import pandas as pd

import matplotlib.pyplot as plt

import seaborn as sns

# Load the traffic accident data

df = pd.read\_csv('accident\_data.csv')

# Convert the timestamp column to a datetime object

df['timestamp'] = pd.to\_datetime(df['timestamp'])

# Calculate the time of day (0-23) and the day of the week (0-6) for each accident

df['time\_of\_day'] = df['timestamp'].dt.hour

df['day\_of\_week'] = df['timestamp'].dt.dayofweek

# Count the number of accidents by time of day and day of the week

time\_of\_day\_counts = df['time\_of\_day'].value\_counts()

day\_of\_week\_counts = df['day\_of\_week'].value\_counts()

# Visualize the time of day and day of the week distributions

plt.figure(figsize=(10, 4))

plt.subplot(1, 2, 1)

sns.histplot(data=df, x='time\_of\_day', bins=24, kde=False)

plt.title('Time of Day Distribution')

plt.xlabel('Hour')

plt.ylabel('Count')

plt.subplot(1, 2, 2)

sns.histplot(data=df, x='day\_of\_week', bins=7, kde=False)

plt.title('Day of Week Distribution')

plt.xlabel('Day')

plt.ylabel('Count')

plt.show()

# Analyze accident contributing factors

road\_conditions = df['road\_conditions'].value\_counts()

weather\_conditions = df['weather\_conditions'].value\_counts()

# Visualize accident contributing factors

plt.figure(figsize=(10, 4))

plt.subplot(1, 2, 1)

sns.barplot(x='road\_conditions', y='Count', data=road\_conditions)

plt.title('Road Conditions')

plt.xlabel('Condition')

plt.ylabel('Count')

plt.subplot(1, 2, 2)

sns.barplot(x='weather\_conditions', y='Count', data=weather\_conditions)

plt.title('Weather Conditions')

plt.xlabel('Condition')

plt.ylabel('Count')

plt.show()

# Visualize accident hotspots

accident\_coordinates = df[['latitude', 'longitude']]

sns.jointplot(data=accident\_coordinates, x='latitude', y='longitude', kind='hex')

plt.title('Accident Hotspots')

plt.xlabel('Latitude')

plt.ylabel('Longitude')

plt.show()