The Battle of the Neighborhoods - Report

1.Introduction & Business Problem :

Business Problem:

Millions of Tourists, every year, travel to the USA to visit at least one out of the 5 major US cities which are: New York,NY, San Francisco, CA, Jersey City, NJ, Boston, MA and Chicago,IL.

As a Tourist I would like to taste one of the finest delicacies of the USA i.e Donuts. So I would like to stay in a place with a high density of Donut shops around me.

The problem this model aims to solve is to analyze the Donut stores' locations in the major US cities and find the best city for our tourist so that he/she can taste the best donuts available in the USA.

The model can help the Tourist to Zoom in the best City and the exact location in the city based on their favourite delicacies. The model developed here is only for Donuts but can be extended to any specific category.

Problem Description:

There are many types of Tourist, few are more interested in the different cuisines of the touring city. It becomes difficult for the tourists to find a hotel which is in the epicenter of their desired cuisine. It will help them to taste these cuisines as well plan their other tourism activities without less disturbance to their schedule.

Target Audience:

This information will help Tourists to zoom in their hotel location/City based on their specific interest for favourite delicacies in a specific country.

This data will also help Hotel owners to make these information available on their site so that it will help the Tourist to book the hotel based on their interest for favourite dishes. Such as 10 Donut shops near the Hotels, 5 Pizza shops near the hotel.

Success Criteria:

The success criteria of the project will be a good recommendation of the City and the exact location choice to Tourist based on their provided Delicacies, which will help them to book Hotel at the specified location.

2. Data and Solution:

FourSquare API will be used to collect data about locations of Donut Shops in 5 major US cities which are: New York,NY, San Francisco, CA, Jersey City, NJ, Boston, MA and Chicago,IL.

The FourSquare API will provide us the Donut Shops for each city. We need to pass CLIENT_ID, CLIENT_SECRET , City and Category of Donut Shop. url = 'https://api.foursquare.com/v2/venues/explore?&client_id={}&client_secret={}&v={}&near={}&limit={}&categoryId={}'.format(CLIENT_ID, CLIENT_SECRET, VERSION, city, LIMIT, "4bf58dd8d48988d148941735")

Then we can calculate the mean of latitude and longitudes of all the Venues in each city. Then calculate the Mean Distance from Mean coordinates. The city with the lowest mean distance is the selected city.
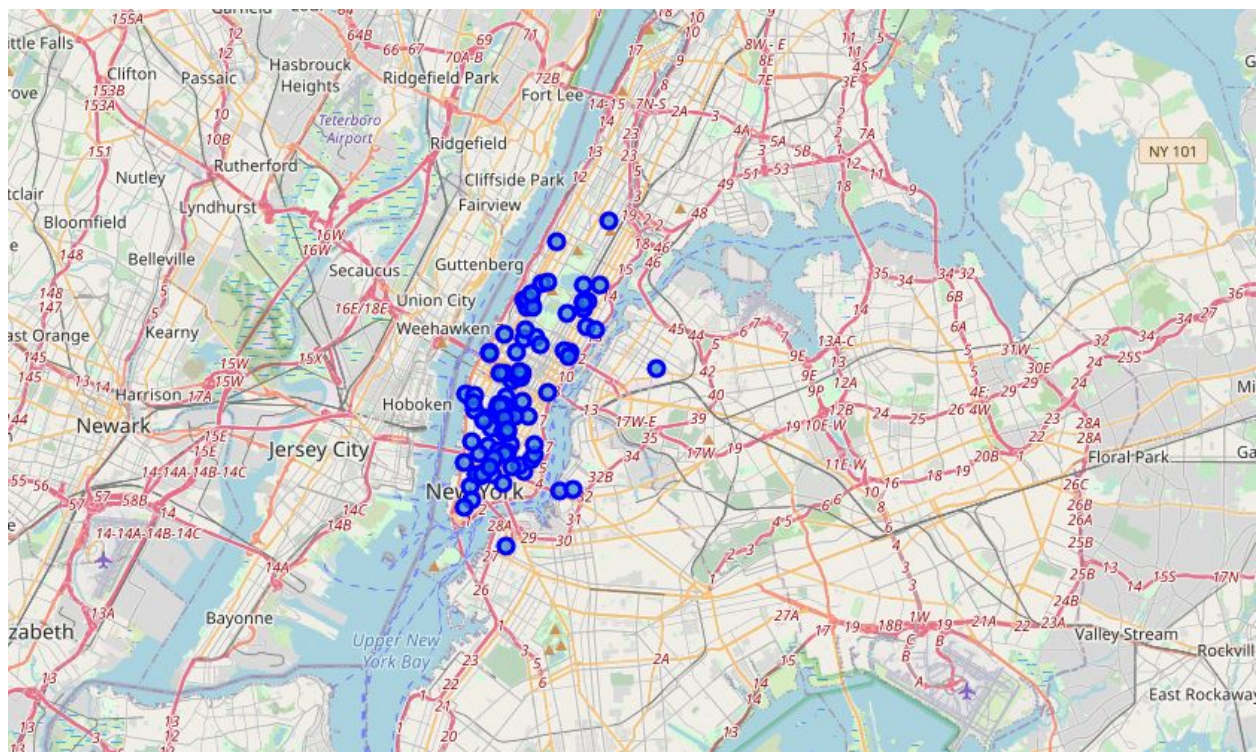
3. Methodology:

Our main goal is to get the best city and the optimum location which is nearest to all the Donut shops available in the city.
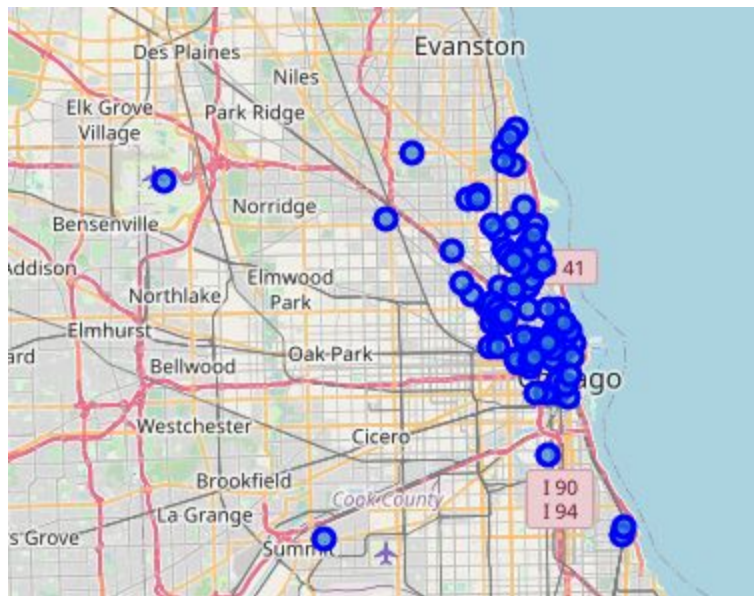
Exploratory Data Analysis :

New York Donut Shop visualization :
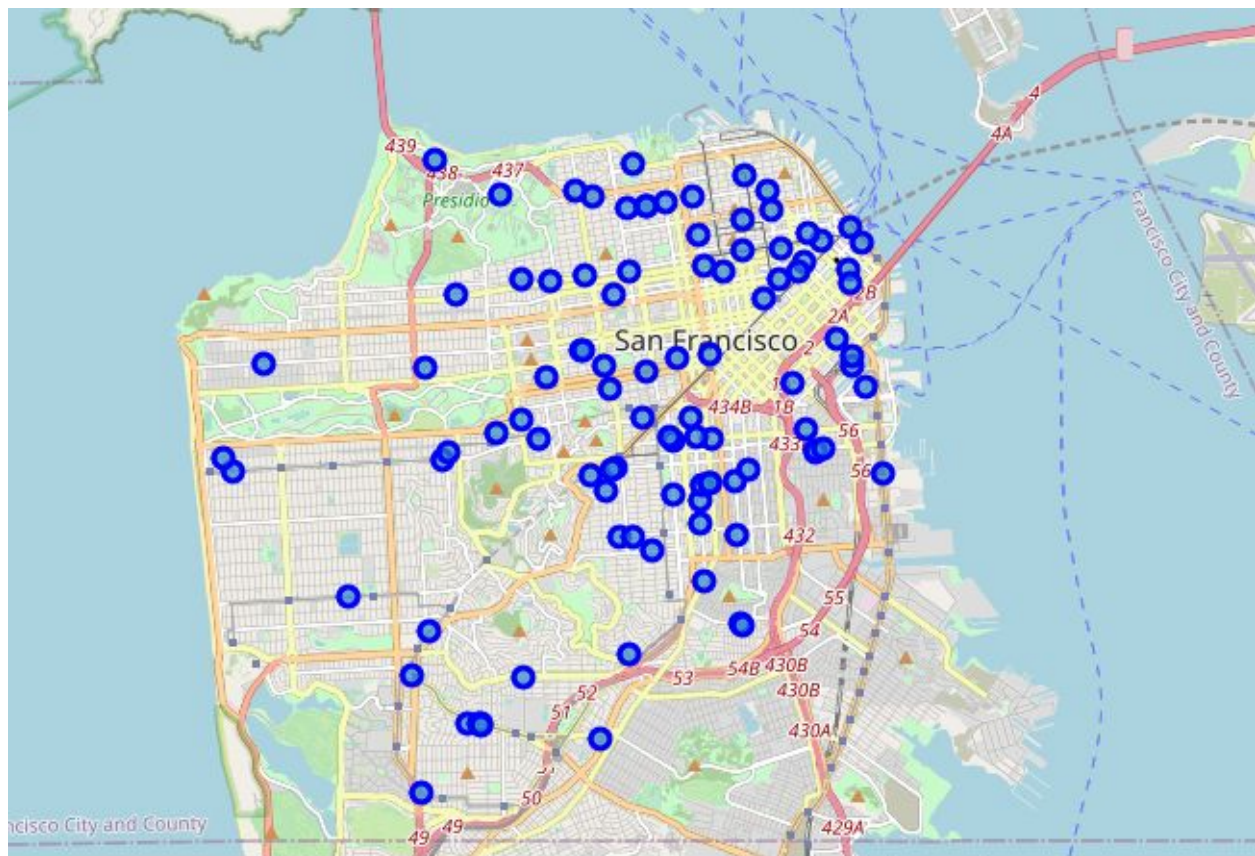Total number of Donut Shops in New York, NY = 170

Chicago Donut Shop visualization :
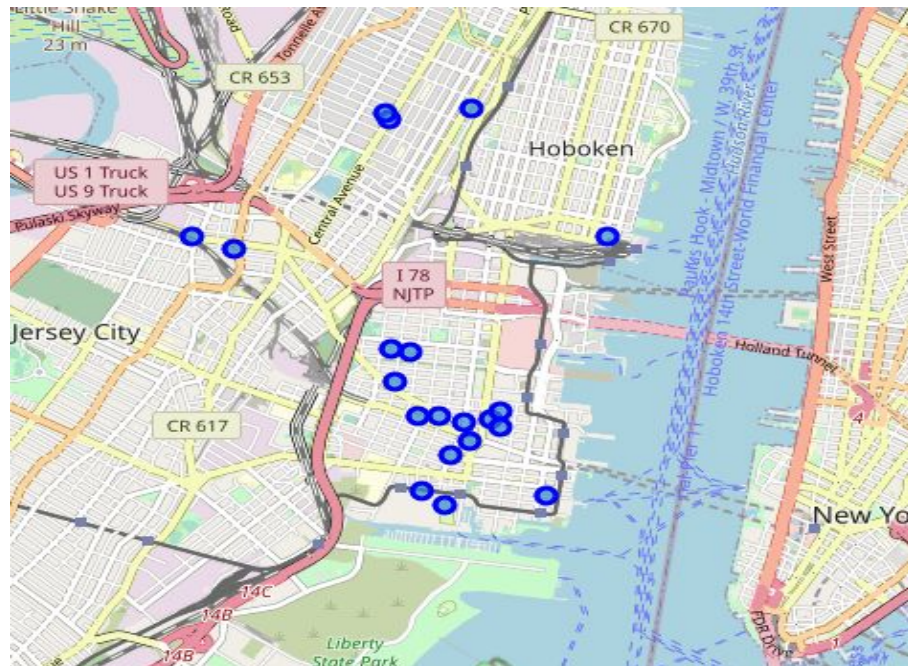Total number of Donut Shops in Chicago, IL = 103

San Francisco Donut Shop visualization :
Total number of Donut Shops in San Francisco, CA = 87
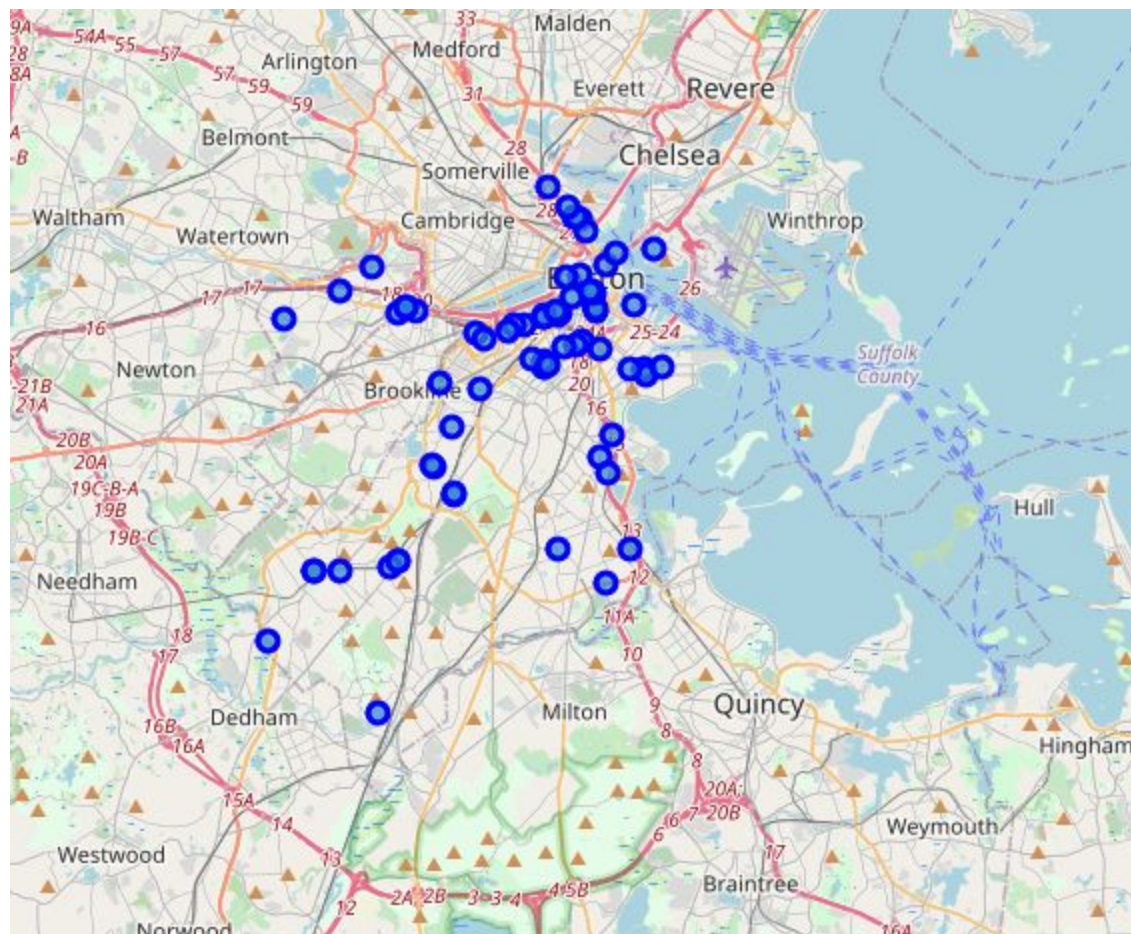
Jersey City Donut Shop visualization :
Total number of Donut Shops in Jersey City, NJ = 20

Boston Donut Shop visualization :
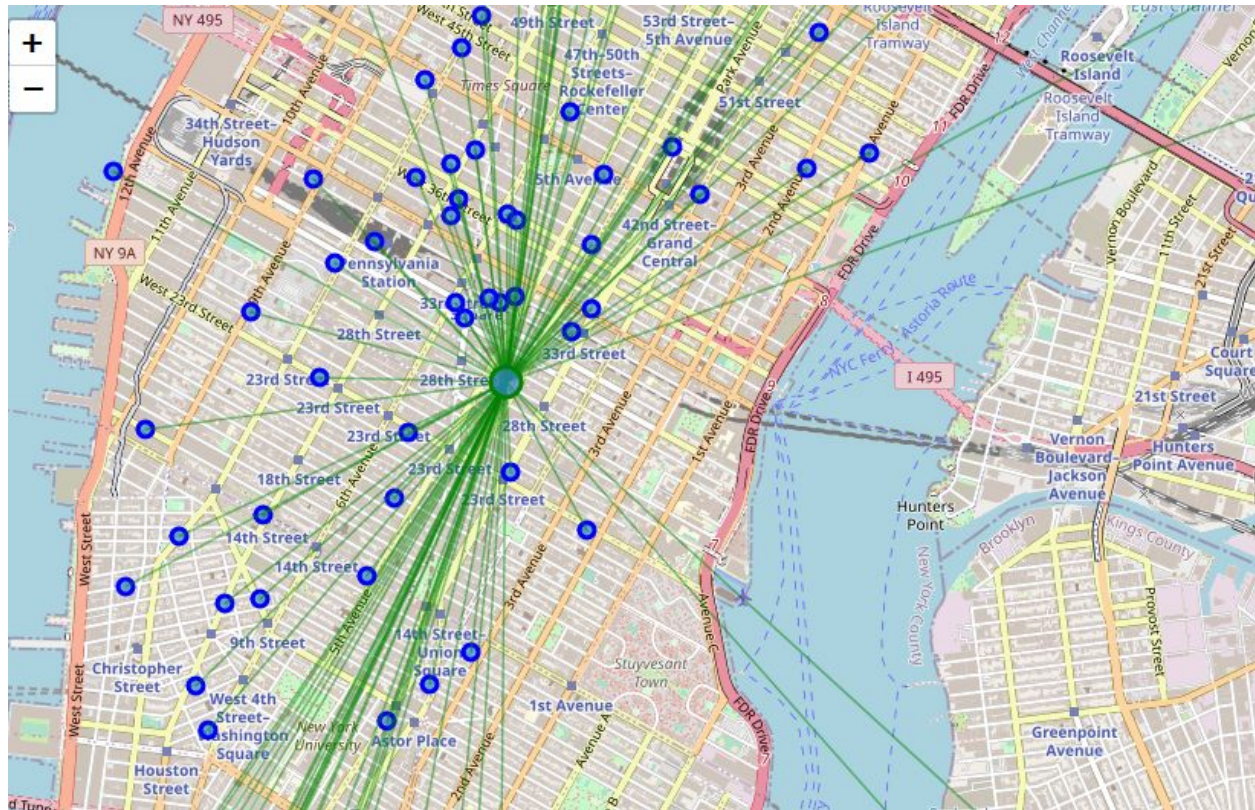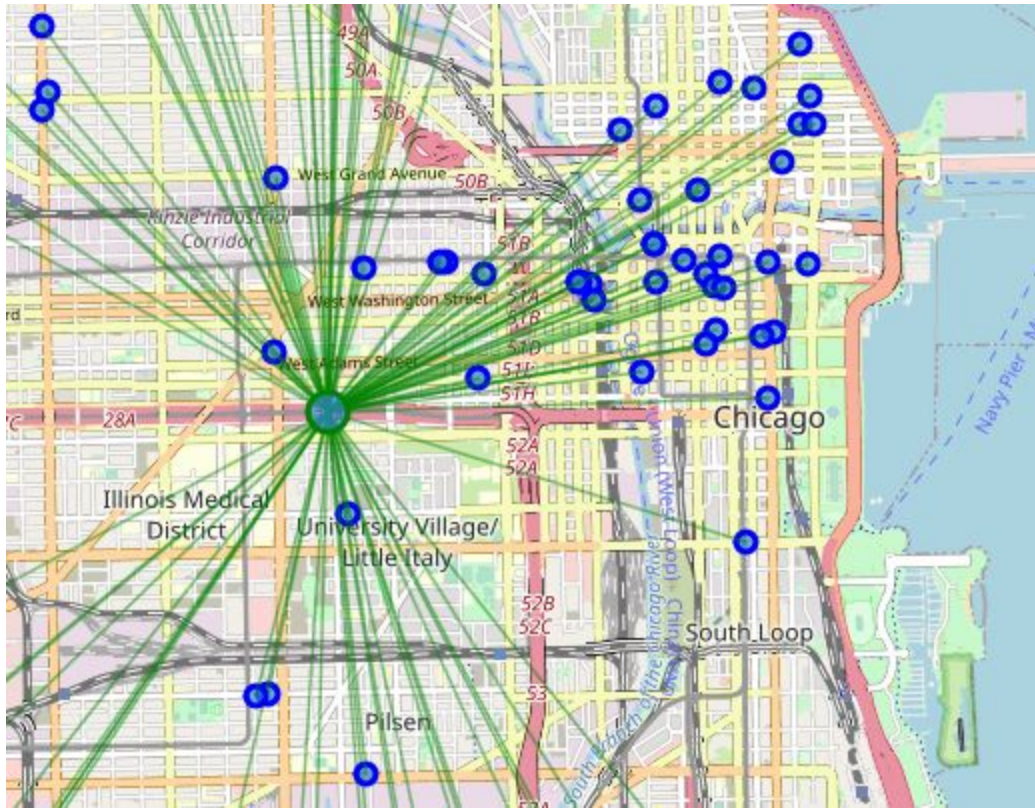Total number of Donut Shops in Boston, MA = 77

4. Results:

We will now find the location which is closest to all the Donut Shops in each city.

Visualization to see the Location is closest to all the Donut Shops.
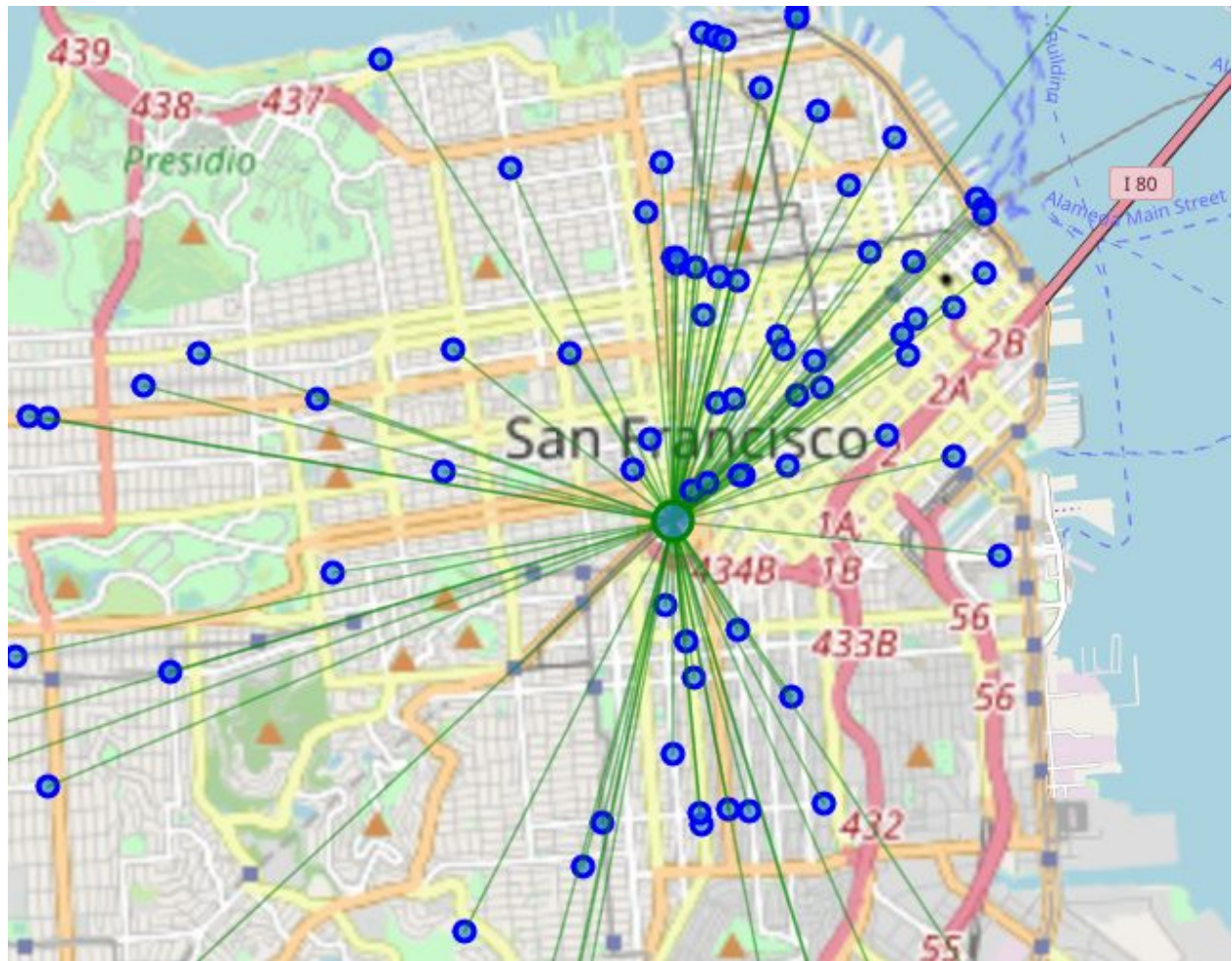
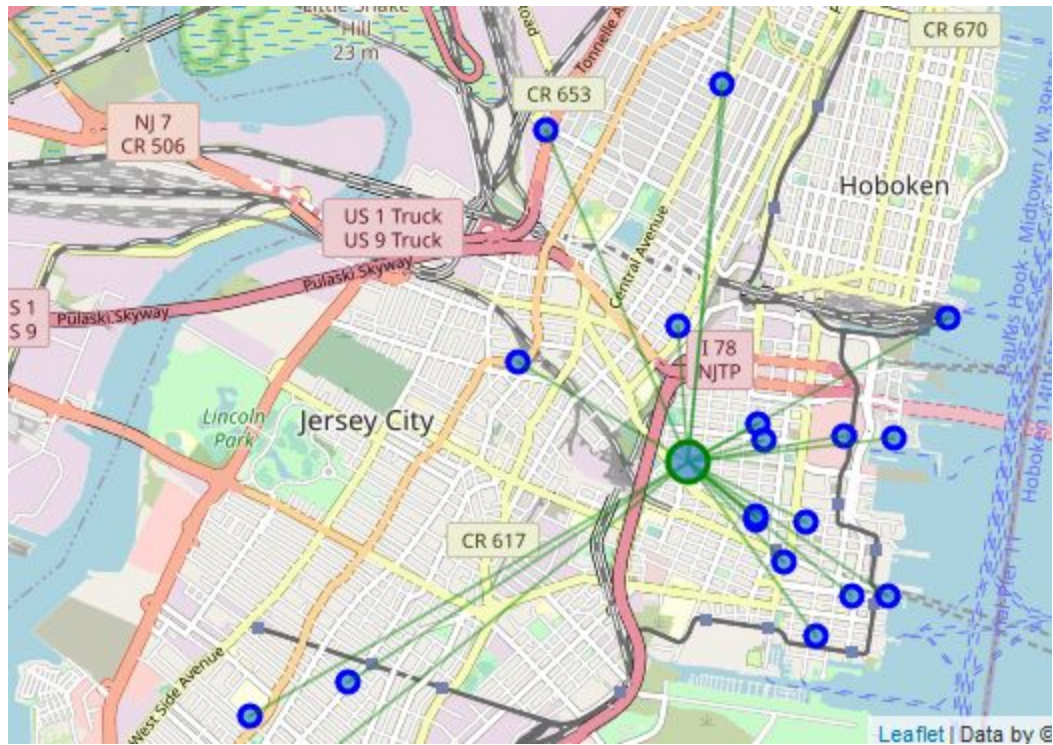New York, NY -Mean Distance from Mean coordinates-0.02647476523189629

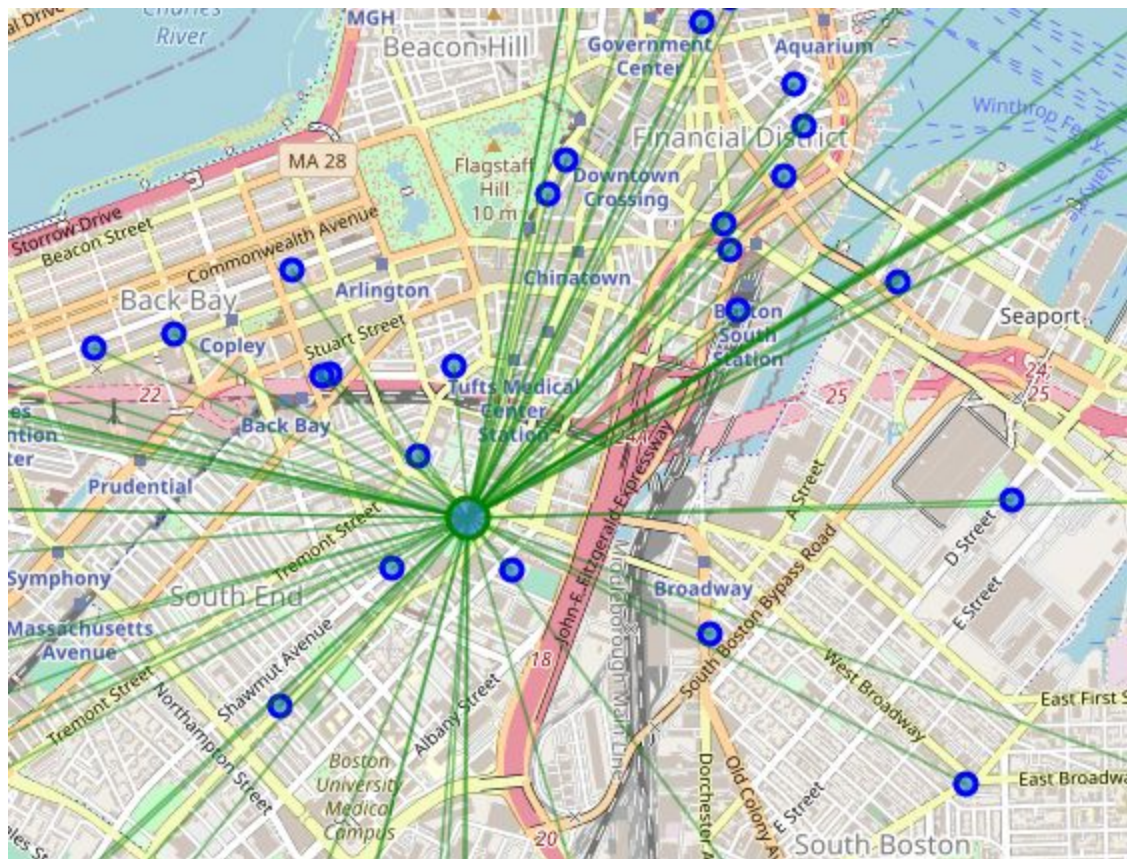Chicago, IL Mean Distance from Mean coordinates-0.06919742144056161

San Francisco, CA Mean Distance from Mean coordinates-0.03222144984555026

Jersey City, NJ Mean Distance from Mean coordinates-0.01973094805306201

Boston, MA Mean Distance from Mean coordinates-0.037330434457634454

We can see that New Jersey has the lowest mean distance. So New Jersey is the first city which will be provided to the Tourist.

New Jersey- Total Number of Donut Shops (20) and best place to access all the Donut Shops-
Jersey City, NJ -Mean Distance from Mean coordinates 0.017608619187662877
Coordinates of the Location [40.725300534781454, -74.05010304948006]

New York-Total Number of Donut Shops (170) and best place to access all the Donut Shops-

New York, NY -Mean Distance from Mean coordinates 0.025940202539747374
Coordinates of the Location [40.7443141132762, -73.98621011477208]