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import seaborn as sns
import matplotlib.pyplot as plt

# Calculating the frequency of different values
cause_counts = df['PRIM_CONTRIBUTORY_CAUSE'].value_counts()

# Creating a bar plot, swapping x and y axes
plt.figure(figsize=(10, 6))
sns.barplot(x=cause_counts.values, y=cause_counts.index, palette='viridis')

# Setting title and labels
plt.title('Number of Occurrences for Each Contributory Cause')
plt.xlabel('Number of Occurrences')
plt.ylabel('Contributory Cause')

# Displaying the chart
plt.tight_layout()
plt.show()

# Calculating the occurrences of accidents for each hour
hour_counts = df['CRASH_HOUR'].value_counts()

# Creating a bar plot
plt.figure(figsize=(10, 6))
sns.barplot(x=hour_counts.index, y=hour_counts.values, palette='viridis')

# Setting title and labels
plt.title('Number of Occurrences for Each Crash Hour')
plt.xlabel('Crash Hour')
plt.ylabel('Number of Occurrences')

# Rotating x-axis labels to avoid overlap
plt.xticks(rotation=90)

# Displaying the chart
plt.tight_layout()
plt.show()

# Calculate the occurrences of accidents in different months
month_counts = df['CRASH_MONTH'].value_counts()

# Create a bar plot
plt.figure(figsize=(10, 6))

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sns.barplot(x=month_counts.index, y=month_counts.values, palette='viridis')

# Set title and labels
plt.title('Number of Occurrences for Each Crash Month')
plt.xlabel('Crash Month')
plt.ylabel('Number of Occurrences')

# Rotate x-axis labels to prevent overlap
plt.xticks(rotation=90)

# Show the plot
plt.tight_layout()
plt.show()

import plotly.express as px

fig = px.scatter_mapbox(df, lat="LATITUDE", lon="LONGITUDE", hover_name="CRASH_TYPE",
zoom=10)
fig.update_layout(mapbox_style="open-street-map")
fig.show()
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