Capstone Project Report

The Battle of Neighborhoods (Week 1)

Introduction/Business Problem

In this project we will try to find an optimal choice between a restaurant, a coffee shop and a bar. Specifically, this report will be targeted to stakeholders in investing in one of the three choices above in New York, or Berlin.

We will try to detect in which city what type of store is more scarce and more popular. Also we are interested if there are areas where our options are not congested, so to be able to fill the existing gap.

Using data science, we will generate possible neighborhoods, for each city based on this criteria. Our clear analysis can guide the stakeholders make the optimal investing choice, for the type, the city and the targeted neighborhood.

Data

Based on the definition of our problem, factors that will influence our decission are:

- number of existing restaurants in the neighborhood
- number of existing coffee shops in the neighborhood
- number of existing bars in the neighborhood
- population of the city
- distance of the neighborhood from the city center

Following data sources will be needed to extract/generate the required information:

- centers of candidate areas will be generated algorithmically and approximate addresses of centers of those areas will be obtained using Google Maps API reverse geocoding.
- number of restaurants and their type and location in every neighborhood will be obtained using Foursquare API
- coordinate of Berlin center will be obtained using Google Maps API geocoding of well known Berlin and New York location.

Methodology

The following process was repeated twice, once for every of the above-mentioned cities, Berlin and New York. Then from the results for each city we were able to compare the elements needed to face the business problem stated in the beginning.

First, we needed to locate the two cities. For that purpose, geolocator was utilized for the longitude and latitude required for the following queries using Foursquare API's.

Using our Foursquare app's credentials we were able to extract all the stores in a 3km radius, considering it a walkable distance from the city center, to exclude options that would require any means of public or private transportation.

Grouping the extracted data is the most important part of the methodology that yields the most information to reach our conclusion and suggestion. The reason that other types of stores were not excluded from consideration is the fact that there might be other variables that affect growth in those places. As we did not specify the type of restaurant for example, all restaurants were considered as equal subjects. For example, American restaurants in NY shouldn't affect our analysis because as expected they are most popular in the country of origin.

Results

In this section, we will present the results extracted from the methodology that we followed and the data that we used.

First we will discuss the results of New York City: Totaling a stunning 8.862 restaurants are in the city where there are 1408 Bars and 1260 Coffee places. We could argue both that the restaurant market is saturated because of the number of restaurants or that the culture of eating out demands more restaurants and is able to maintain the market.

On the other hand Berliners have 2309 Restaurants, 954 Coffee Places and 1602 Bars/Clubs. Even though restaurants are still more that the Bars, if we take into account that in general more people are crammed into a bar and because of the prices are more accessible to most people we can argue that Berlin's culture is leaning towards the choice of a Bar for spending their time. Of course we cant immediately say that by noticing that Berlin's bars/clubs are 194 more than the ones in NYC, when the later has 2.3 times the population of Berlin.

Also in the data we found something not able to be spotted with a first look. New York's restaurants include just 65 out of 8.862 vegetarian/vegan places. That is 0.7% of the current market. In comparison, Berlin has 148 out of 2.309 restaurants which is 6.4% of the market.

Train Station	37	37	37	37	37	37
Turkish Restaurant	46	46	46	46	46	46
Udon Restaurant	15	15	15	15	15	15
Used Bookstore	1	1	1	1	1	1
Vape Store	2	2	2	2	2	2
Vegetarian / Vegan Restaurant	65	65	65	65	65	65
Venezuelan Restaurant	13	13	13	13	13	13
Veterinarian	11	11	11	11	11	11
Video Game Store	70	70	70	70	70	70
Video Store	43	43	43	43	43	43
Vietnamese Restaurant	86	86	86	86	86	86
Volleyball Court	8	8	8	8	8	8
Warehouse Store	34	34	34	34	34	34

New York's Vegetarian/Vegan restaurants

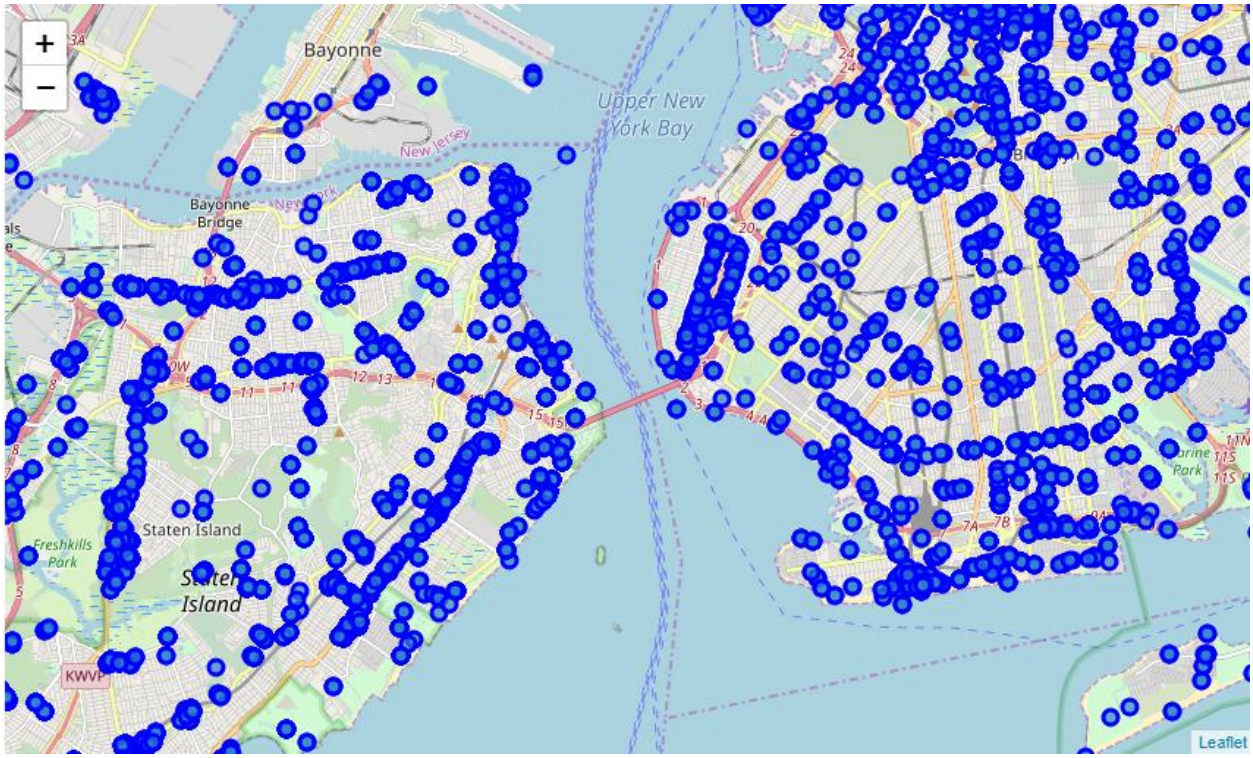
Theater	156	156	156
Theme Restaurant	11	11	11
Track	8	8	8
Trail	23	23	23
Trattoria/Osteria	19	19	19
Turkish Restaurant	27	27	27
Vacation Rental	74	74	74
Vegetarian / Vegan Restaurant	148	148	148
Vietnamese Restaurant	185	185	185
Volleyball Court	3	3	3
Waterfall	2	2	2
Waterfront	20	20	20
Whisky Bar	3	3	3

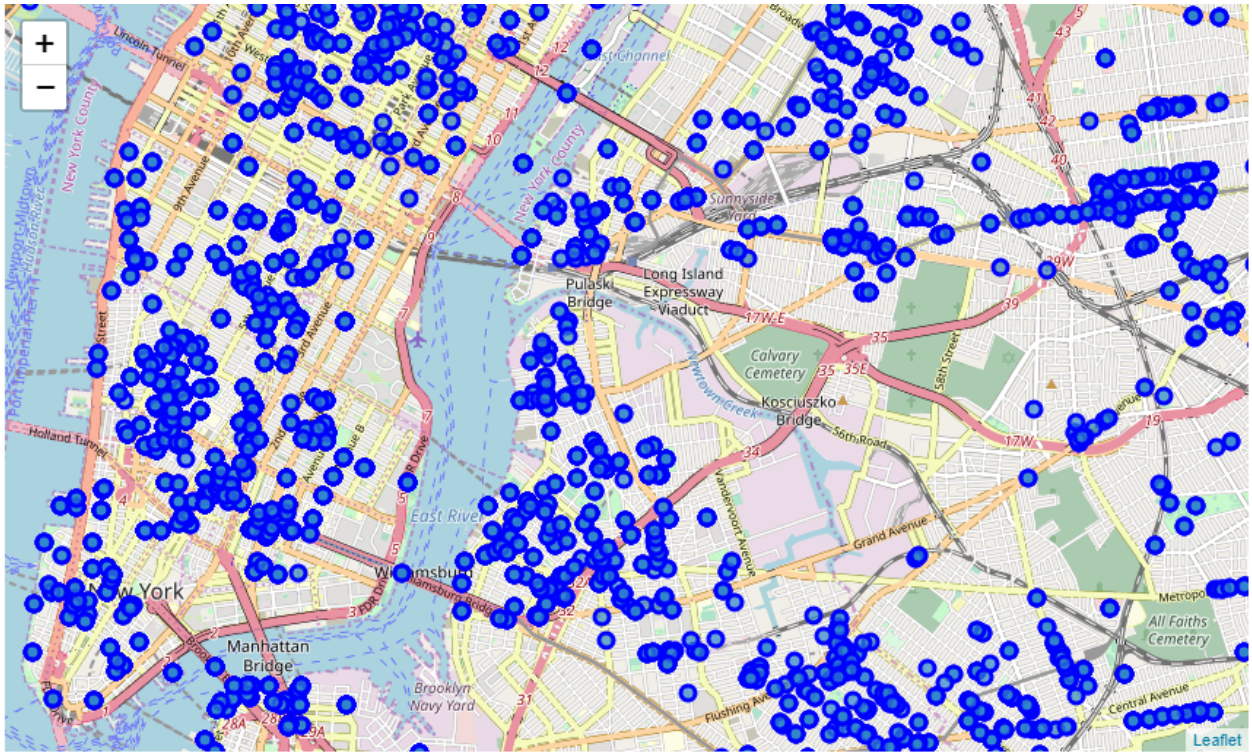
Berlin's Vegetarian/Vegan Restaurants

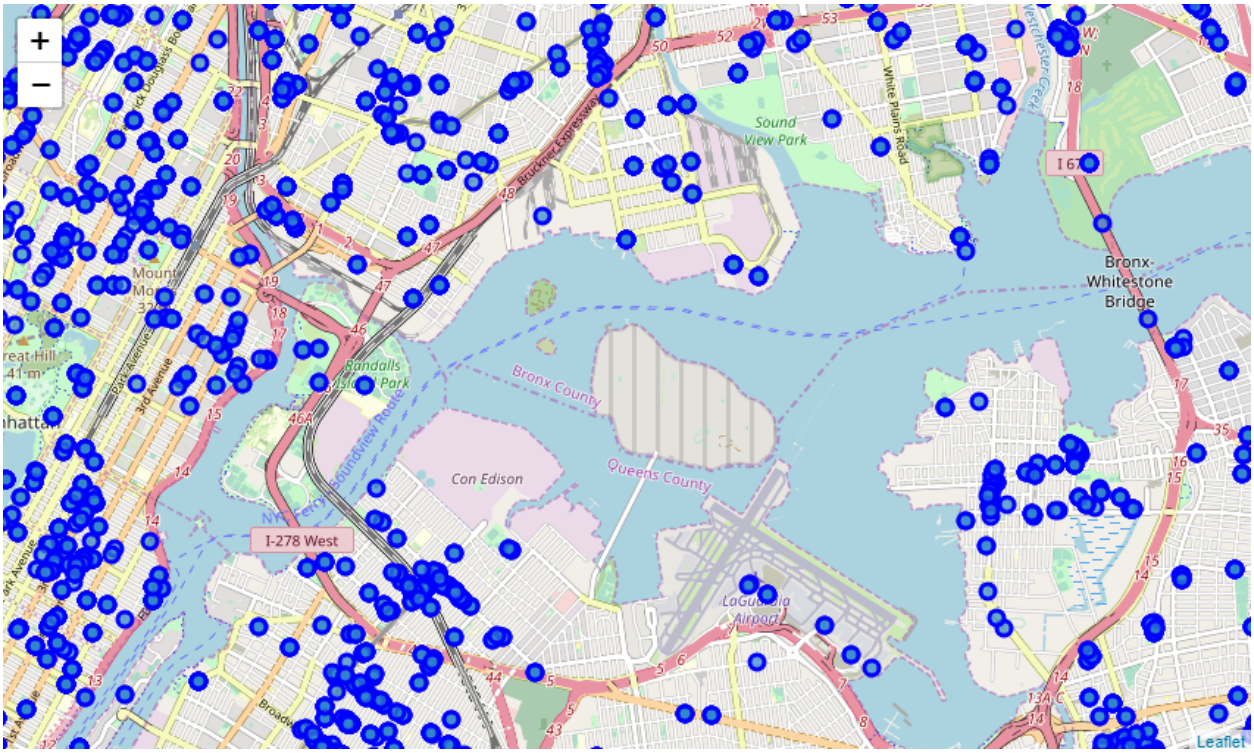
Discussion

In this section of the report we will discuss the results above to propose a possible investment to our stakeholders.

As mentioned, we came to conclusion that New York's culture favors restaurants, and Berlin's culture favors bars/clubs. However, we also noticed a huge gap in the market for vegetarian restaurants in the city that was expected to have more of that kind. Thus, from all the options stated in our business problem we would suggest the option of a vegetarian/vegan restaurant in New York. To be more precise let's take a look at the following maps of New York's Stores.




Pulaski Bridge
Long Island Expressway Viaduct
Calvary Cemetery
Kosciuszko Bridge
East River
Manhattan Bridge
Brooklyn Navy Yard
Grand Avenue
All Faithes Cemetery
Central Avenue
Leaflet

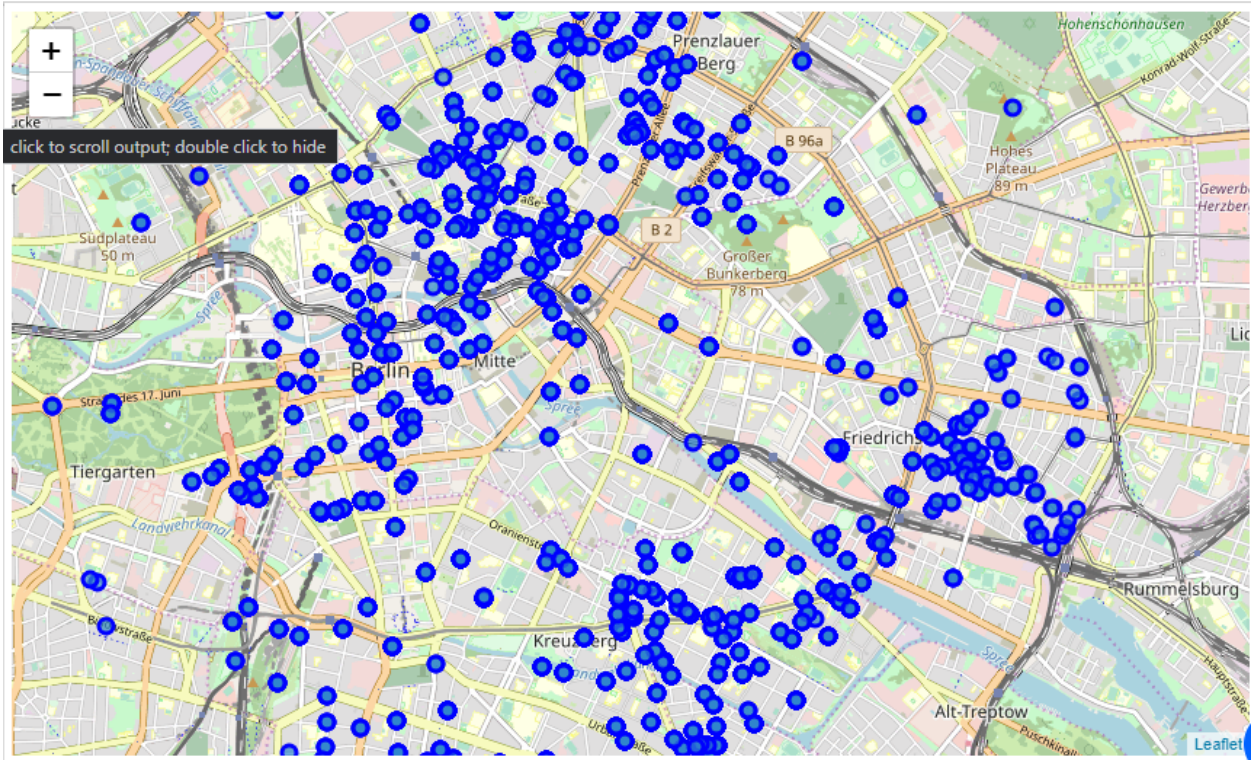

Sound View Park
Bronx-Whitestone Bridge
Bronx County
Queens County
Con Edison
I-278 West
Leaflet

As we can notice, there are three main areas where a restaurant could be placed, to fill a spot where people are not served, and also avoid contenders. Northern Staten Island, Central Brooklyn and Southern Bronx.

Not only did we propose a location but also the restaurant category to the stakeholders.

If for any reason, the stakeholders don't want to invest in New York, a restaurant or want to avoid for any other reason the proposition, we have an alternative.

Following the same pattern, Berlin could benefit from another Vegetarian/Vegan restaurant or another bar/nightclub. To find the best suitable location let's take a look at Berlin's map of currently open stores.



As we can immediately tell there is a spot in Central/Eastern Berlin suitable for a new store for the same reason's mentioned in the New York's case.

Conclusion

In this study we analyzed the gap in the market of two cities New York and Berlin, for one of three options for a store: Restaurant, Coffee shop, Bar/Nightclub. We utilized data from the Foursquare API to fill our location maps, and to calculate the need for a new store in each city. In the end, we came up with a propose to the stakeholders, along with an alternative solution.