**Source code:**

import pandas as pd

import matplotlib.pyplot as plt

import seaborn as sns

from sklearn.model\_selection import train\_test\_split

from sklearn.ensemble import RandomForestClassifier

from sklearn.metrics import classification\_report, confusion\_matrix

# Step 1: Load dataset

try:

df = pd.read\_csv('traffic\_accidents.csv')

print("✅ Dataset loaded successfully.")

except FileNotFoundError:

print("❌ Error: File 'traffic\_accidents.csv' not found.")

df = None

if df is not None:

# Step 2: Clean data

df.dropna(inplace=True) # Remove missing values

# Drop irrelevant columns if present

if 'location' in df.columns:

df.drop('location', axis=1, inplace=True)

# Step 3: Feature Engineering

# Encode day of the week

if 'Day' in df.columns:

df = pd.get\_dummies(df, columns=['Day'], drop\_first=True)

# Extract hour if 'Time' column exists

if 'Time' in df.columns:

df['Hour'] = pd.to\_datetime(df['Time'], errors='coerce').dt.hour

df.dropna(subset=['Hour'], inplace=True)

# Step 4: Prepare features and target

if 'Severity' not in df.columns:

print("❌ 'Severity' column not found in dataset.")

else:

X = df.drop('Severity', axis=1)

y = df['Severity']

# Step 5: Train/test split

X\_train, X\_test, y\_train, y\_test = train\_test\_split(X, y, test\_size=0.3, random\_state=42)

# Step 6: Train model

model = RandomForestClassifier()

model.fit(X\_train, y\_train)

# Step 7: Evaluate

y\_pred = model.predict(X\_test)

print("\n📊 Confusion Matrix:\n", confusion\_matrix(y\_test, y\_pred))

print("\n📈 Classification Report:\n", classification\_report(y\_test, y\_pred))

# Step 8: Visualization

if 'Hour' in df.columns:

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

sns.countplot(data=df, x='Hour', palette='coolwarm')

plt.title("Traffic Accidents by Hour")

plt.xlabel("Hour of Day")

plt.ylabel("Number of Accidents")

plt.tight\_layout()

plt.show()

else:

print("⚠️ Skipping analysis due to dataset load error.")

output:

❌ Error: File 'traffic\_accidents.csv' not found.

⚠️ Skipping analysis due to dataset load error.