Task 5: Analyze traffic accident data to identify patterns related to road conditions, weather, and time of day. Visualize accident hotspots and contributing factors.

Import Libraries

```
import pandas as pd
import matplotlib.pyplot as plt
```

Load Dataset

```
data = pd.read_csv("healthcare_dataset.csv")
data.head(5)
```

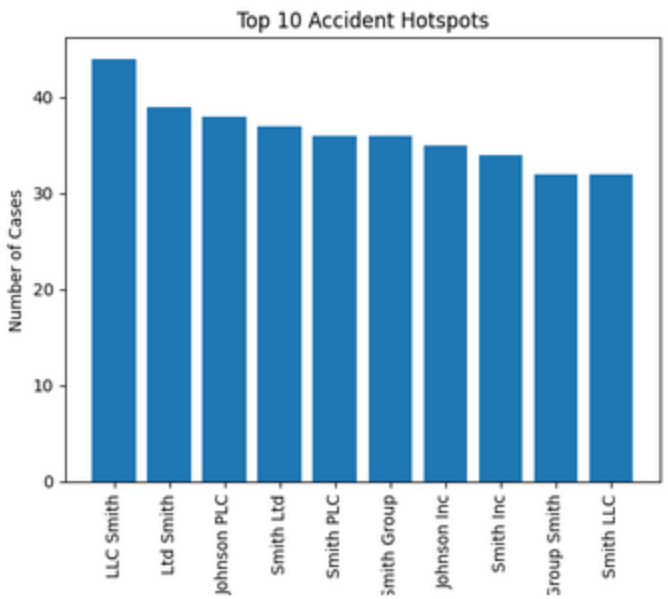
	Name	Age	Gender	Blood Type	Medical Condition	Date of Admission	Doctor	Hospital	Insurance Provider	Billing Amount	Room Number	Admission Type
0	Bobby JacksOn	30	Male	B-	Cancer	1/31/2024	Matthew Smith	Sons and Miller	Blue Cross	18856.28131	328	Urgent
1	LesLie TErRy	62	Male	A+	Obesity	8/20/2019	Samantha Davies	Kim Inc	Medicare	33643.32729	265	Emergency
2	DaNnY sMitH	76	Female	A-	Obesity	9/22/2022	Tiffany Mitchell	Cook PLC	Aetna	27955.09608	205	Emergency
3	andrEw waTtS	28	Female	O+	Diabetes	11/18/2020	Kevin Wells	Hernandez Rogers and Vang,	Medicare	37909.78241	450	Elective
4	adrIENNE bEll	43	Female	AB+	Cancer	9/19/2022	Kathleen Hanna	White-White	Aetna	14238.31781	458	Urgent

Convert Date Column & Extract Time Features

```
data['Date of Admission'] = pd.to_datetime(data['Date of Admission'])
# Extract hour and day
data['Hour'] = data['Date of Admission'].dt.hour
data['Day'] = data['Date of Admission'].dt.day_name()
```

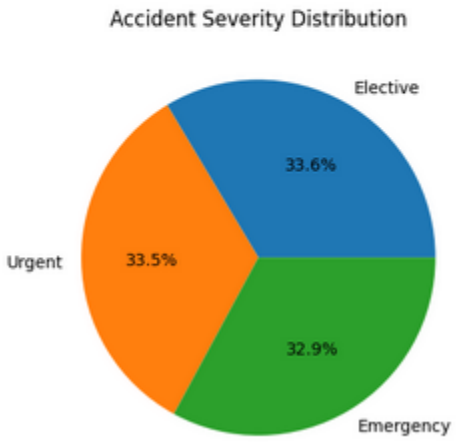
Hotspot Visualization (Hospital-wise Frequency)

```
hotspot = data['Hospital'].value_counts().head(10)

plt.figure()
plt.bar(hotspot.index, hotspot.values)
plt.xlabel("Location (Hospital)")
plt.ylabel("Number of Cases")
plt.title("Top 10 Accident Hotspots")
plt.xticks(rotation=90)
plt.show()
```



Severity Analysis (Admission Type – Pie Chart)

```
severity = data['Admission Type'].value_counts()

plt.figure()
plt.pie(severity.values, labels=severity.index, autopct='%1.1f%%')
plt.title("Accident Severity Distribution")
plt.show()
```



Box Plot – Billing Amount by Admission Type (Severity Comparison)

```
emergency = data[data['Admission Type'] == 'Emergency']['Billing Amount']
urgent = data[data['Admission Type'] == 'Urgent']['Billing Amount']
elective = data[data['Admission Type'] == 'Elective']['Billing Amount']

plt.figure()
plt.boxplot([emergency, urgent, elective], labels=['Emergency','Urgent','Elective'])
plt.xlabel("Admission Type")
plt.ylabel("Billing Amount")
plt.title("Billing Amount by Accident Severity")
plt.show()
```

```
/tmp/ipython-input-3710652562.py:6: MatplotlibDeprecationWarning: The 'labels' parameter of boxp
  plt.boxplot([emergency, urgent, elective], labels=['Emergency','Urgent','Elective'])
```