AUTO THEFT CASES IN INDIA

```
from google.colab import drive
drive.mount('/content/drive')
```

```
Drive already mounted at /content/drive; to attempt to forcibly remount, call drive.mount("/content/drive", force_remount=True).
```

```
import numpy as np # linear algebra
import matplotlib.pyplot as plt
import seaborn as sns
import pandas as pd # data processing, CSV file I/O (e.g. pd.read_csv)

import os
for dirname, _, filenames in os.walk('/content/drive/MyDrive/Data visualozation/Crime'):
    for filename in filenames:
        print(os.path.join(dirname, filename))
```

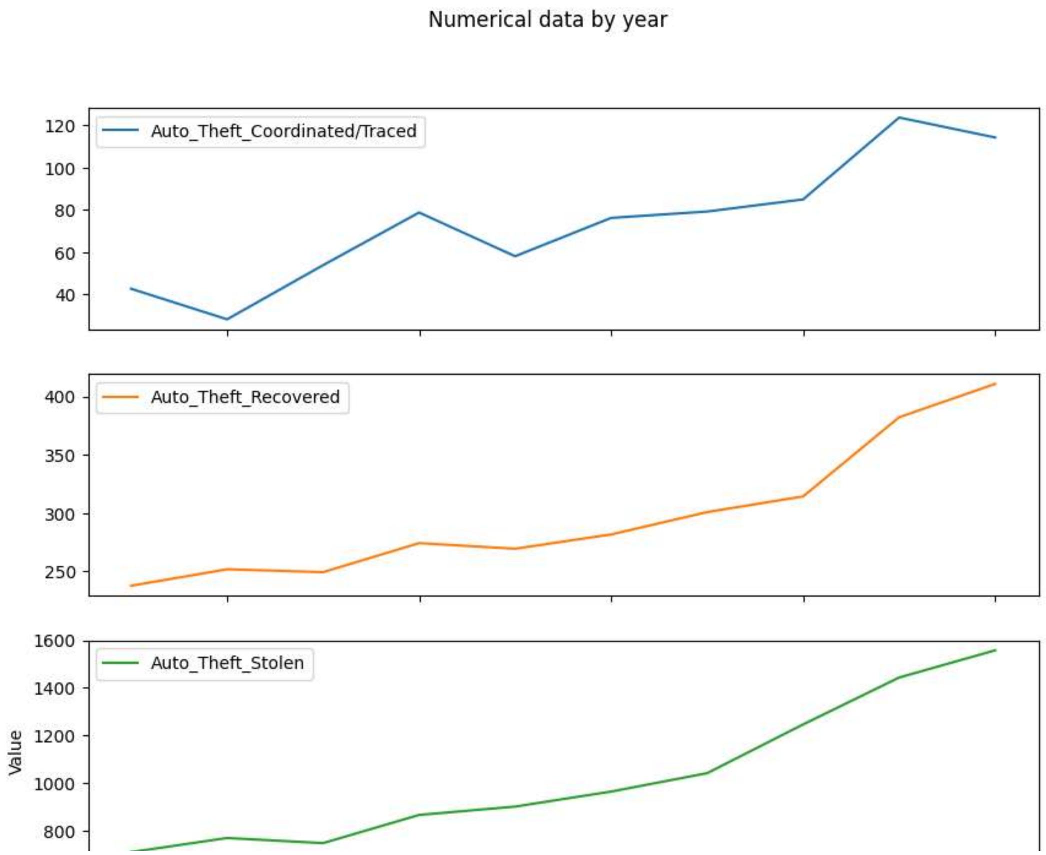
```
/content/drive/MyDrive/Data visualozation/Crime/Auto_theft.csv
/content/drive/MyDrive/Data visualozation/Crime/Complaints_against_police.csv
/content/drive/MyDrive/Data visualozation/Crime/Property_stolen_and_recovered.csv
/content/drive/MyDrive/Data visualozation/Crime/Rape_Victims.csv
/content/drive/MyDrive/Data visualozation/Crime/Murders.csv
/content/drive/MyDrive/Data visualozation/Crime/Murged_data/output1.csv
/content/drive/MyDrive/Data visualozation/Crime/Murged_data/output2.csv
/content/drive/MyDrive/Data visualozation/Crime/Indian map/India Boundary/India_boundary.dbf
/content/drive/MyDrive/Data visualozation/Crime/Indian map/India Boundary/India_boundary.shx
/content/drive/MyDrive/Data visualozation/Crime/Indian map/India Boundary/India_boundary.prj
/content/drive/MyDrive/Data visualozation/Crime/Indian map/India Boundary/India_boundary.shp
/content/drive/MyDrive/Data visualozation/Crime/Indian map/India States/Indian_states.shx
/content/drive/MyDrive/Data visualozation/Crime/Indian map/India States/Indian_states.dbf
/content/drive/MyDrive/Data visualozation/Crime/Indian map/India States/Indian_states.shp
/content/drive/MyDrive/Data visualozation/Crime/Indian map/India States/Indian_states.prj
```

```
df1=pd.read_csv('/content/drive/MyDrive/Data visualozation/Crime/Auto_theft.csv')
df1.head()
```

	Area_Name	Year	Group_Name	Sub_Group_Name	Auto_Theft_Coordinated/Traced	Auto_Theft_Recovered	Au
0	Andaman & Nicobar Islands	2001	AT1-Motor Cycles/ Scooters	1. Motor Cycles/ Scooters	NaN	4.0	
1	Andhra Pradesh	2001	AT1-Motor Cycles/ Scooters	1. Motor Cycles/ Scooters	136.0	1311.0	
2	Arunachal	2001	AT1-Motor Cycles/	1. Motor Cycles/	0.0	21.0	

```
import pandas as pd
import matplotlib.pyplot as plt
# Group the data by year and calculate the mean of each numerical column
grouped = df1.groupby('Year').mean()

# Plot each numerical column in the same plot
grouped.plot(kind='line', subplots=True, figsize=(10, 8))

# Set the plot title and labels
plt.suptitle('Numerical data by year')
plt.xlabel('Year')
plt.ylabel('Value')

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

```
<ipython-input-18-98f7fc0a404d>:4: FutureWarning: The default value of numeric_only in DataFrameGroupBy
  grouped = df1.groupby('Year').mean()
```



```
df1.isna().sum()
```

```
Area_Name                         0
Year                              0
Group_Name                        0
Sub_Group_Name                    0
Auto_Theft_Coordinated/Traced   346
Auto_Theft_Recovered             28
Auto_Theft_Stolen                 0
dtype: int64
```

```
df1['Auto_Theft_Coordinated/Traced'].fillna((df1['Auto_Theft_Coordinated/Traced'].mean()), inplace=True)
df1['Auto_Theft_Recovered'].fillna((df1['Auto_Theft_Recovered'].mean()),inplace=True)
```

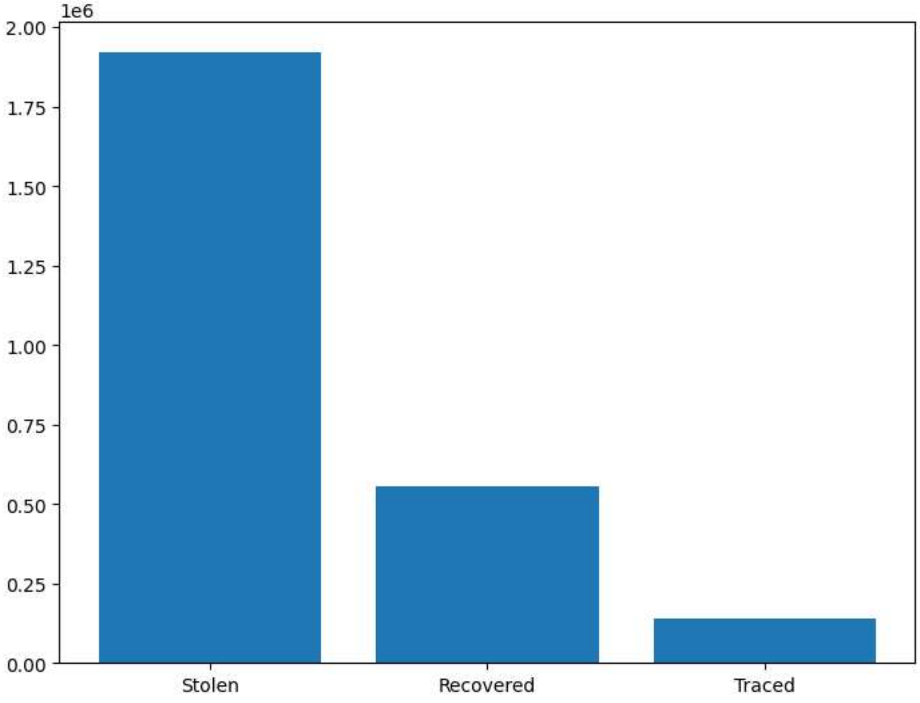
```
df1.describe()
```

	Year	Auto_Theft_Coordinated/Traced	Auto_Theft_Recovered	Auto_Theft_Stolen
count	1865.000000	1865.000000	1865.000000	1865.000000
mean	2005.564075	74.541145	297.927055	1029.431635
std	2.853598	243.831856	672.338149	2399.389932
min	2001.000000	0.000000	0.000000	0.000000
25%	2003.000000	0.000000	4.000000	7.000000
50%	2006.000000	6.000000	31.000000	80.000000
75%	2008.000000	74.541145	193.000000	521.000000
max	2010.000000	2985.000000	5453.000000	18605.000000

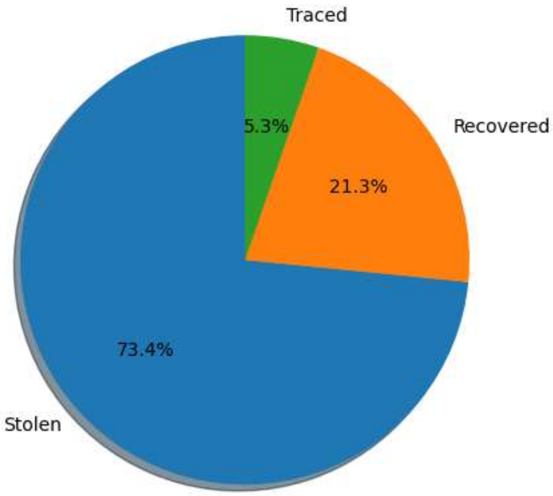
Actions taken on stolen automobiles

```
import pandas as pd
```

```
new = df1[['Auto_Theft_Stolen', 'Auto_Theft_Recovered', 'Auto_Theft_Coordinated/Traced']].copy()

stolen_df = new['Auto_Theft_Stolen'].sum()
theft_df = new['Auto_Theft_Recovered'].sum()
traced_df = new['Auto_Theft_Coordinated/Traced'].sum()

fig = plt.figure()
ax = fig.add_axes([0,0,1,1])


total = [stolen_df,theft_df,traced_df]
columns = ['Stolen','Recovered','Traced']

ax.bar(columns,total)
plt.show()
```



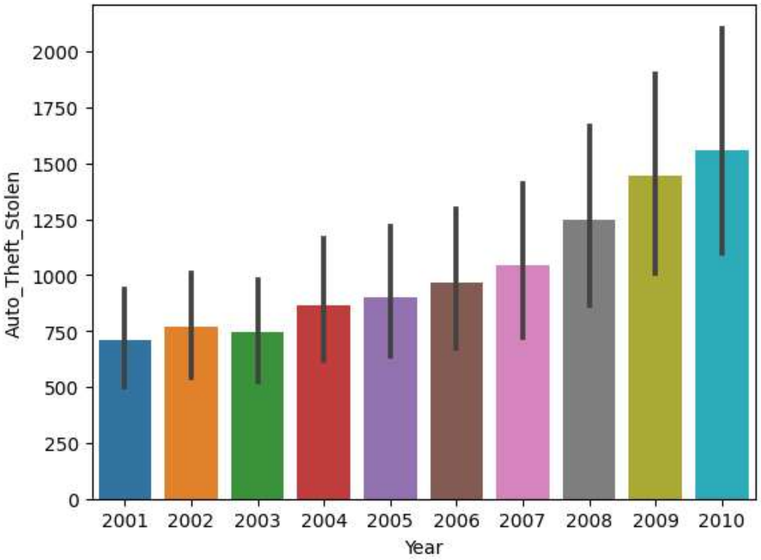
```
fig1, ax1 = plt.subplots()
ax1.pie(total, labels=columns, autopct='%1.1f%%',
        shadow=True, startangle=90)
ax1.axis('equal')  # Equal aspect ratio ensures that pie is drawn as a circle.

plt.show()
```



Stolen automobiles recorded each year

```
sns.barplot(x="Year", y="Auto_Theft_Stolen", data=df1)
```

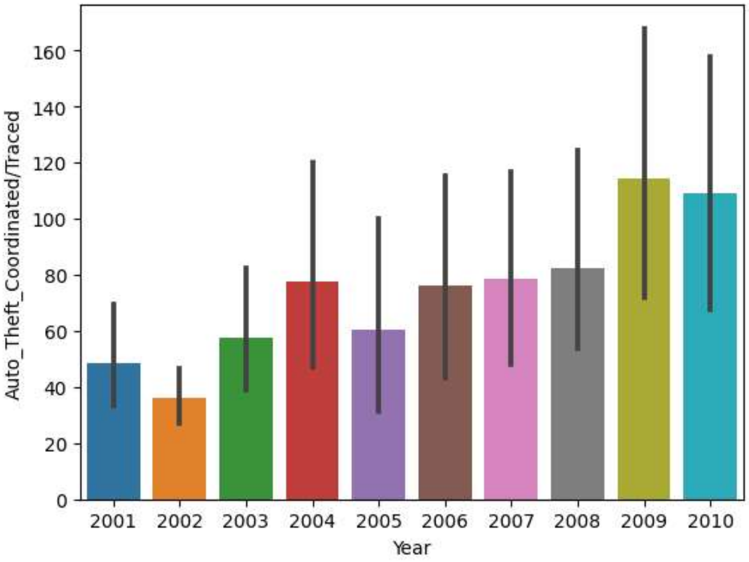
```
<Axes: xlabel='Year', ylabel='Auto_Theft_Stolen'>
```



Stolen automobiles traced each year

```
sns.barplot(x="Year", y="Auto_Theft_Coordinated/Traced", data=df1)
```

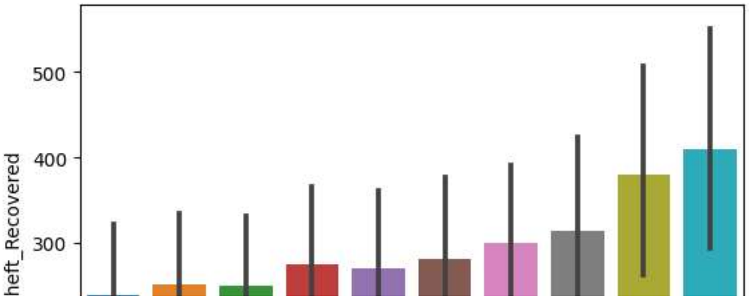
```
<Axes: xlabel='Year', ylabel='Auto_Theft_Coordinated/Traced'>
```



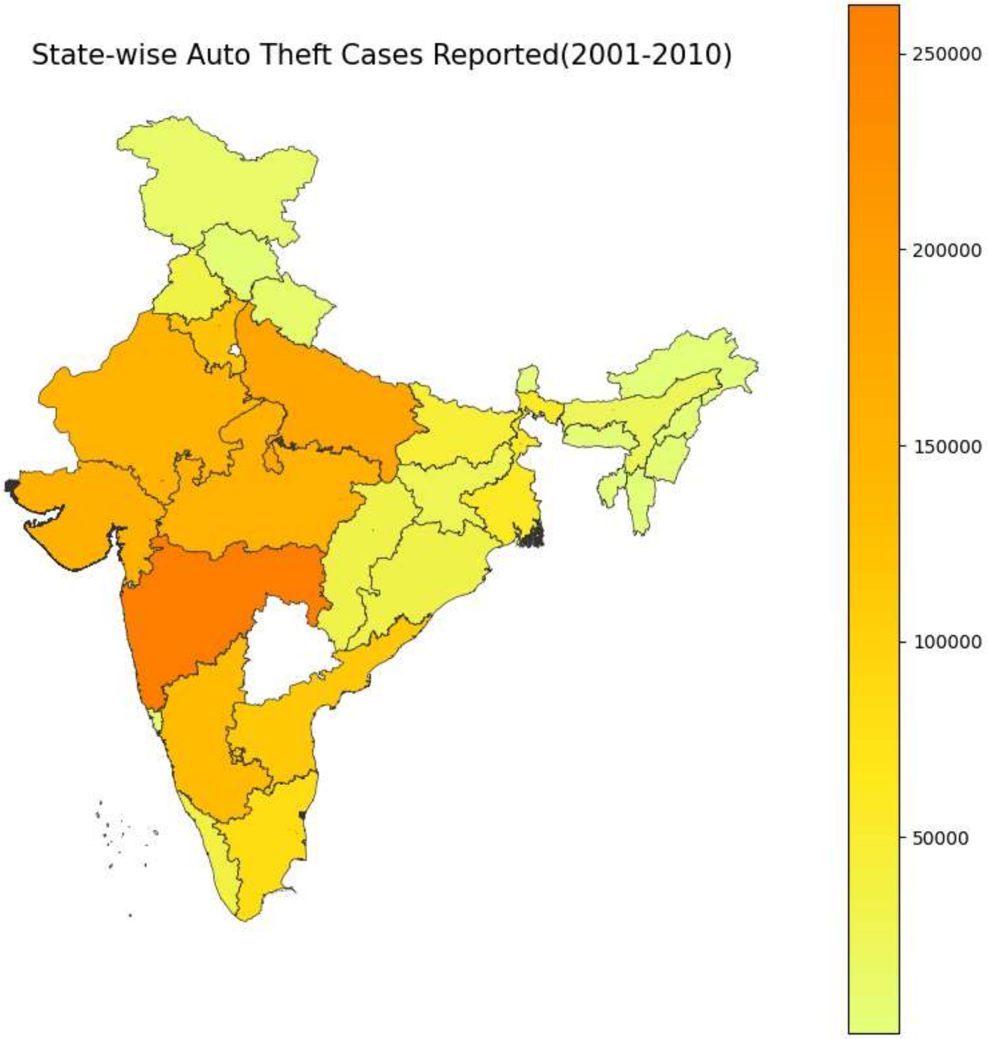
Stolen automobiles recovered each year

```
sns.barplot(x="Year", y="Auto_Theft_Recovered", data=df1)
```

```
<Axes: xlabel='Year', ylabel='Auto_Theft_Recovered'>
```

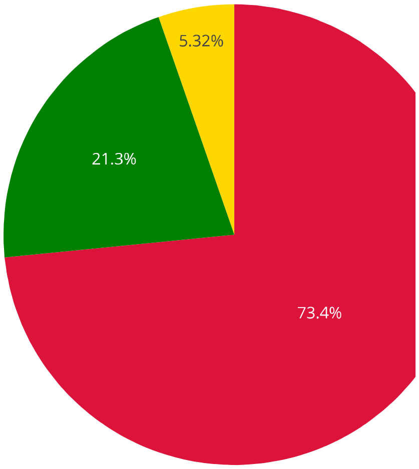


```
import geopandas as gpd

g5 = pd.DataFrame(df1.groupby(['Area_Name'])['Auto_Theft_Stolen'].sum().reset_index())
g5.columns = ['State/UT','Vehicle_Stolen']
g5.replace(to_replace='Arunachal Pradesh',value='Arunanchal Pradesh',inplace=True)

shp_gdf = gpd.read_file('/content/drive/MyDrive/Data visualozation/Crime/Indian map/India States/Indian_states.shp')
merged = shp_gdf.set_index('st_nm').join(g5.set_index('State/UT'))

fig, ax = plt.subplots(1, figsize=(10, 10))
ax.axis('off')
ax.set_title('State-wise Auto Theft Cases Reported(2001-2010)',
             fontdict={'fontsize': '15', 'fontweight' : '3'})
fig = merged.plot(column='Vehicle_Stolen', cmap='Wistia', linewidth=0.5, ax=ax, edgecolor='0.2',legend=True)
```



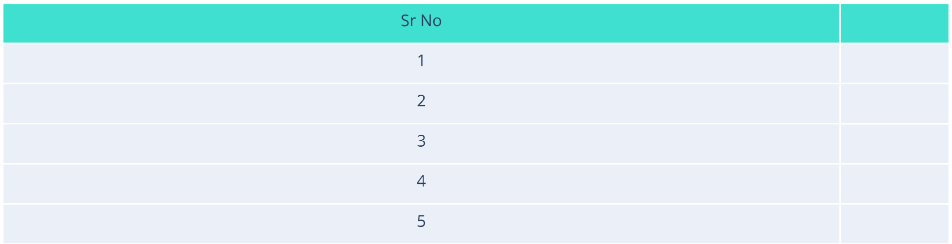
```
import pandas as pd
import plotly.graph_objs as go

auto_theft_traced = df1['Auto_Theft_Coordinated/Traced'].sum()
auto_theft_recovered = df1['Auto_Theft_Recovered'].sum()
```

```
auto_theft_stolen = df1['Auto_Theft_Stolen'].sum()

vehicle_group = ['Vehicles Stolen','Vehicles Traced','Vehicles Recovered']
vehicle_vals = [auto_theft_stolen,auto_theft_traced,auto_theft_recovered]

colors = ['crimson','gold','green']

fig = go.Figure(data=[go.Pie(labels=vehicle_group, values=vehicle_vals,sort=False,
                            marker=dict(colors=colors),textfont_size=12)])

fig.show()
```



```
import pandas as pd
import plotly.express as px

g5 = pd.DataFrame(df1.groupby(['Year'])['Auto_Theft_Stolen'].sum().reset_index())
g5.columns = ['Year','Vehicles Stolen']

fig = px.bar(g5, x='Year', y='Vehicles Stolen', color_discrete_sequence=['#17becf'])
fig.show()
```

```
vehicle_list = ['Motor Cycles/ Scooters','Motor Car/Taxi/Jeep','Buses',
               'Goods carrying vehicles (Trucks/Tempo etc)','Other Motor vehicles']

sr_no = [1,2,3,4,5]

fig = go.Figure(data=[go.Table(header=dict(values=['Sr No','Vehicle type'],
                                          fill_color='turquoise',
                                           height=30),
                 cells=dict(values=[sr_no,vehicle_list],
                            height=30))
                     ])
fig.show()
```

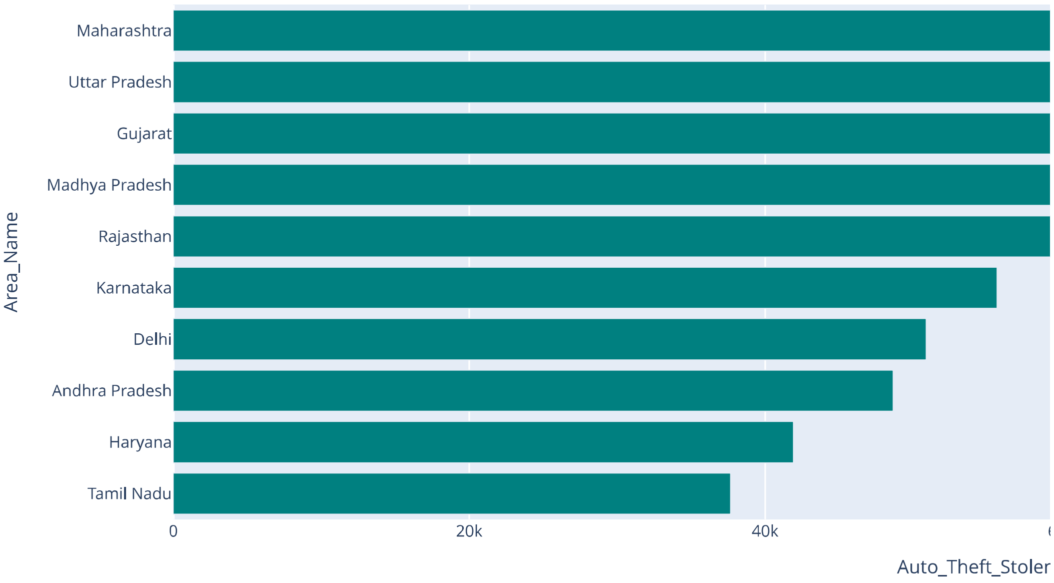


Sr No	
1	
2	
3	
4	
5	

```
motor_c = df1[df1['Sub_Group_Name']=='1. Motor Cycles/ Scooters']

g8 = pd.DataFrame(motor_c.groupby(['Area_Name'])['Auto_Theft_Stolen'].sum().reset_index())
g8_sorted = g8.sort_values(['Auto_Theft_Stolen'],ascending=True)
fig = px.bar(g8_sorted, y='Area_Name', x='Auto_Theft_Stolen',
             orientation='h',color_discrete_sequence=['#008080'])
fig.show()
```

Showing top 10 ststes

```
motor_c = df1[df1['Sub_Group_Name']=='1. Motor Cycles/ Scooters']

g8 = pd.DataFrame(motor_c.groupby(['Area_Name'])['Auto_Theft_Stolen'].sum().reset_index())
g8_sorted = g8.sort_values(['Auto_Theft_Stolen'],ascending=True)
fig = px.bar(g8_sorted.iloc[-10:,:], y='Area_Name', x='Auto_Theft_Stolen',
             orientation='h',color_discrete_sequence=['#008080'])
fig.show()
```



✓ 0s completed at 10:06 PM ● ×