**Analyze traffic accident data to identify patterns related to road conditions, weather, and time of day. Visualize accident hotspots and contributing factors.**

Import pandas as pd

Import matplotlib.pyplot as plt

Import seaborn as sns

Import folium

From folium.plugins import HeatMap

# Load your traffic accident dataset

Df = pd.read\_csv(‘traffic\_accidents.csv’)

# Data Cleaning

# Assume ‘Road\_Condition’, ‘Weather\_Condition’, ‘Time’, ‘Latitude’, and ‘Longitude’ are relevant columns

Df.dropna(subset=[‘Road\_Condition’, ‘Weather\_Condition’, ‘Time’, ‘Latitude’, ‘Longitude’], inplace=True)

# Visualize Accident Hotspots

M = folium.Map(location=[df[‘Latitude’].mean(), df[‘Longitude’].mean()], zoom\_start=10)

HeatMap(data=df[[‘Latitude’, ‘Longitude’]].groupby([‘Latitude’, ‘Longitude’]).size().reset\_index(name=’Accident Count’).values.tolist(), radius=8, max\_zoom=13).add\_to(m)

M.save(‘accident\_heatmap.html’)

# Time Analysis

# Extract hour from ‘Time’ column

Df[‘Hour’] = pd.to\_datetime(df[‘Time’]).dt.hour

# Plot accidents over different times of the day

Plt.figure(figsize=(10, 5))

Sns.countplot(x=’Hour’, data=df)

Plt.title(‘Accidents Distribution by Hour of the Day’)

Plt.xlabel(‘Hour of the Day’)

Plt.ylabel(‘Accident Count’)

Plt.show()

# Factor Analysis

# Stacked bar chart to show relationships between road and weather conditions

Factor\_df = df.groupby([‘Road\_Condition’, ‘Weather\_Condition’]).size().unstack().fillna(0)

Factor\_df.plot(kind=’bar’, stacked=True)

Plt.title(‘Accidents by Road and Weather Conditions’)

Plt.xlabel(‘Road Condition’)

Plt.ylabel(‘Accident Count’)

Plt.legend(title=’Weather Condition’)

Plt.show()