DS Capstone Project Report

Introduction

In this project, the focus is on NYC data. First, we will find the most visited commercial shop according to the number of check-ins, then we will try to find the neighborhoods that are lacking the selected type of shop which could be potential business opportunity.

Target User

The target audience of this report is any one that is interested in opening a shop but have no idea what kind of and in which neighborhood.

Data Section

https://sites.google.com/site/yangdingqi/home/foursquare-dataset. It contains 227,428 check-ins in NYC. The data contains two files in CSV format. Each file contains 8 columns, which are:

1. User ID
2. Venue ID (Foursquare)
3. Venue category ID (Foursquare)
4. Venue category name (Foursquare)
5. Latitude

6. Longitude

7. Time zone offset in minutes (The offset in minutes between when this check-in occurred and the same time in UTC)

8. UTC time

After extracting and reading the data, we will translate the above data into a Pandas data frame for processing which would look like this. These are the data elements that are needed when we call Foursquare web service call in order to get the venues available in that neighborhood (Neighborhoods are not included here)

	VenueID	CategoryName	Visitor Count	Latitude	Longitude
0	49bbd6c0f964a520f4531fe3	Arts & Crafts Store	7	40.719810375488535	-74.00258103213994
1	4a43c0aef964a520c6a61fe3	Bridge	37	40.60679958140643	-74.04416981025437
2	4c5cc7b485a1e21e00d35711	Home (private)	1	40.716161684843215	-73.88307005845945
3	4bc7086715a7ef3bef9878da	Medical Center	1	40.7451638	-73.982518775
4	4cf2c5321d18a143951b5cec	Food Truck	4	40.74010382743943	-73.98965835571289

Then we will create a dictionary in order to decide which category is the most popular (commercial type)

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[('Train Station', 943), ('Park', 778), ('Airport', 769), ('Bar', 756), ('Subway', 587), ('Coffee Shop', 447), ('Gym / Fitness
Center', 447), ('Food & Drink Shop', 426), ('Neighborhood', 362), ('Plaza', 342), ('Stadium', 339), ('Bridge', 272), ('Office',
264), ('Department Store', 240), ('Mall', 238), ('Burger Joint', 206), ('American Restaurant', 202), ('Road', 201), ('Bus Stati
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'Bar' is the most visited commercial category according to given data.
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After all this, we will check the coordinates within given n number of kilometers and count how many ‘Bar’ are there (venues selected as 2000 as a trial)

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Coordinates with number of Bar shops within 4 kilometers according to 2000 venues.

('40.60613336268842', '-74.17904376983643') : 2
('40.719810375488535', '-74.00258103213994') : 0
('40.60679958140643', '-74.04416981025437') : 0
('40.716161684843215', '-73.88307005845945') : 0
```

Find the two neighborhoods that are closest to the coordinate which has the most number of the specific shop type but lacking that within 4 kilometers

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Bedford-Stuyvesant
Turtle Bay
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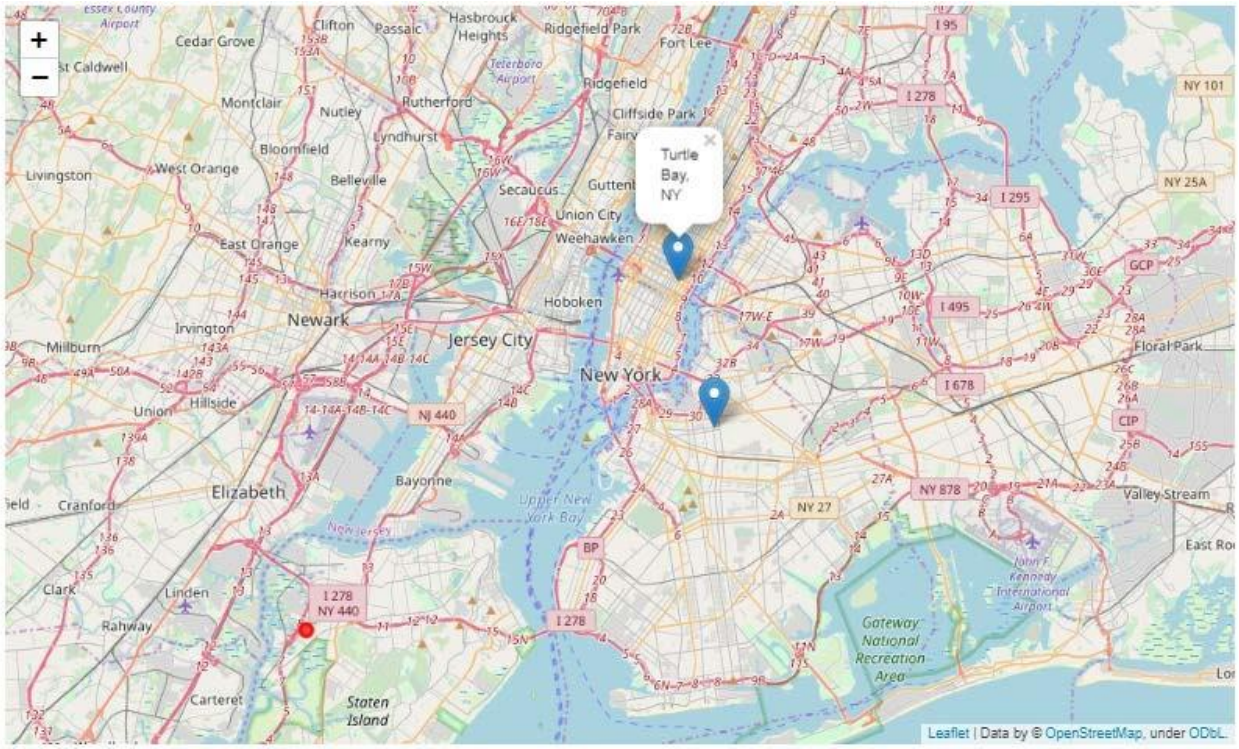

Red dot is the center

Results & Conclusion

In our sample of 2000 venues, we did find more than 10 coordinates that has no bar (the most visited shop type according to sample) within four-kilometer sphere. And we did manage to get the neighborhoods' names from foursquare database and pin down the two closest neighborhoods, 'Bedford-Stuyvesant', and 'Turtle Bay', into the map. Of course, it should not be forgotten that the data used above is almost 6-year old so further research might be needed.

Anyways, the results according to the data in hand can be checked from the map and analysis above can be of use for future entrepreneurs.