Mini Project -4

Crime data analysis using Folium

OVERVIEW

A project that is intended in providing a better understanding of creating maps and visualize. Usage of libraries Pandas.
In the course of completing the project, you use folium and create a Choropleth map.

Problem Statement

Creation of maps with markers to explore crimer rate in San Francisco, California.
Eventually creation of a Chloropleth map to visualize the crime rate in San Francisco.

Software Requirements

1. Programming Language : Python

2. Environemnt: Jupyter Notebooks / Google Collab

3. Database: CSV(export type)

4. Operation System: Windows XP or above

5. Librarires Used: Pandas,Folium

6.Datasets used:

San Francisco:https://cocl.us/sanfran_crime_dataset(https://cocl.us/sanfran_crime_dataset)

Geojson file: https://cocl.us/sanfran_geojson (https://cocl.us/sanfran_geojson)

1. Open a New Notebook and import the required libraires and read the csv file

```
import pandas as pd
df_sfcrime = pd.read_csv("*insert the path of CSV file")
```

We use pandas for data manipulation and for analysing data. Here we import pandas and make a data frame and load data into it.

2. Set the dataset accordingly

```
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)
df_tmp
```

Output:

	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

Here we firstly use groupby to split the objects and reset the index value. Next we drop the column and rename it.

3. Importing Folium

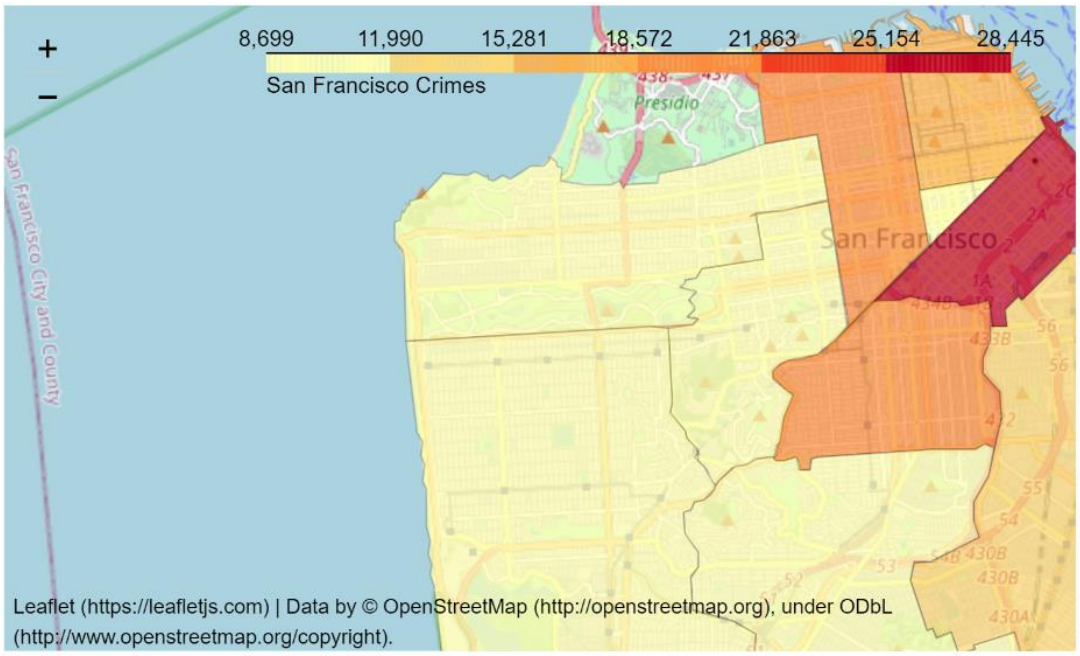
```
import folium
sf_geo = r'*insert path of the GeoJSON correctly*'
print('Folium installed and imported!')
```

Here we import the folium library. It is used for visualizing geospatial data. It visualizes data on leaflet map. We also import the geo jason file path.

4. Creating a plain map(Choropleth) of Sanfrancisco:

```
sf_map = folium.Map(location=[37.773972, -
122.431297], zoom_start=12) #, tiles='Mapbox Bright')
folium.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'
).add_to(sf_map)
sf_map
```

Output:



Here we use choropleth map which is composed of coloured polygons which represent spatial variations of quantity. Here we will import the san francisco map. We will mention the zoom status for getting the size of the area. Fill opacity is used to set opacity of the paint server that is applied to shape

5. Conclusion

We created a Choropleth with markers while exploring and visualising the crime rate in San Franciso.

synergina