IT Services

Location Report

Introduction

The tech industry is alluring—there's no doubt about it.
A career in technology promises high wages, opportunities to innovate, and a chance to make a real impact on the world. Choosing the right city can make a huge difference in your career prospects.

Today, the tech industry spans across the United States, and each region has its own technology hub. It provides lot of business opportunities and business friendly environment.
It has attracted many different players into the market. It is a global hub of business and commerce. This also means that the market is highly competitive.

As these are highly developed cities so cost of doing business is also the highest. Therefore, any new business venture or expansion needs to be analyzed carefully.
The insights derived from the analysis will give us a good understanding of the business environment which could help in strategically targeting the market. This will help in reduction of risk and the reasonable Return on Investment (ROI).

Problem Description

IT services refers to the application of business and technical expertise to enable organizations in the creation, management and optimization of or access to information and business processes.

The problem we aim to solve is to analyze the IT Services' locations in the major Tech based US cities and find the best place for our investor so that he they could compete and have a reasonable ROI.

Our main target are offices, building like:

- Advertising Agency
- Campaign Office
- Conference Room
- Corporate Amenity
- Corporate Cafeteria
- Corporate Coffee Shop
- Coworking Space
- Tech Startup

So it is evident that to survive in such competitive market it is very important to strategically plan. Various factors need to be studied in order to decide on the Location such as:

- Population
- Workforce
- Training and education
- Career opportunities
- Political Factors
- Logistics
- Weather etc.

Even though well funded XYZ Company Ltd. need to choose the correct location to start its first venture. If this is successful, they can replicate the same in other locations. First move is very important, thereby choice of location is very important.

Data section

For this problem statement, we are going to depend totally on data from FourSquare API.

We would collect data of locations of Offices across top Tech Cities in the US which are:

- Austin
- Boston
- Chicago
- Colorado
- Los Angeles
- NYC
- San Francisco
- Seattle

We believe that, the listed building will have most aggressive businesses and sticking to their locations and will strategically gives us the best location to start.

Methodology

Our target is to identify the locations with highest probable opportunity. Here we are utilizing Four Square API and are using its endpoints.

Request

```
GET https://api.foursquare.com/v2/venues/explore
```

We are going to plot the density of the offices along with IT services, to see if there is any scope of IT services within (10,000 m).

We would get all the Office locations with, their following dimensions:

- Name
- Address
- Latitude
- Longitude

FOURSQUARE

Extracting Json from Foursquare API endpoint

```
for city in cities:
    url = 'https://api.foursquare.com/v2/venues/explore?\
            &client_id={}&client_secret={}&v={}&near={}&radius={}&limit={}&categoryId={}'\
        .format(
            CLIENT_ID,
            CLIENT_SECRET,
            VERSION,
            city,
            10000,
            LIMIT,
            "4bf58dd8d48988d124941735"          # OFFICE CATEGORY ID
        )
    offices[city] = requests.get(url).json()
```

Response:

	Name	Address	Lat	Lng
0	Frost Tower Financial Center	401 Congress Ave	30.266304	-97.743444
1	LatinWorks	206 E 9th St	30.270464	-97.739655
2	Cohn & Wolfe Austin	206 E 9th St Fl 16	30.270896	-97.739778
3	Silicon Labs	400 W Cesar Chavez St	30.264733	-97.748232
4	Norton Rose Fulbright	600 Congress Ave Ste 600	30.262443	-97.742881
5	Texas Motor Transport Association (TMTA)	700 E 11th St	30.271078	-97.733920

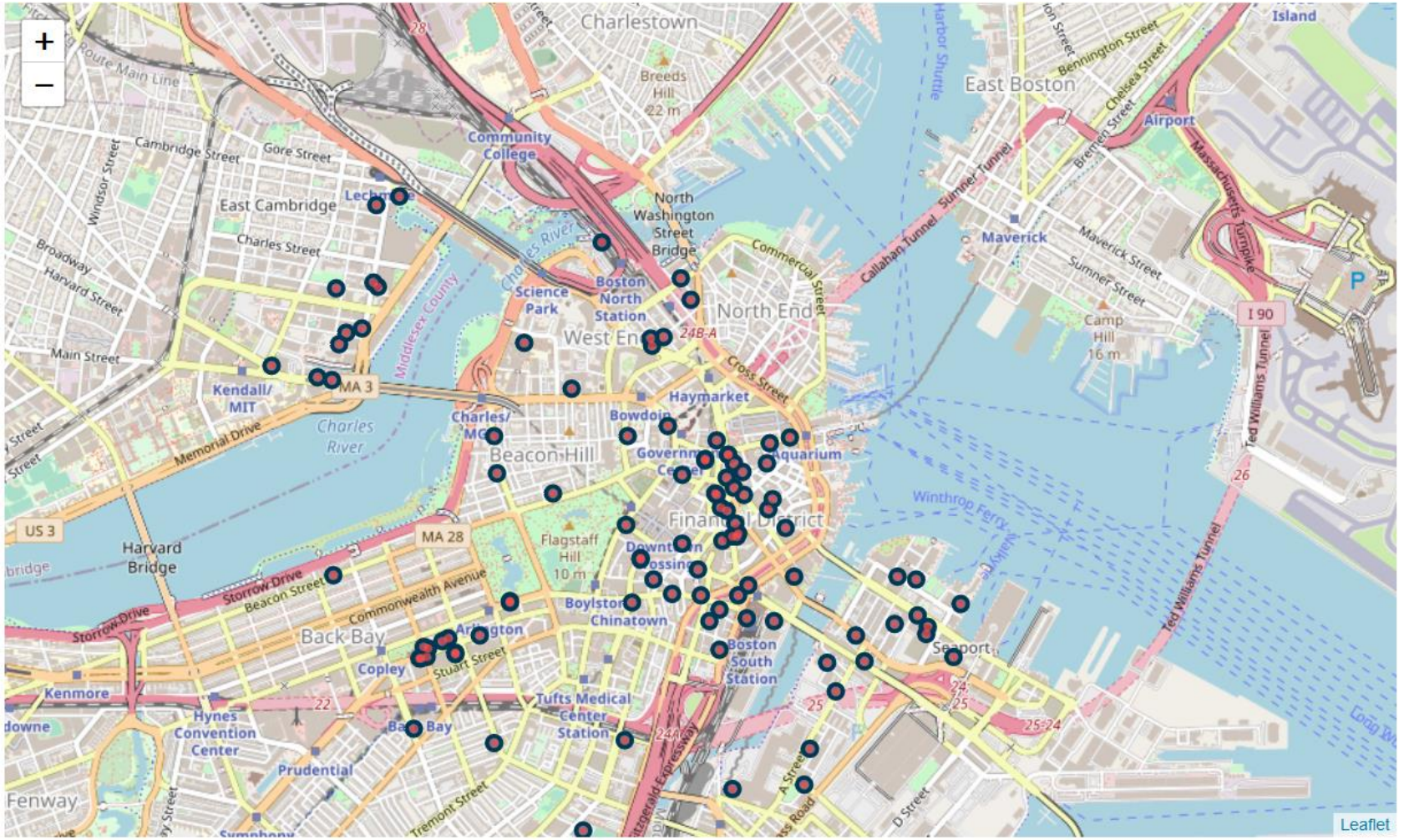
Steps followed

1. Get all the Offices/IT Services data like **Name**, **Address**, **Latitude**, **Longitude** using Foursquare APIs.
2. Plot top three Cities with highest opportunities.
3. Opportunity = $(1 - \frac{\textbf{Total IT Services}}{\textbf{Total Offices}}) * 100$

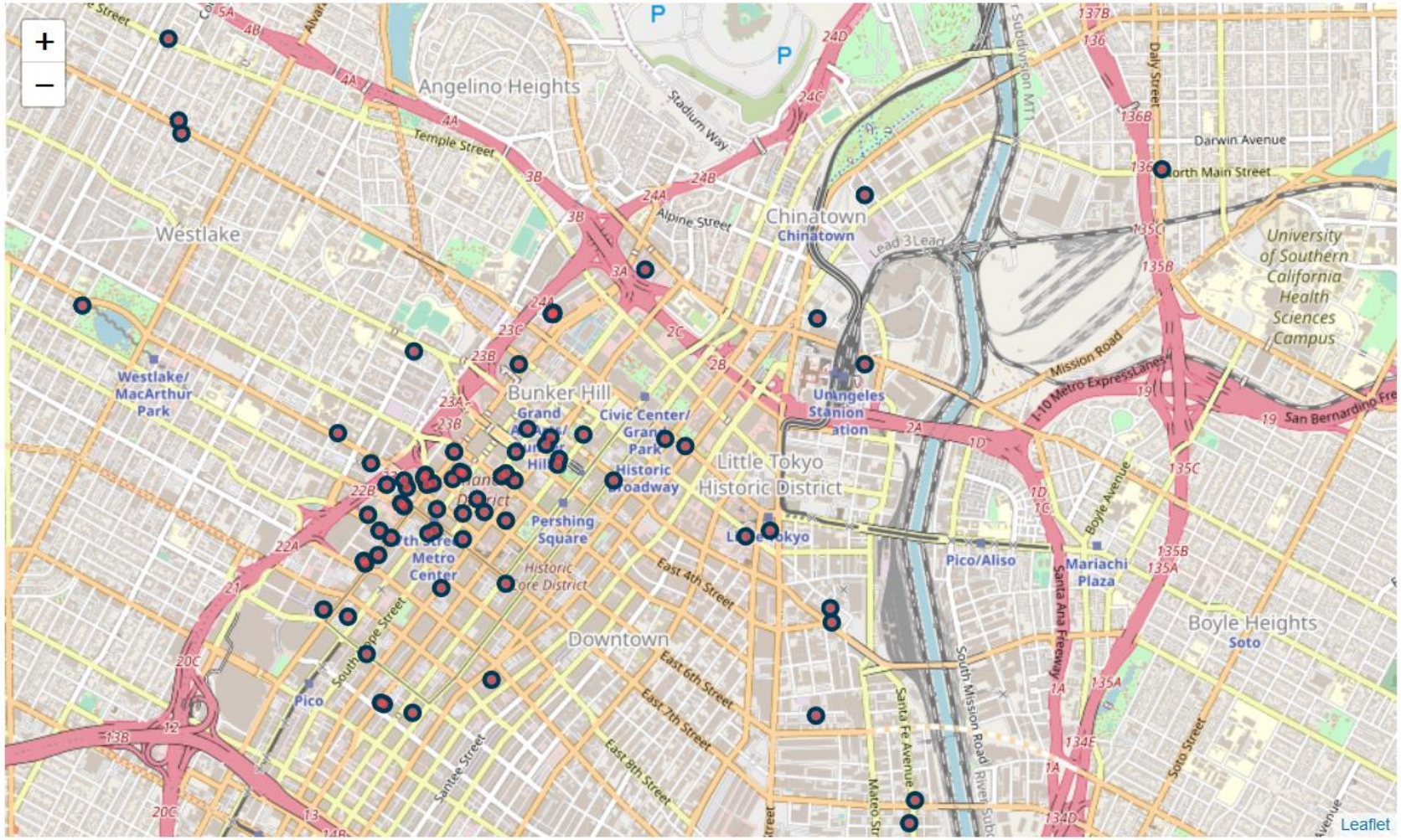
	City	Total Offices	Total IT Services	Opportunity (%)
0	Boston, MA	279	113	59.498208
1	Los Angeles, LA	329	161	51.063830
2	Seattle, WA	285	147	48.421053
3	Austin, TX	300	163	45.666667
4	San Francisco, CA	322	185	42.546584
5	Chicago, IL	335	194	42.089552
6	New York, NY	375	246	34.400000
7	Denver, CO	292	218	25.342466

Boston

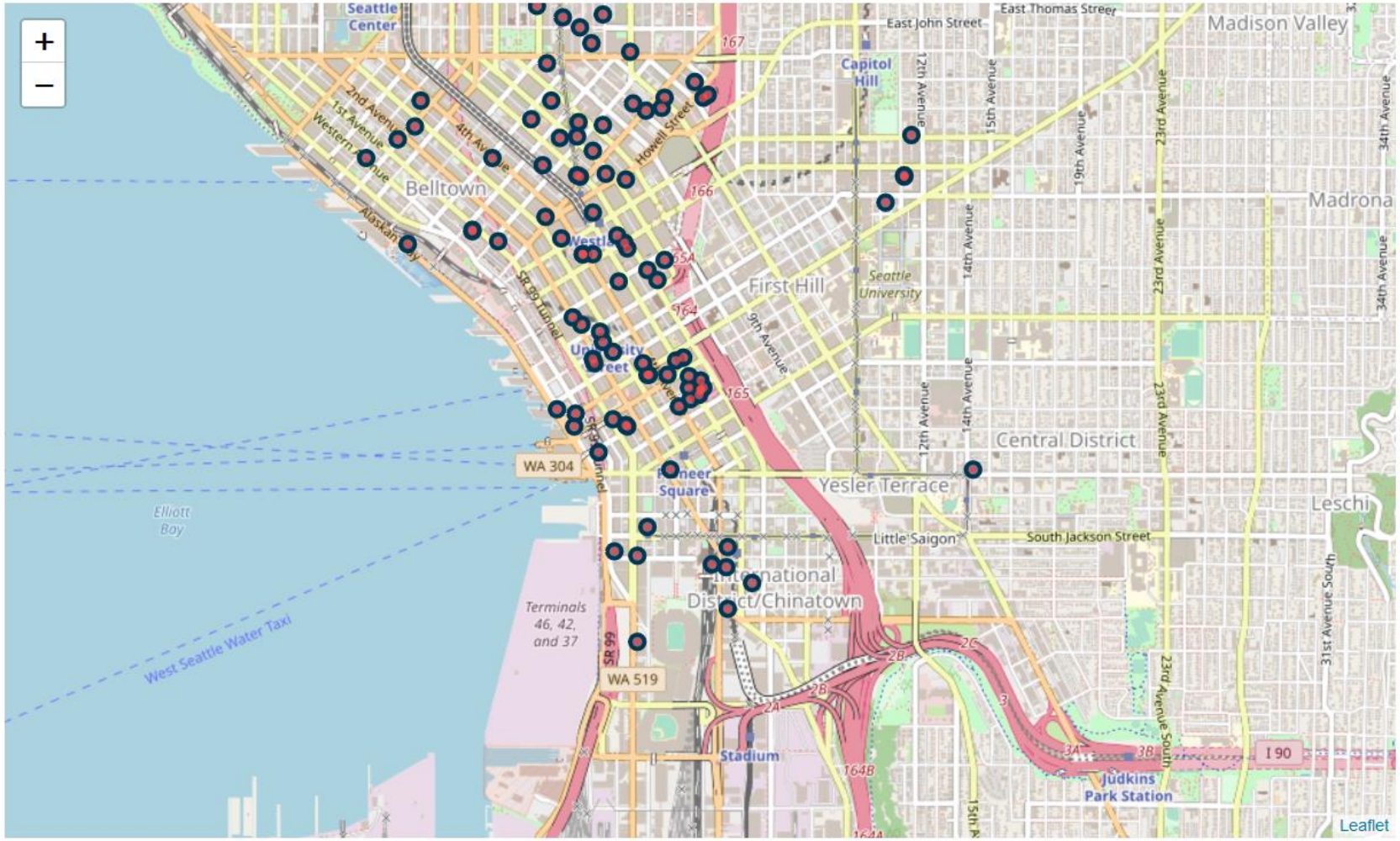
The following here are the pictures of the geoplot generated with folium:



Los Angeles


Angelino Heights
Westlake
Chinatown
Bunker Hill
Little Tokyo
Historic District
Downtown
Boyle Heights
Soto
Westlake/
MacArthur
Park
Pershing
Square
Metro
Center
Civic Center/
Grand
Park
Historic
Broadway
Pico/Aliso
Mariachi
Plaza
Pico
Temple Street
Alpine Street
Stadium Way
Darwin Avenue
Mission Road
East 4th Street
East 6th Street
East 7th Street
East 8th Street
Boyle Avenue
Soto Street
Santa Fe Avenue
South Mission Road
Santee Street
Santa Ana Freeway
I-10 Metro ExpressLanes
University
of Southern
California
Health
Sciences
Campus
Leaflet

Seattle


Seattle Center
East John Street
East Thomas Street
Madison Valley
Capitol Hill
Belltown
Madrona
First Hill
Seattle University
Central District
Yesler Terrace
Leschi
Little Saigon
South Jackson Street
International District/Chinatown
Pioneer Square
Elliott Bay
Terminals 46, 42, and 37
West Seattle Water Taxi
WA 304
WA 519
SR 99
SR 99 Tunnel
Stadium
Judkins Park Station
I 90
Howell Street
Western Avenue
Alaskan Way
1st Avenue
2nd Avenue
4th Avenue
9th Avenue
12th Avenue
14th Avenue
15th Avenue
19th Avenue
23rd Avenue
34th Avenue
31st Avenue South
23rd Avenue South
Leaflet

Observation

- We can clearly see that, all the Offices markers and IT Services markers overlap.
- As, we have seen the fact that "Total Number of IT services" in comparison to "Total number of Offices" in a city are very low. Which means the demand must be high and IT services, must be running out of resources.

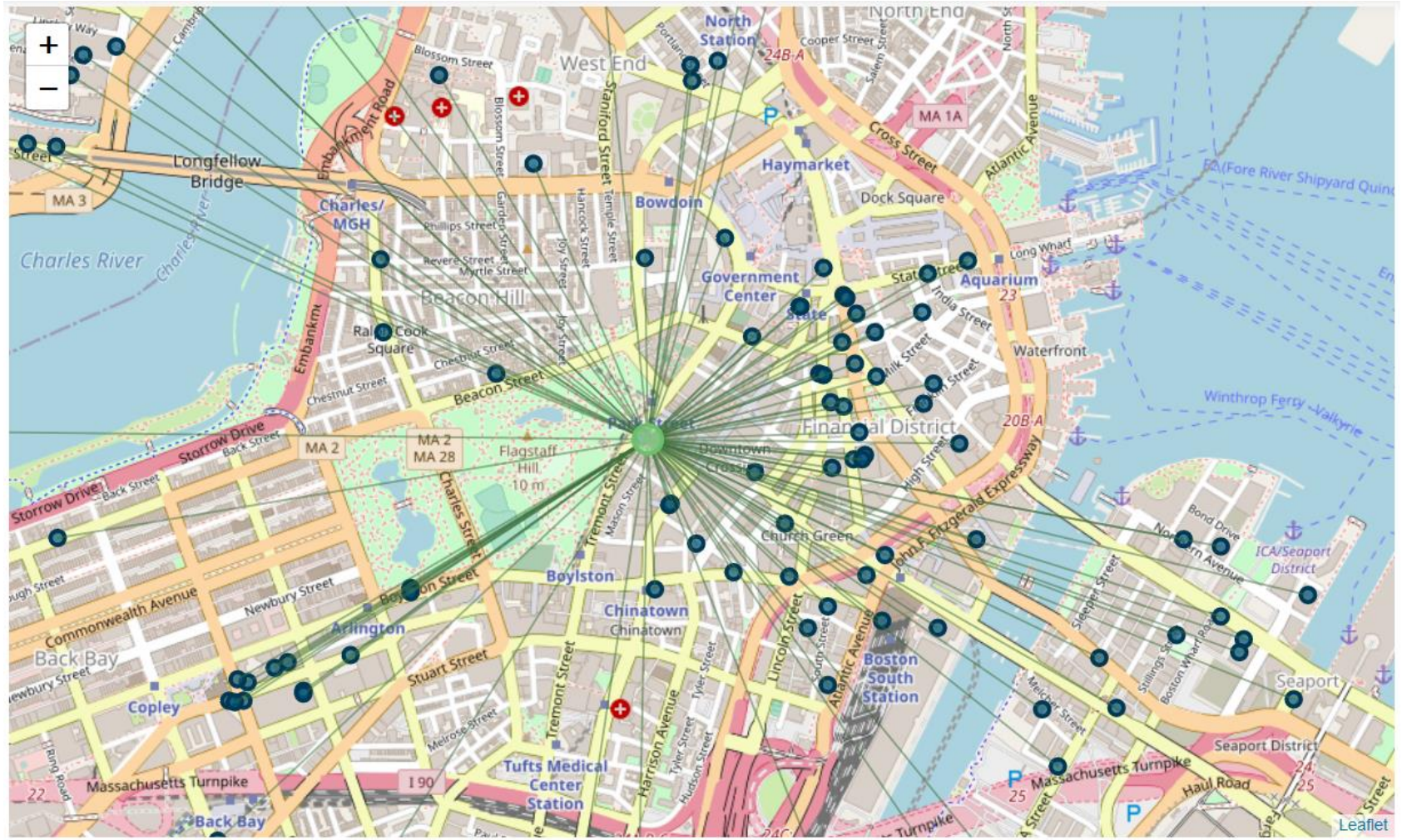
Next Step …

- Calculating Mean co-ordinates to find out probable location. This would give us a fair idea about the location within a city

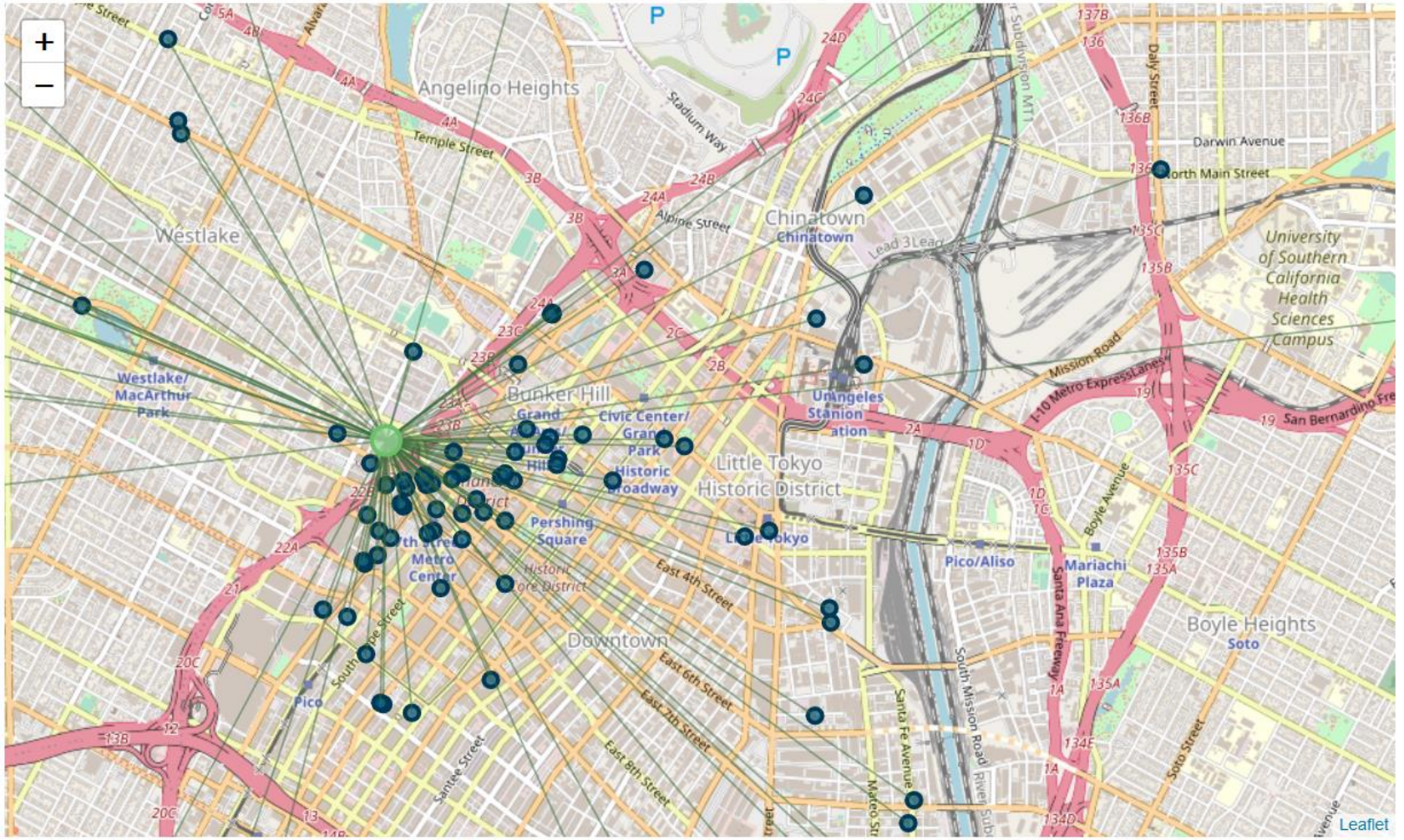
Calculating Mean co-ordinates to find out probable location

Boston

The following here are the pictures of the geoplot generated with folium:



Los Angeles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University of Southern California Health Sciences Campus
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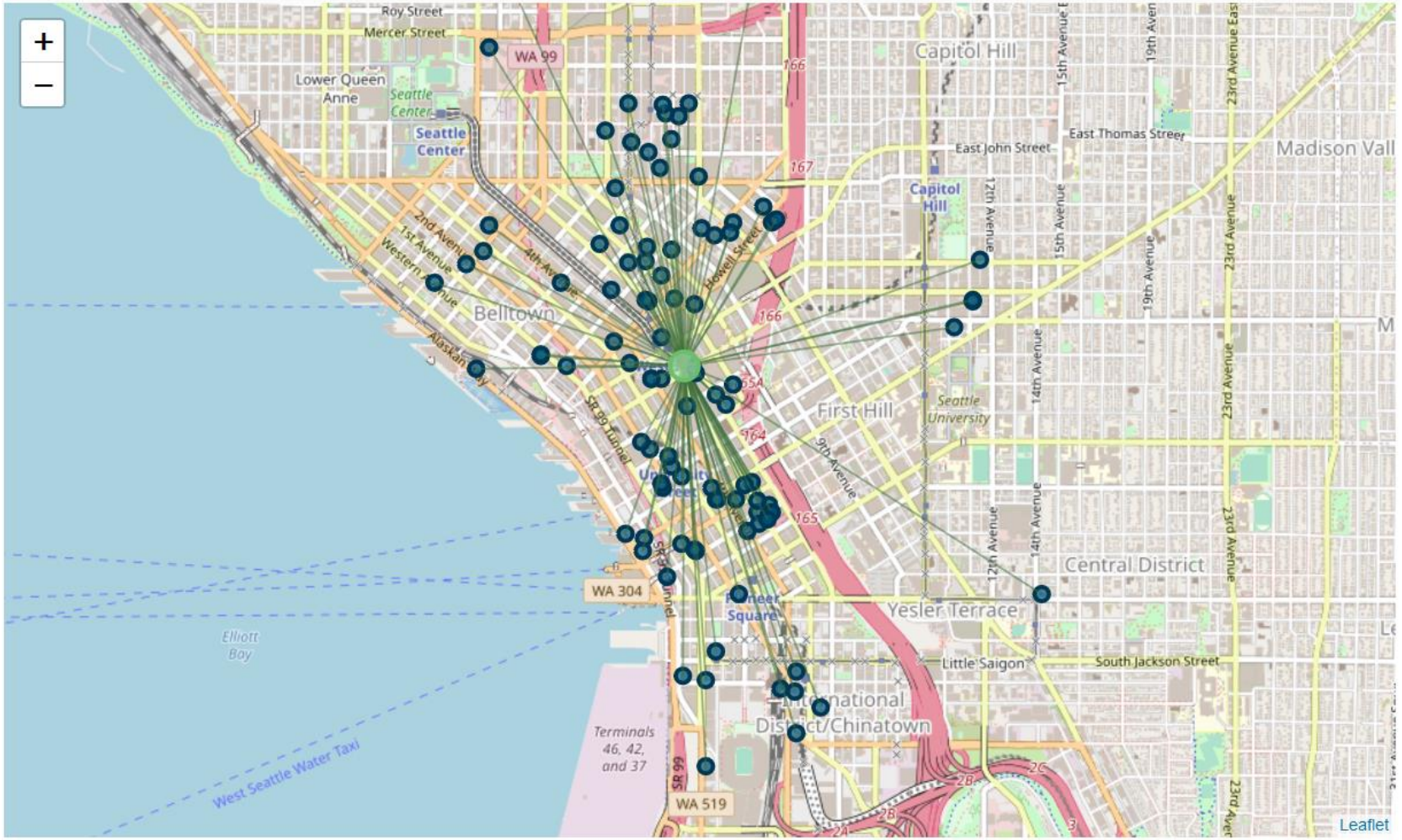
Historic Broadway
Pershing Square
Pico/Aliso
Mariachi Plaza
Pico
Temple Street
Alpine Street
Stadium Way
Darwin Avenue
North Main Street
Mission Road
East 4th Street
East 6th Street
East 7th Street
East 8th Street
Boyle Avenue
Santa Fe Avenue
South Mission Road
Soto Street
Santee Street
Leaflet

Seattle


Roy Street
Mercer Street
WA 99
Lower Queen Anne
Seattle Center
Seattle Center
Capitol Hill
East John Street
East Thomas Street
Madison Vall
Capitol Hill
Howell Street
Belltown
First Hill
Seattle University
Central District
Yesler Terrace
Pioneer Square
Little Saigon
South Jackson Street
International District/Chinatown
Elliott Bay
Terminals 46, 42, and 37
West Seattle Water Taxi
WA 304
WA 519
SR 99 Tunnel
Leaflet

Resulting locations and their co-ordinates

	City	Lat	Long	Address
0	Boston, MA	42.355566	-71.062564	Downtown Boston, Boston
1	Los Angeles, LA	34.052718	-118.261544	Downtown Los Angeles, Los Angeles
2	Seattle, WA	47.611097	-122.335131	Seattle Central Business District, Seattle