Find the Best Café Spot in Toronto

IBM DATA SCIENCE CAPSTONE PROJECT

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A. Introduction

Nowadays, almost everyone loves coffee. Even though you don't like coffee, a café is always a perfect place to hang out with friends or have some relax time.

This research is aimed to help visitors to find a best spot to explore perfect cafe in Toronto. To find a successful lifestyle cafe in the neighborhood, we will try to identify locations that have the most cafes in nearby.

We would also prefer locations as close to central of the city as possible, if first two conditions are met. We will use our data science powers to generate a few most promising neighborhoods based on this criterion. Advantages of each area will then be clearly expressed so that best possible final location can be chosen by stakeholders. We will utilize neighborhood's information of Toronto and Scarborough, Foursquare information on venue categories, top tips, location data, ratings to tackle this task. Neighborhood information can be accessed through Wikipedia:

https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M

B. Data Section

In order to establish the targeted neighborhood(s), we will explore the demographics of the neighborhoods in the city of Toronto by segmenting the data and conducting descriptive analysis using Panda. Additional data will be gleaned by web scraping and API will be used to generate data.

C. Methodology

The methodology of this research is to evaluate the density of café in every city in Toronto. The major tool to explore the venues information will be the Foursquare API. We will use a specific category ID to search the Café venue in each city, the ID could be found on the FourSquare Website. According to the Foursquare, the category ID for Café is "4bf58dd8d48988d16d941735". Using the foursquare, we can the total number of the café in each city in Toronto. And we will explore the café density with a concrete measure.

D. Result

After exploring the total number of café in Toronto, the result is shown as following:

The Total number of café in each city in Toronto is shown as following:

```
Total number of CAFE in Downtown Toronto =  111
Showing Top 100
Total number of CAFE in East York =  67
Showing Top 100
Total number of CAFE in Etobicoke =  93
Showing Top 100
Total number of CAFE in Mississauga =  87
Showing Top 100
Total number of CAFE in North York =  103
Showing Top 100
Total number of CAFE in Queen's Park =  12
Showing Top 100
Total number of CAFE in Scarborough =  58
Showing Top 100
Total number of CAFE in West Toronto =  82
Showing Top 100
Total number of CAFE in York =  47
Showing Top 100
```

We can see that downtown Toronto and North York has the most cafe in town. After the exploration of total amount, we will have a concrete measure of the café density in the city. This research will use some basic statistics to measure the density. We will get the mean location of the cafe which should be near to most of them if they are dense or far if not. And I will take the average of the distance of the venues to the mean coordinate.

The summary of the density is shown in the following:

```
Downtown Toronto
Mean Distance from Mean coordinates
0.004928355936759374
East York
Mean Distance from Mean coordinates
0.014176758888982533
Etobicoke
Mean Distance from Mean coordinates
0.0613207492389694
Mississauga
Mean Distance from Mean coordinates
0.06393634263776303
North York
Mean Distance from Mean coordinates
0.050525526602368895
Queen's Park
Mean Distance from Mean coordinates
0.01838488690565628
Scarborough
Mean Distance from Mean coordinates
0.05717454980627016
West Toronto
Mean Distance from Mean coordinates
0.015961898750024964
York
Mean Distance from Mean coordinates
0.03082937873623301
```

The café map of each city is shown as following
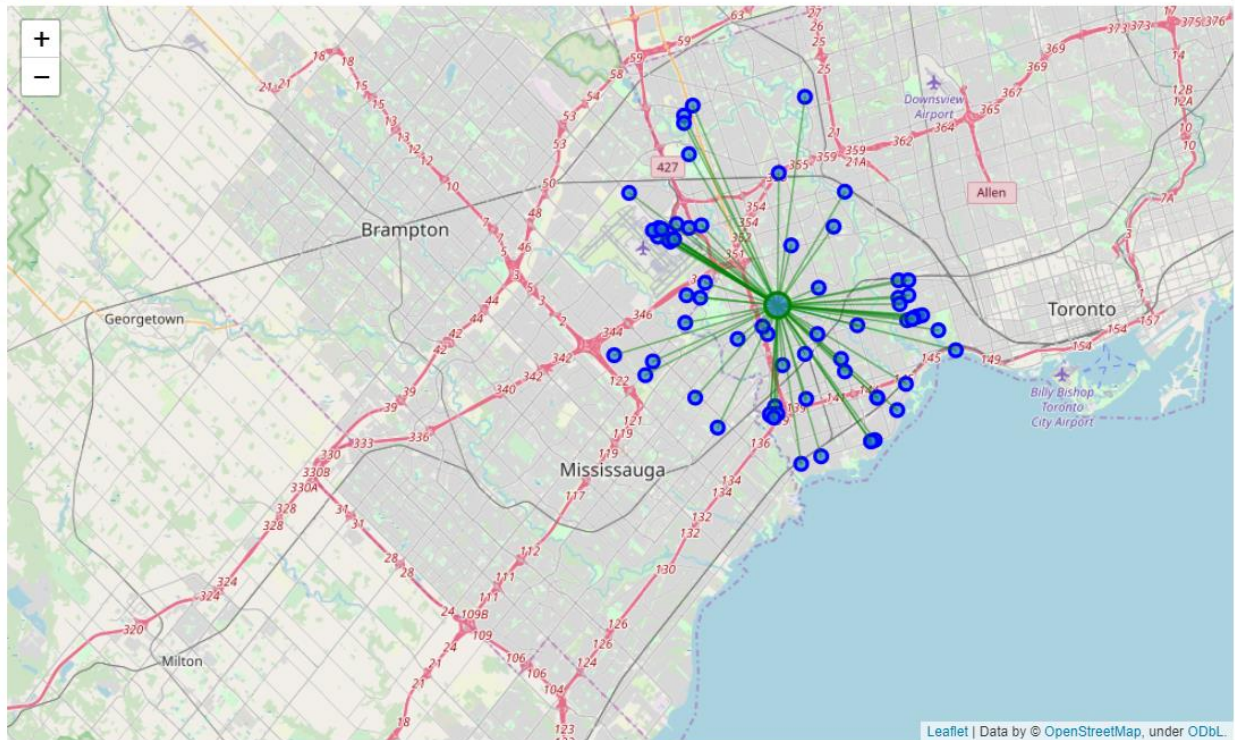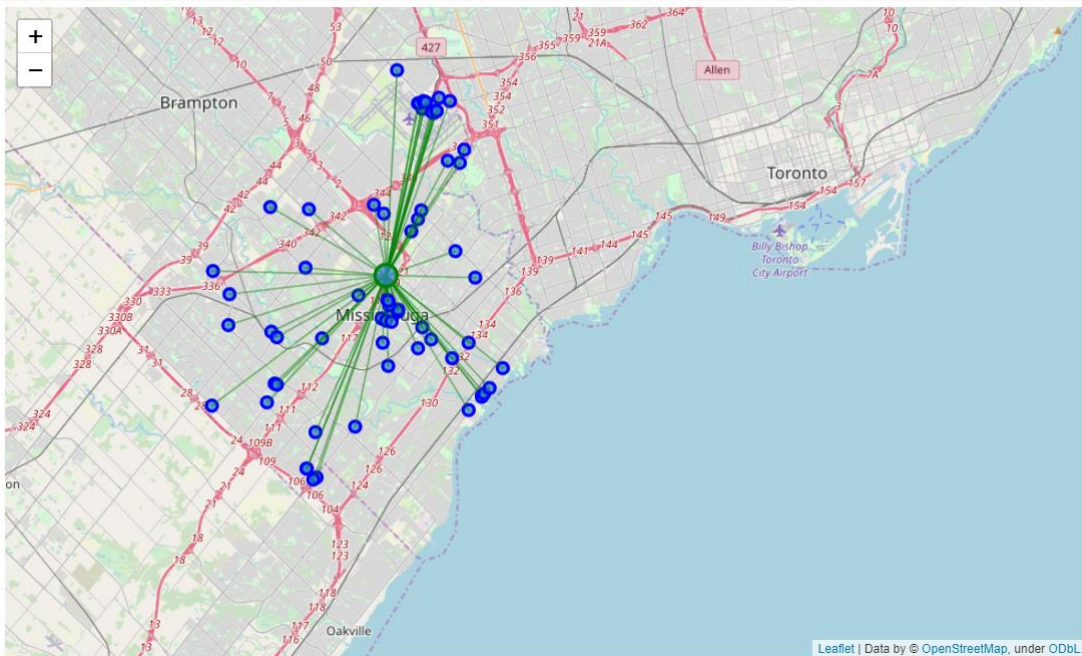
1. Downtown Toronto

```
maps[cities[0]] #Downtown Toronto
```


2. East York
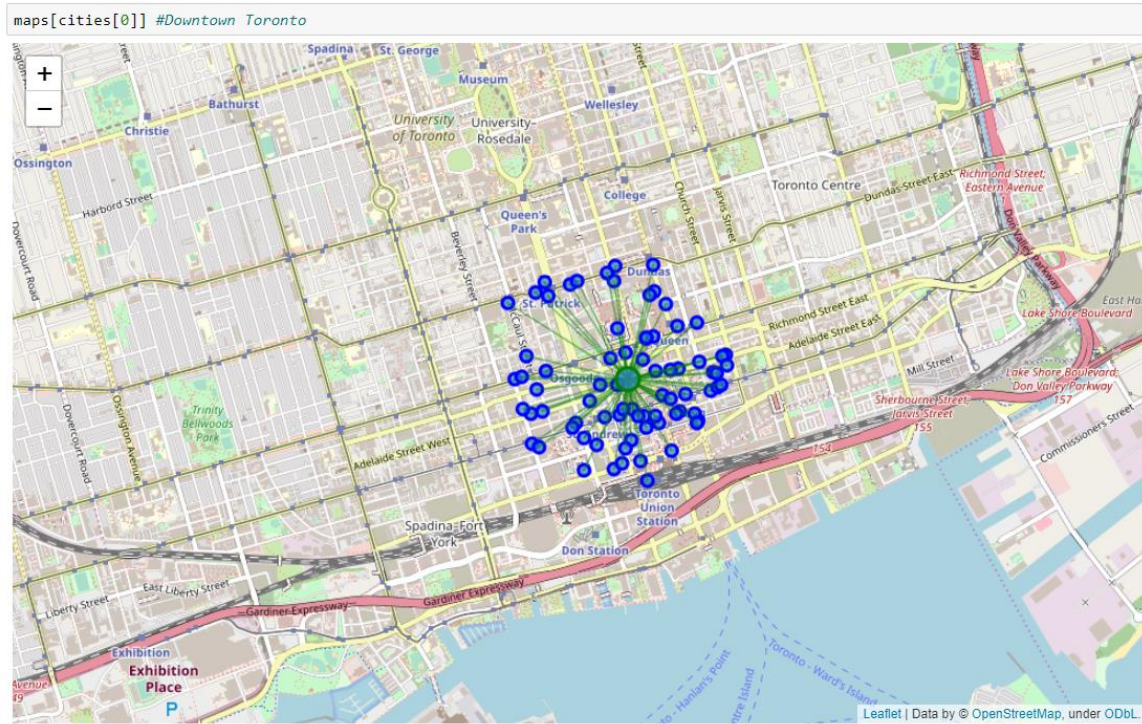
```
maps[cities[1]] #East York
```
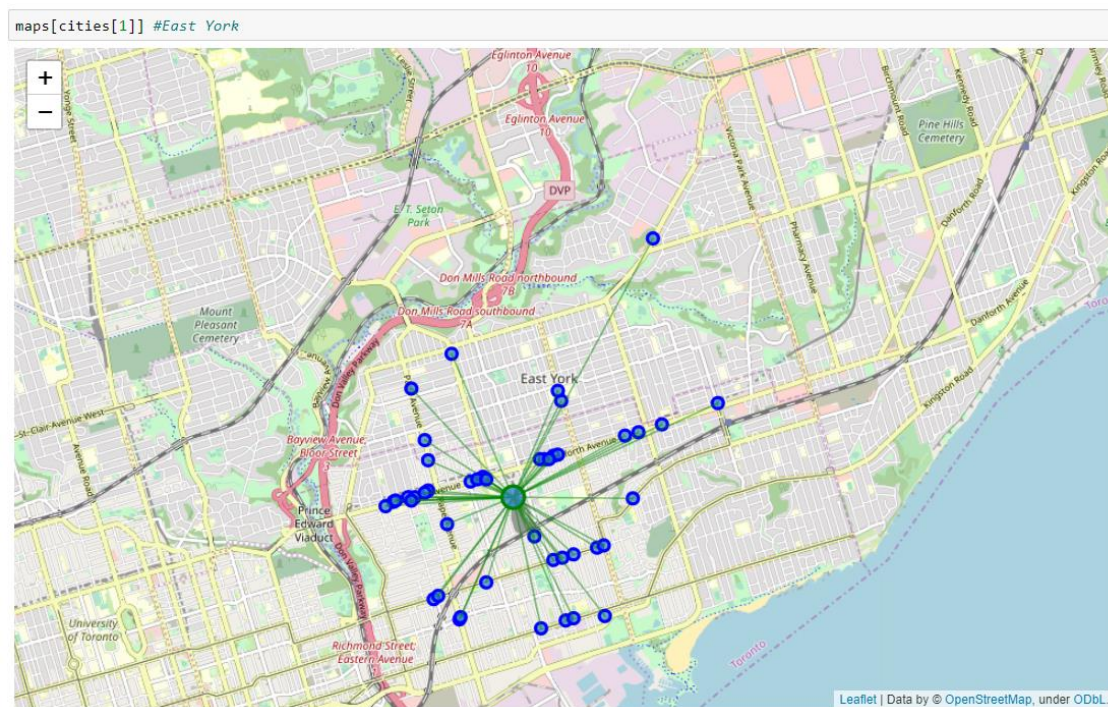
3. Etobicoke
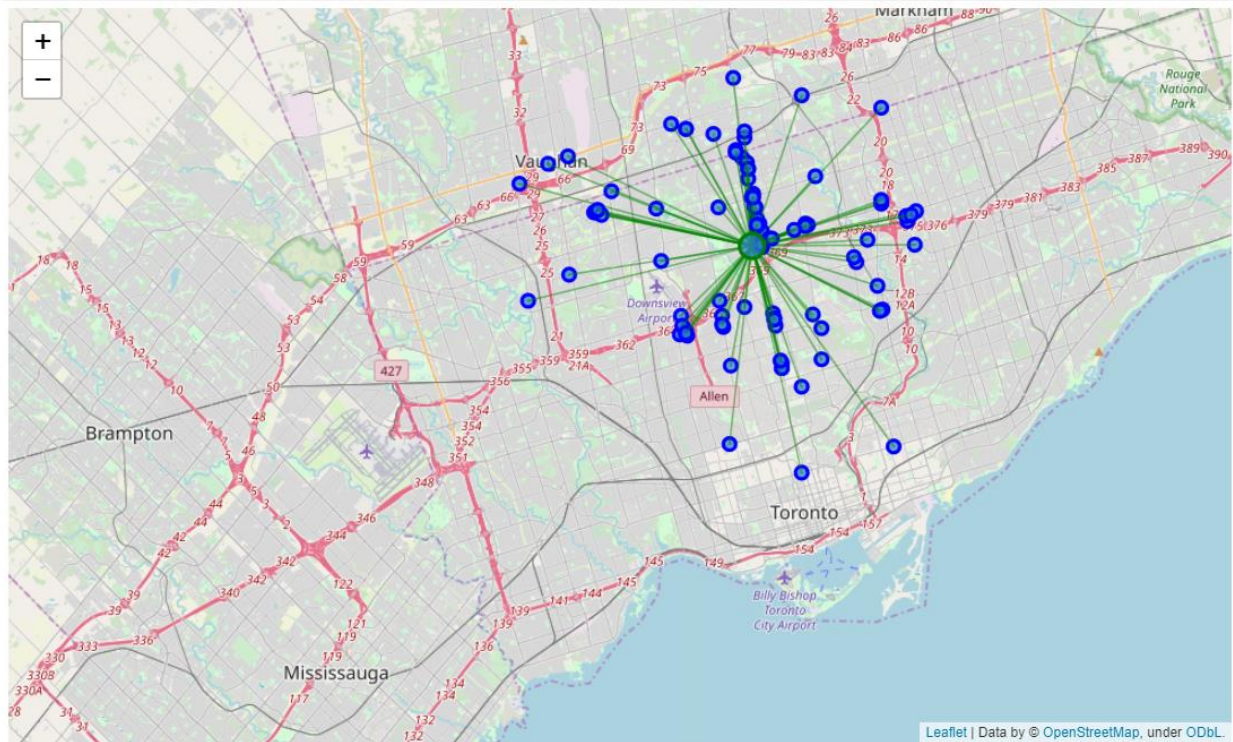
```
maps[cities[2]] #Etobicoke
```


4. Mississauga
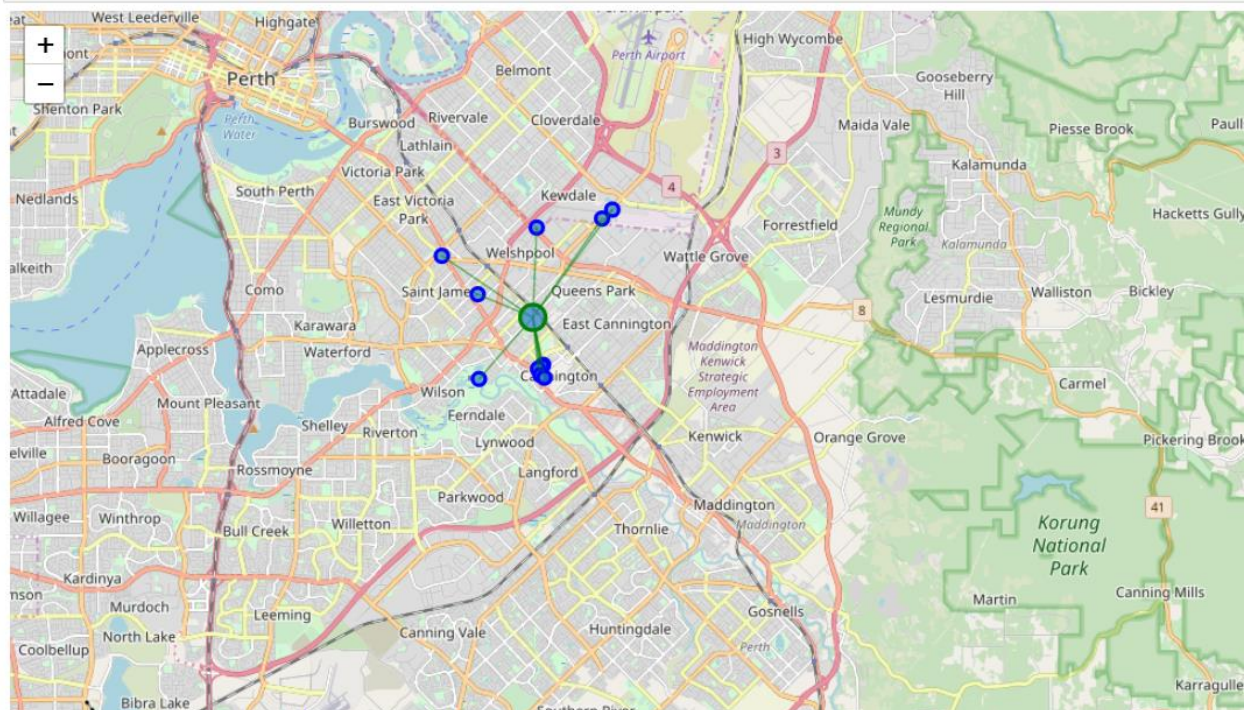
```
maps[cities[3]] #Mississauga
```

5. North York

```
maps[cities[4]] #North York
```


6. Queen's Park

```
maps[cities[5]] #Queen's Park
```

7. Scarborough

```
maps[cities[6]] #Scarborough
```
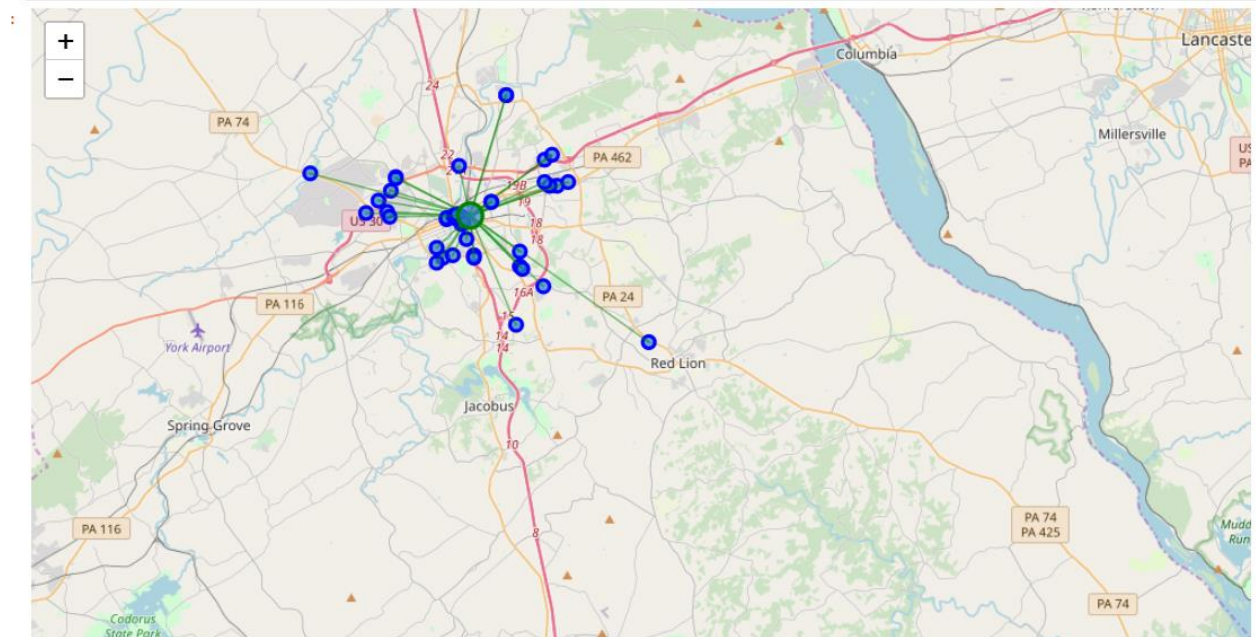

8. West Toronto
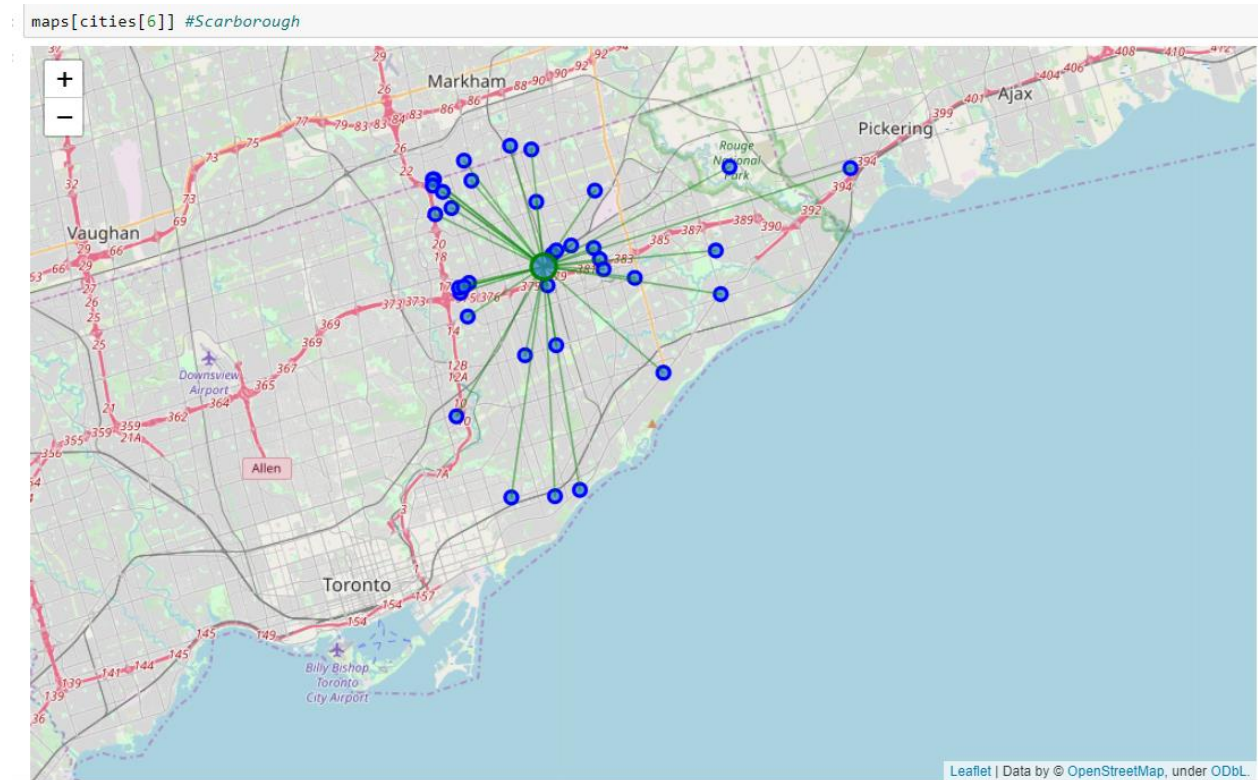
```
maps[cities[7]] #West Toronto
```
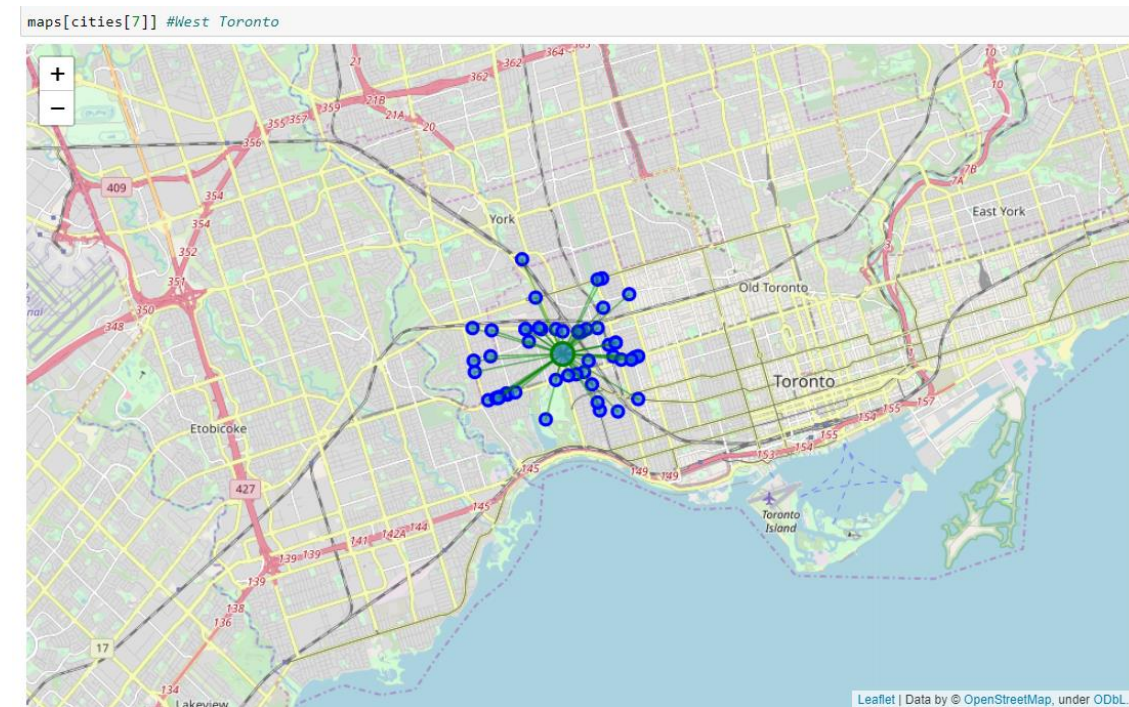
9. York

```
maps[cities[8]] #York
```


E. Conclusion

We now see that Downtown Toronto is his best option. Our tourist's best interest would be to book a hotel near that mean coordinate to surround himself with the 111 cafe there!!