

'Battle of Neighborhoods

(Coffee shops in US destinations)

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Major Destinations:

1. Boston, MA
2. Chicago, IL
3. Jersey City, NJ
4. New York, NY
5. San Francisco, Ca

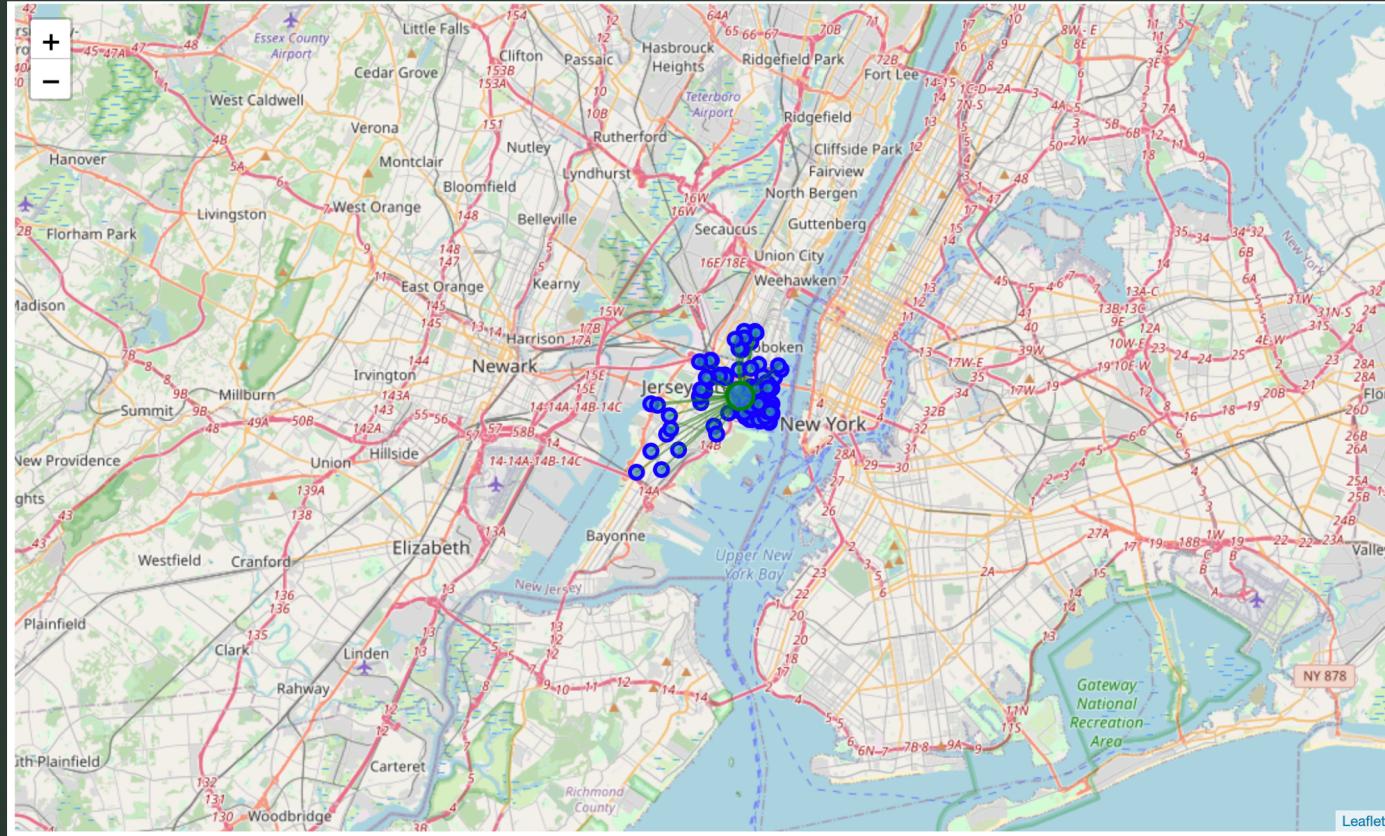
How I calculated the mean coordinate and the mean distance to mean coordinate (MDMC)?

```
maps = {}
for city in cities:
    city_lat = np.mean([results[city]['response']['geocode']['geometry']['bounds']['ne']['lat'],
                        results[city]['response']['geocode']['geometry']['bounds']['sw']['lat']])
    city_lng = np.mean([results[city]['response']['geocode']['geometry']['bounds']['ne']['lng'],
                        results[city]['response']['geocode']['geometry']['bounds']['sw']['lng']])
    maps[city] = folium.Map(location=[city_lat, city_lng], zoom_start=11)
    venues_mean_coor = [df_venues[city]['Lat'].mean(), df_venues[city]['Lng'].mean()]
    # add markers to map
    for lat, lng, label in zip(df_venues[city]['Lat'], df_venues[city]['Lng'], df_venues[city]['Name']):
        label = folium.Popup(label, parse_html=True)
        folium.CircleMarker(
            [lat, lng],
            radius=5,
            popup=label,
            color='blue',
            fill=True,
            fill_color="#3186cc",
            fill_opacity=0.7,
            parse_html=False).add_to(maps[city])
        folium.PolyLine([venues_mean_coor, [lat, lng]], color="green", weight=1.5, opacity=0.5).add_to(maps[city])

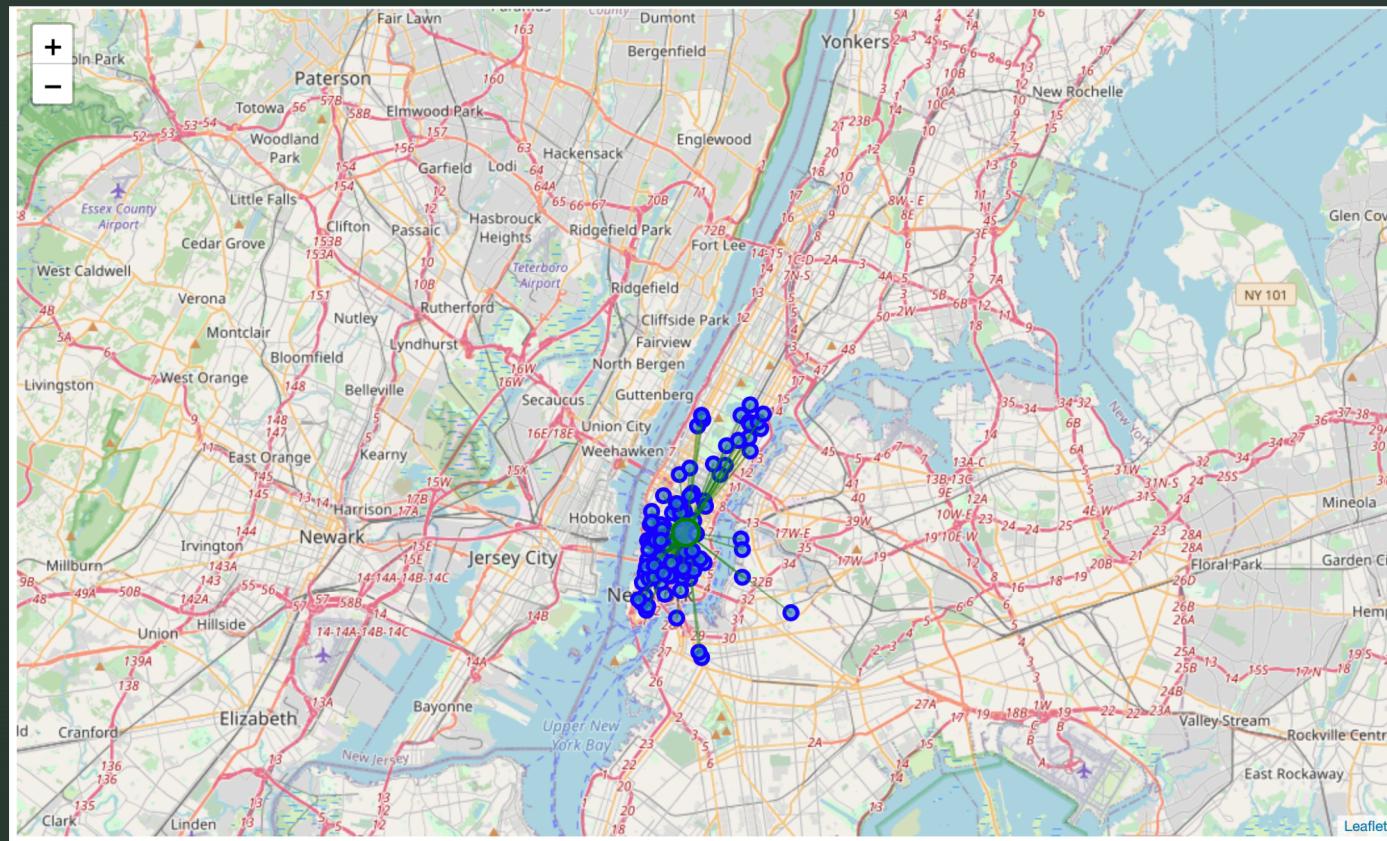
    label = folium.Popup("Mean Co-ordinate", parse_html=True)
    folium.CircleMarker(
        venues_mean_coor,
        radius=10,
        popup=label,
        color='green',
        fill=True,
        fill_color='#3186cc',
        fill_opacity=0.7,
        parse_html=False).add_to(maps[city])

    print(city)
    print("Mean Distance from Mean coordinates")
    print(np.mean(np.apply_along_axis(lambda x: np.linalg.norm(x - venues_mean_coor), 1, df_venues[city][['Lat', 'Lng']].values)))
```

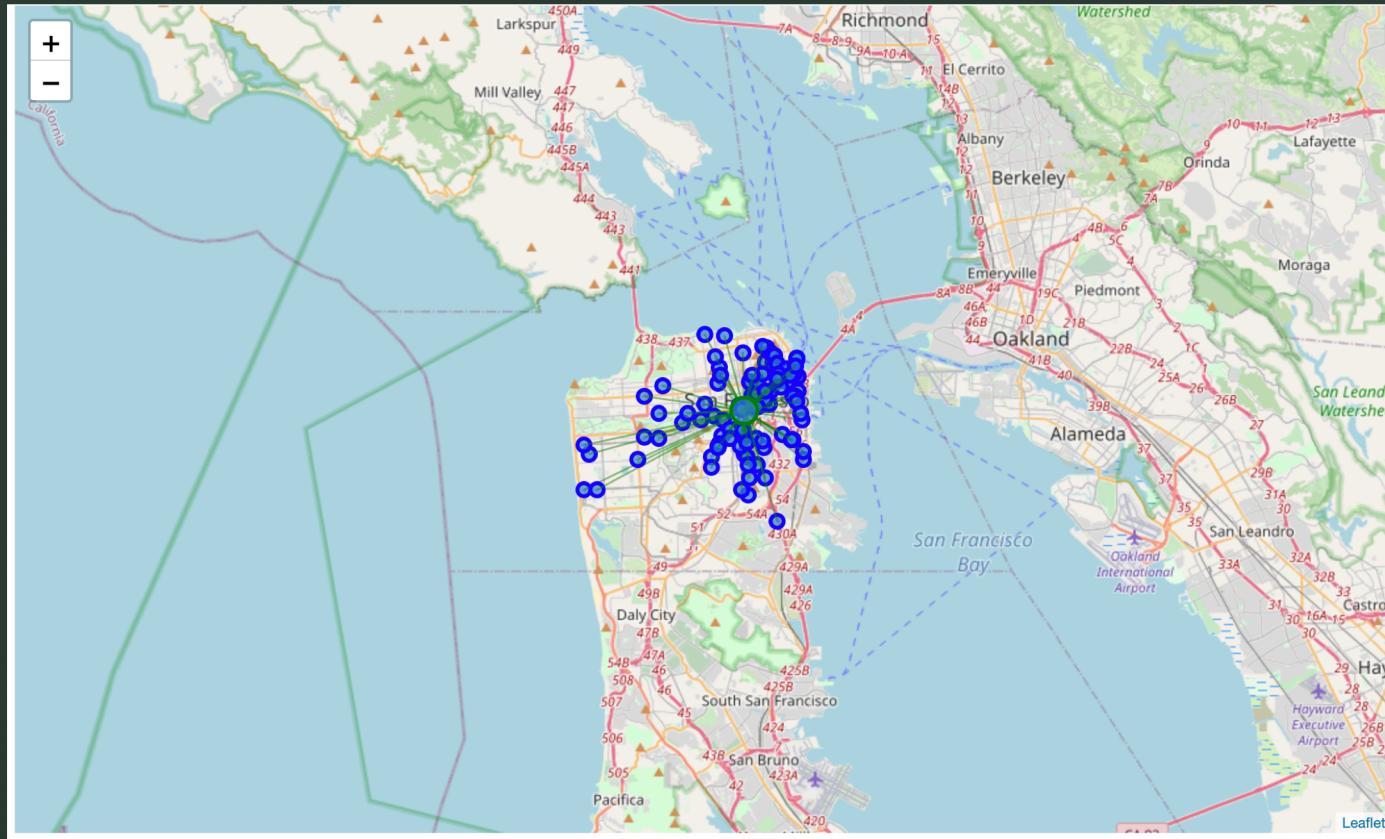
Jersey City, NJ



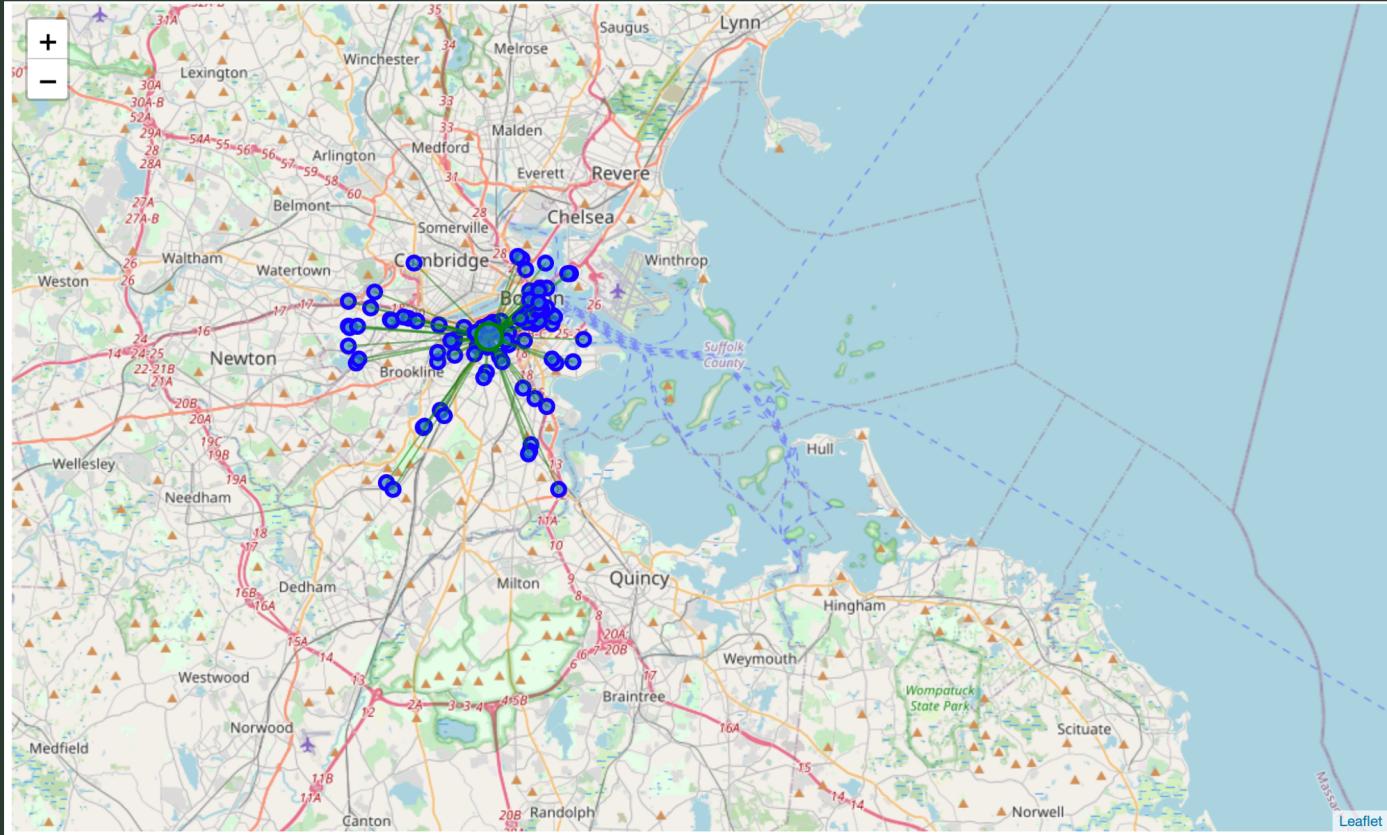
New York, NY



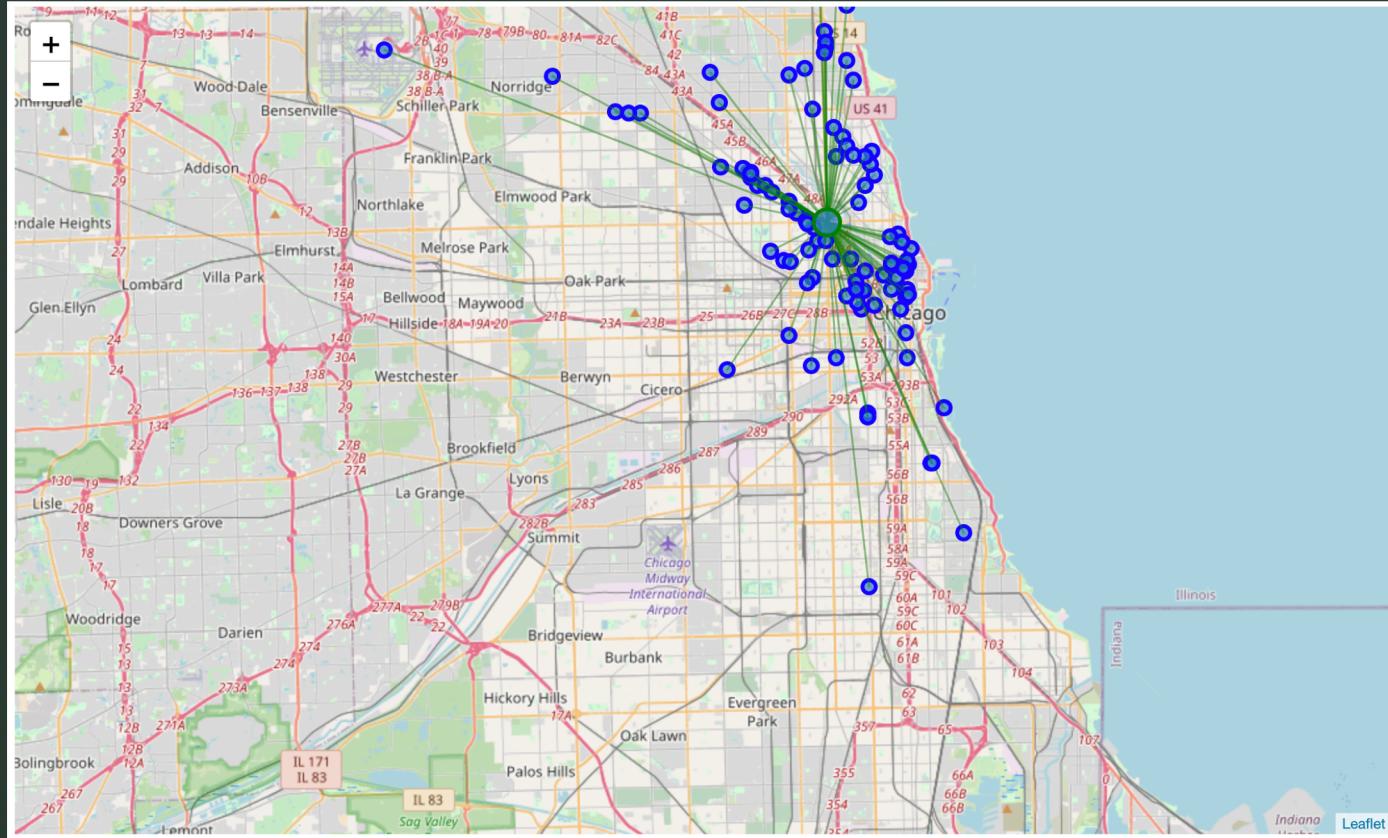
San Francisco, CA



Boston, MA



Chicago, IL



How I found the best dense city for coffee shop?

- Calculated the center (mean coordinate) of all the coffee shops for each city.
- Calculated the distance for each coffee shop from the center for each city
- Calculated average distance (mean distance to mean coordinate MDMC) for the each city
- Based on the least MDMC ranked the cities accordingly.