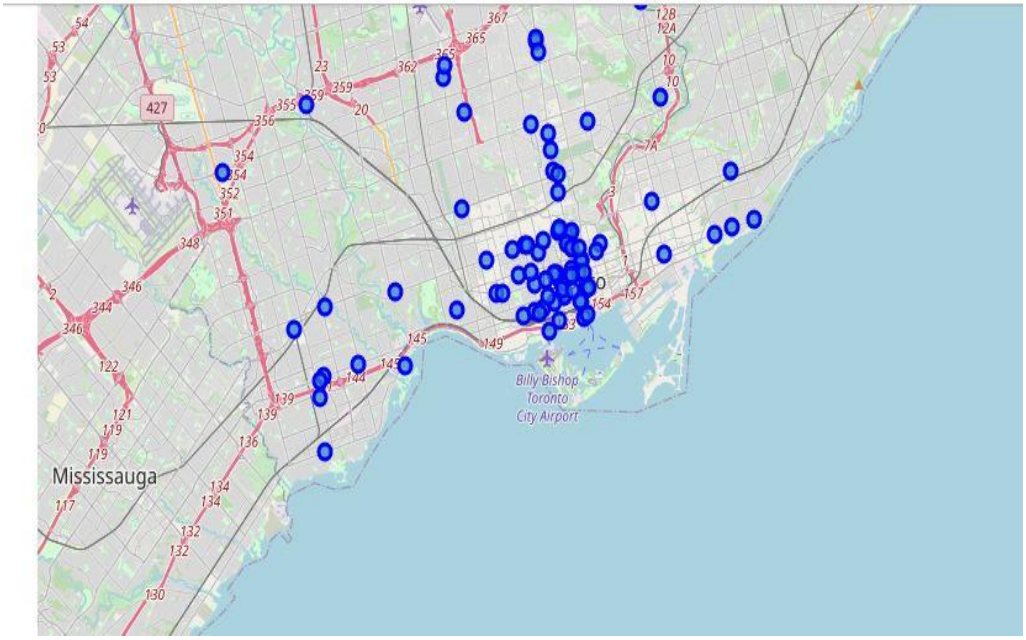
```
        label = folium.Popup(label, parse_html=True)
        folium.CircleMarker(
            [lat, lng],
            radius=5,
            popup=label,
            color='blue',
            fill=True,
            fill_color='#3186cc',
            fill_opacity=0.7,
            parse_html=False).add_to(maps[city])
    print(f"Total number of Japanese restaurant in {city} = ", results[city]['response']['totalResults'])
    print("Showing Top 100")
```

```
Total number of Japanese restaurant in Toronto =  228
Showing Top 100
Total number of Japanese restaurant in Ottawa =  74
Showing Top 100
Total number of Japanese restaurant in Montreal =  160
Showing Top 100
Total number of Japanese restaurant in Calgary =  149
Showing Top 100
Total number of Japanese restaurant in Victoria =  29
Showing Top 100
```

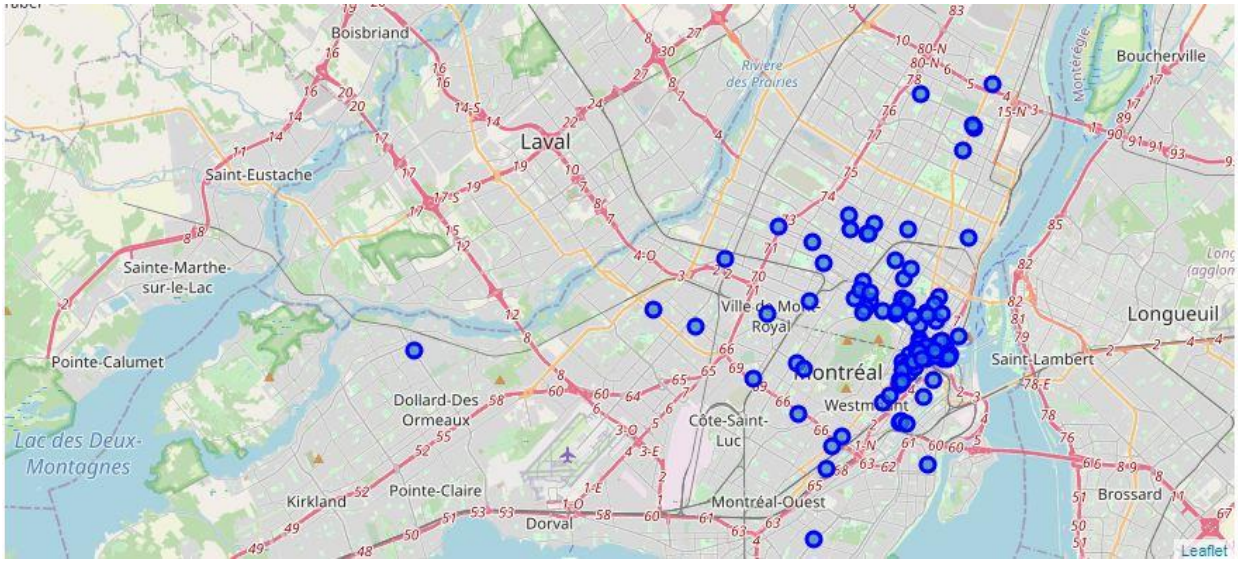
Foursquare API Call Result

This result shows that Victoria City has list number of Japanese restaurant followed by Ottawa, Calgary, Montreal, and Toronto.

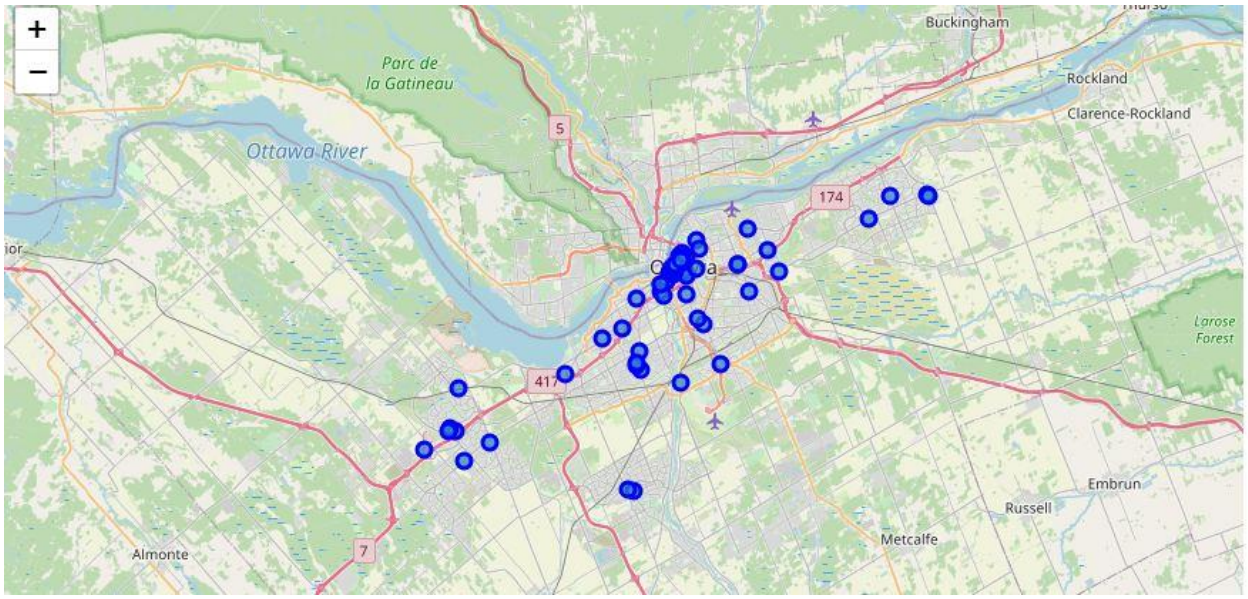
II. Let's observe the Graphical view for each city.



Toronto Location of Japanese Restaurants



Montreal Location of Japanese Restaurants



Ottawa Location of Japanese Restaurants

III. **Let's check Mean Distance from Mean coordinates of Japanese Restaurants in Different Cities**

```
        color='green',
        fill=True,
        fill_color='#3186cc',
        fill_opacity=0.7,
        parse_html=False).add_to(maps[city])
    print(city)
    print("Mean Distance from Mean coordinates")
    print(np.mean(np.apply_along_axis(lambda x: np.linalg.norm(x - venues_mean_coor),1,df_venues[city][['Lat','Lng']].values
```

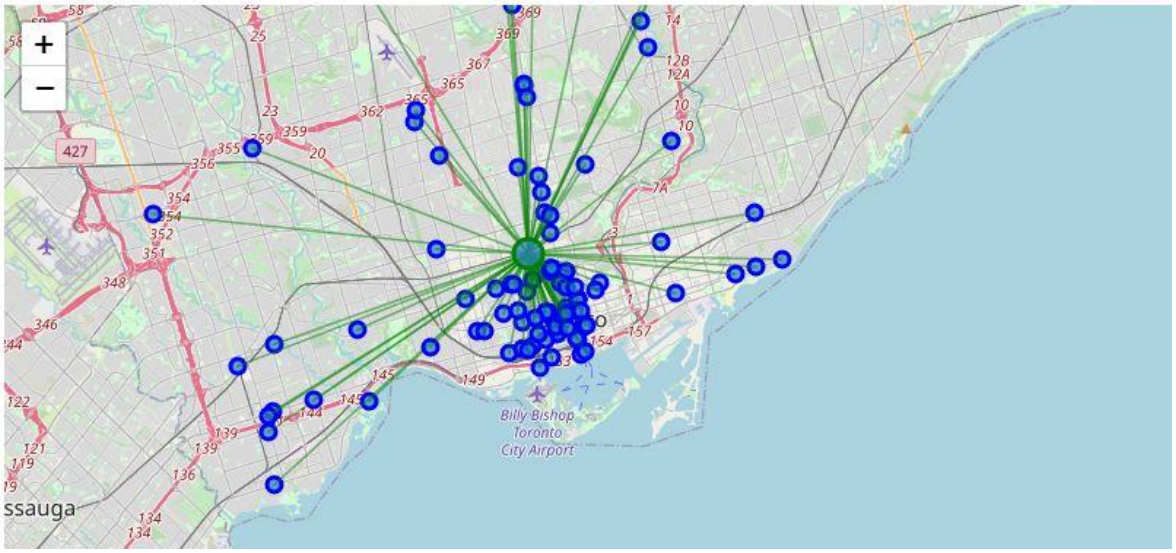
```
Toronto
Mean Distance from Mean coordinates
0.053782952768257085
Ottawa
Mean Distance from Mean coordinates
0.06746202386960644
Montreal
Mean Distance from Mean coordinates
0.03358825349802856
Calgary
Mean Distance from Mean coordinates
0.0623751079019326
Victoria
Mean Distance from Mean coordinates
0.021574210007855248
```

Mean Distance from Mean coordinates of Japanese Restaurants

IV. Let's see graphical view

```
[12]: maps[cities[0]]
```

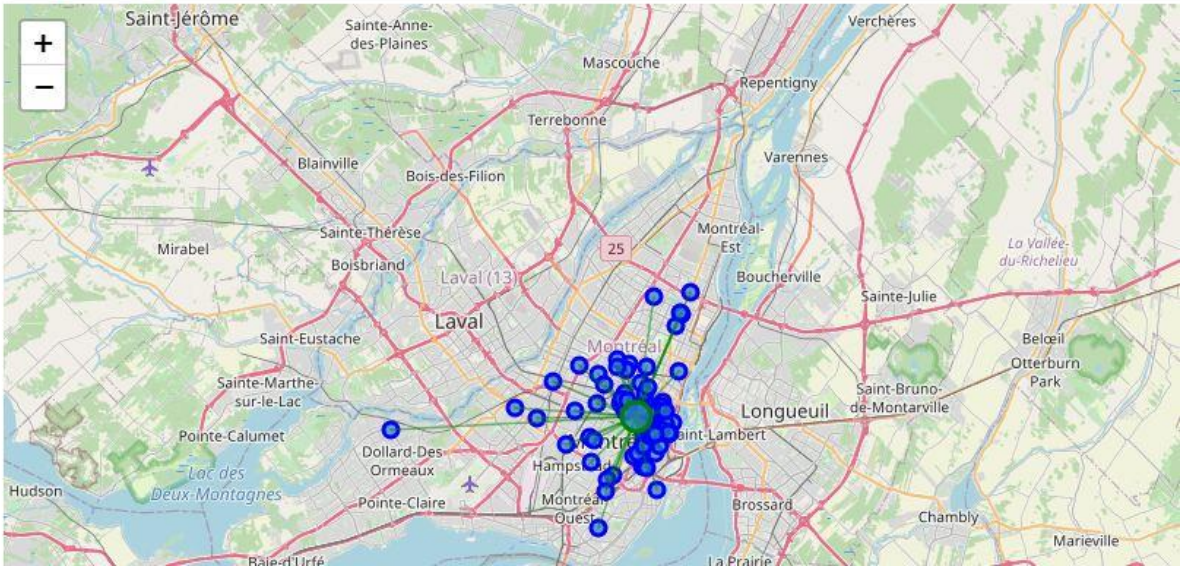
[12]:



Toronto Location of Japanese Restaurants Distance from Mean coordinates

```
[14]: maps[cities[2]]
```

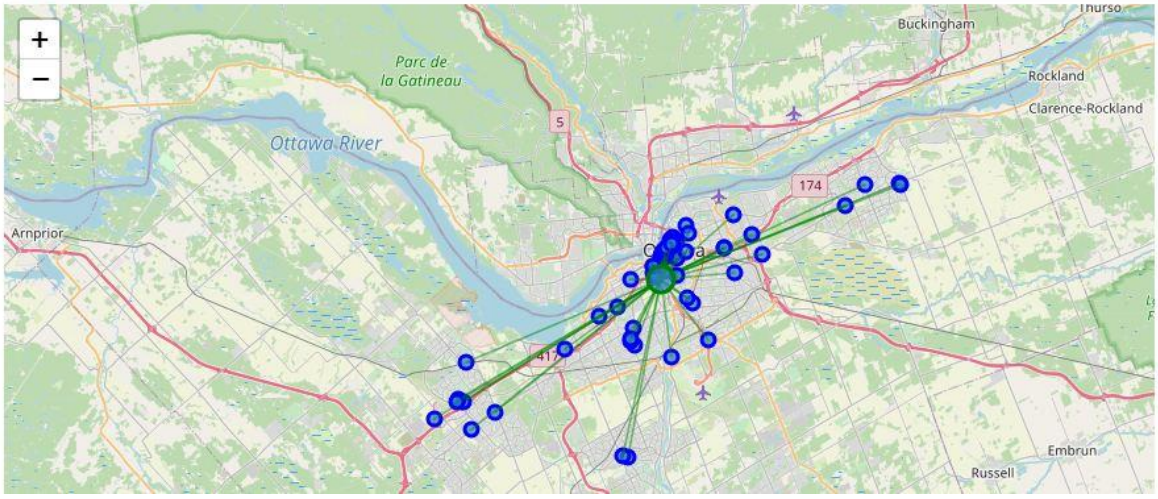
[14]:



Montreal - Location of Japanese Restaurants Distance from Mean coordinates

```
[13]: maps[cities[1]]
```

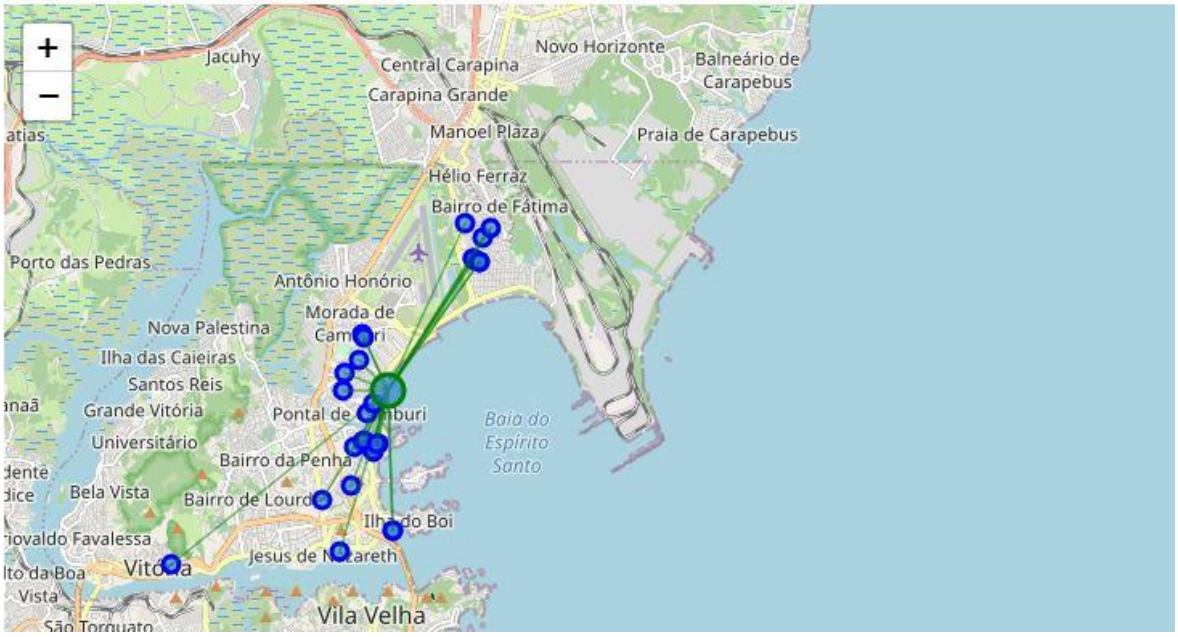
[13]:



Ottawa - Location of Japanese Restaurants Distance from Mean coordinates

```
[16]: maps[cities[4]]
```

[16]:



Victoria - Location of Japanese Restaurants Distance from Mean coordinates

4. **Result Discussion and Conclusion**

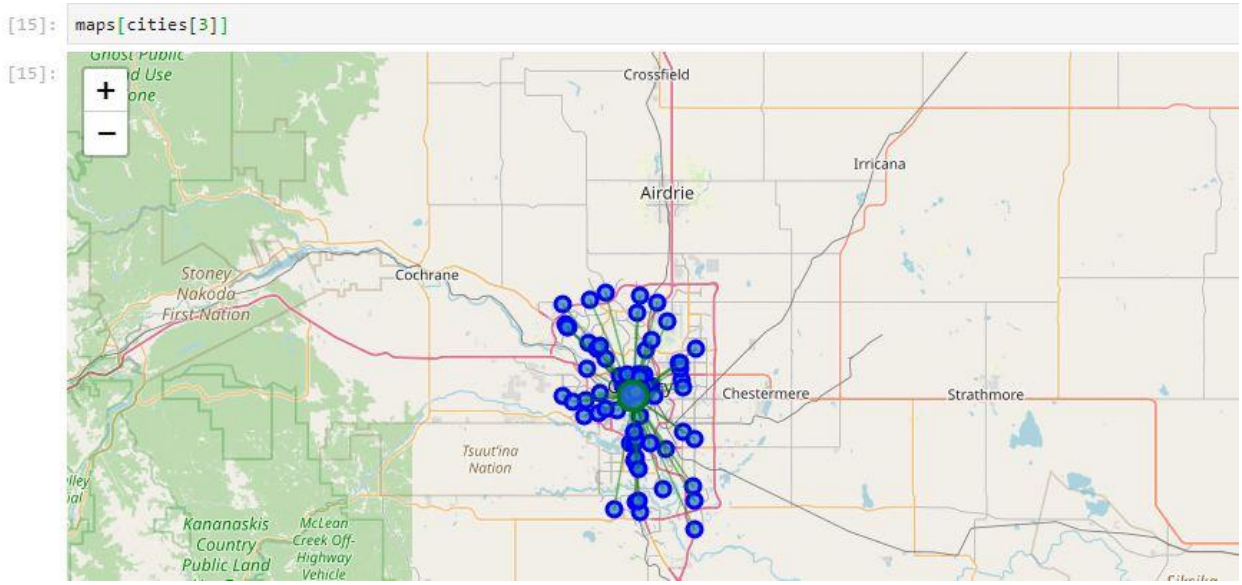
Here I have presented an analysis for a Japanese restaurant chain expansion prospects in different Canadian cities.

Considering number of restaurants and their mean distance from city center Ottawa seems to be the first option to open the restaurant. Because it has only 74 Japanese restaurants so competition is less moreover the mean distance from the city center is high. Considering this if we select location nearer to mean city location it will be a perfect choice.

Considering competitive environment Victoria is the best option as it has only 29 Japanese restaurants.

5. **Future Expansion**

   Here I have only taken in consideration about number of restaurants in a city and there distance from mean city coordinates. We can analyze the Japanese population in each selected city and comment in terms of demand supply strategy. We can also add per capita income in selected city and comment in terms of spending capacity of consumers etc.



Calgary - Location of Japanese Restaurants Distance from Mean coordinates