**TASK 5**

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

**SOURCE CODE**

import pandas as pd

import matplotlib.pyplot as plt

import seaborn as sns

#load data

df = pd.read\_csv(r'C:\Users\ANIRBAN CHOWDHURY\Downloads\accident.csv')

df.head()

df.info()

df.columns = df.columns.str.replace(' ', '\_').str.replace('.', '').str.strip()

sns.set(style='whitegrid')

#Distribution of accident severity

plt.figure(figsize=(10, 6))

sns.countplot(data=df, x='Accident\_Severity', palette='viridis')

plt.title('Distribution of Accident Severity')

plt.xlabel('Accident Severity')

plt.ylabel('Count')

plt.show()

#Distribution of accidents by Light Conditions

plt.figure(figsize=(10, 6))

sns.countplot(data=df, x='Light\_Conditions', palette='viridis')

plt.title('Distribution of Accidents by Light Conditions')

plt.xlabel('Light Conditions')

plt.ylabel('Count')

plt.xticks(rotation=45)

plt.show()

# Distribution of accidents by Road Surface Conditions

plt.figure(figsize=(10, 6))

sns.countplot(data=df, x='Road\_Surface\_Conditions', palette='viridis')

plt.title('Distribution of Accidents by Road Surface Conditions')

plt.xlabel('Road Surface Conditions')

plt.ylabel('Count')

plt.xticks(rotation=45)

plt.show()

# Distribution of accidents by weather conditions

plt.figure(figsize=(10, 6))

sns.countplot(data=df, x='Weather\_Conditions', palette='viridis')

plt.title('Distribution of Accidents by Weather Conditions')

plt.xlabel('Weather Conditions')

plt.ylabel('Count')

plt.xticks(rotation=45)

plt.show()

#Accident hotspots using a scatter plot of latitude and longitude

plt.figure(figsize=(10, 6))

sns.scatterplot(data=df, x='Longitude', y='Latitude', hue='Accident\_Severity', palette='viridis', alpha=0.7)

plt.title('Accident Hotspots by Severity')

plt.xlabel('Longitude')

plt.ylabel('Latitude')

#Number of accidents by month

df['Accident Date'] = pd.to\_datetime(df['Accident Date'], dayfirst=True, errors='coerce')

df['Month'] = df['Accident Date'].dt.month

plt.figure(figsize=(12, 6))

sns.countplot(x='Month', data=df, hue='Accident\_Severity', palette='viridis')

plt.title('Accidents by Month')

plt.xlabel('Month')

plt.ylabel('Count')

plt.legend(title='Accident Severity')

plt.show()

plt.show()







