Crime Data Analysis

Geospatial Analysis using Folium

In this Project, we created a map with markers to explore crime rate in San Francisco, California. In this question, you are required to create a Choropleth map to visualize crime in San Francisco.

Before you are ready to start building the map, let's restructure the data so that it is in the right format for the Choropleth map. Essentially, you will need to create a dataframe that lists each neighborhood in San Francisco along with the corresponding total number of crimes.

Based on the San Francisco crime dataset, you will find that San Francisco consists of 10 main neighborhoods, namely:

1. Central,
2. Southern,
3. Bayview,
4. Mission,
5. Park,
6. Richmond,
7. Ingleside,
8. Taraval,
9. Northern, and,
10. Tenderloin.

San Francisco dataset used : https://cocl.us/sanfran_crime_dataset (https://cocl.us/sanfran_crime_dataset)
Geojson file : https://cocl.us/sanfran_geojson (https://cocl.us/sanfran_geojson)

In [2]:

```
import pandas as pd
df_sfcrime = pd.read_csv("C:/Users/Cherukuri Amul/Desktop/Data Science Projects/Crime D
ata Analysis (GeoSpaital - Folium)/data2.csv")
```

In [3]:

```
df_tmp = df_sfcrime.groupby(['PdDistrict']).count().reset_index()
df_tmp.drop(['Category','Descript','DayOfWeek','Date','Time', 'Resolution','Address',
'X','Y','Location','PdId'], axis=1, inplace=True)
df_tmp.rename(columns={'PdDistrict':'Neighborhood', 'IncidntNum':'Count'}, inplace=True
)
```

In [4]:

```
df_tmp
```

Out[4]:

	Neighborhood	Count
0	BAYVIEW	14303
1	CENTRAL	17666
2	INGLESIDE	11594
3	MISSION	19503
4	NORTHERN	20100
5	PARK	8699
6	RICHMOND	8922
7	SOUTHERN	28445
8	TARAVAL	11325
9	TENDERLOIN	9942

Now let us create a Choropleth map.

We are going to folle the below cinditions for our map:

1. it is centred around San Francisco,
2. you use a zoom level of 12,
3. you use fill_color = 'YlOrRd',
4. you define fill_opacity = 0.7,
5. you define line_opacity=0.2, and,
6. you define a legend and use the default threshold scale.

Import folium package in the environment

If you follow the lab on Choropleth maps and use the GeoJSON correctly, you should be able to generate the following map:

In [5]:

```
import folium
sf_geo = r'C:/Users/Cherukuri Amul/Desktop/Data Science Projects/Crime Data Analysis (GeoSpaital - Folium)/geofile.geojson'
print('Folium installed and imported!')
```

```
Folium installed and imported!
```

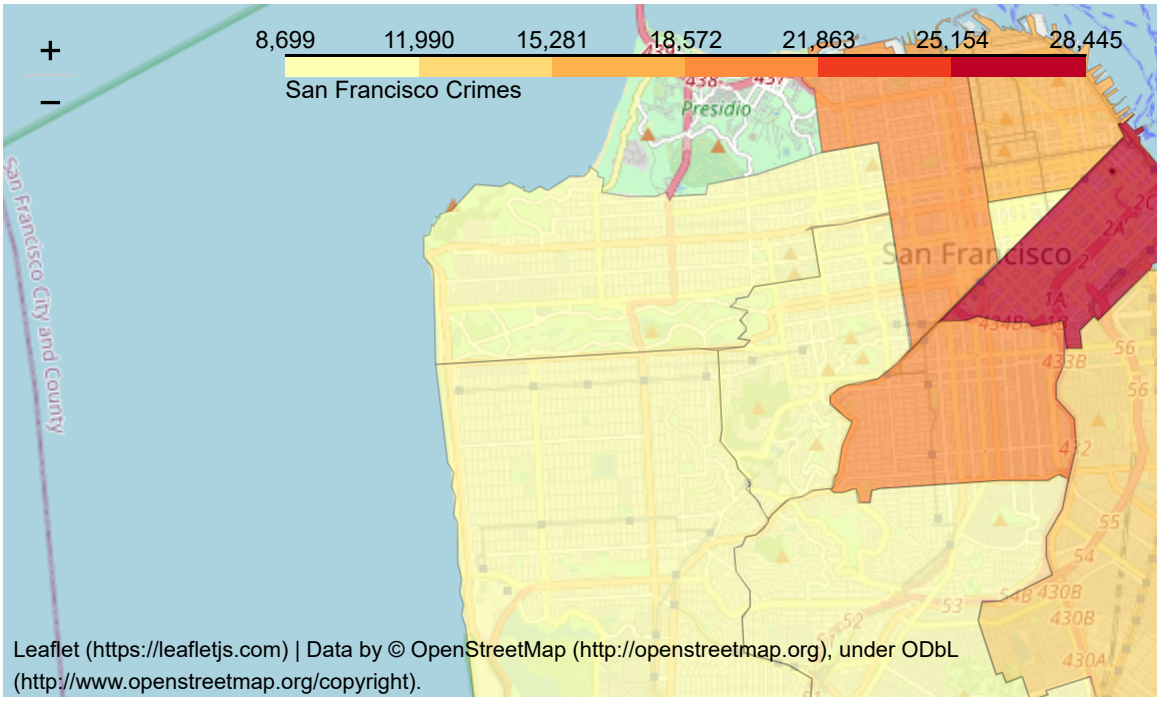
In [7]:

```
# create a plain San Francisco map
sf_map = folium.Map(location=[37.773972, -122.431297], zoom_start=12) #, tiles='Mapbox
 Bright')
sf_map.choropleth(
    geo_data=sf_geo,
    data=df_tmp,
    columns=['Neighborhood','Count'],
    key_on='feature.properties.DISTRICT',
    fill_color='YlOrRd',
    fill_opacity=0.7,
    line_opacity=0.2,
    legend_name='San Francisco Crimes'
)

# display map
sf_map
```

```
E:\Anaconda\lib\site-packages\folium\folium.py:415: FutureWarning: The cho
ropleth  method has been deprecated. Instead use the new Choropleth class,
which has the same arguments. See the example notebook 'GeoJSON_and_choroplet
leth' for how to do this.
  FutureWarning
```

Out[7]:



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