In [27]:

```
import numpy as np
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
import warnings
warnings.filterwarnings('ignore')
```

In [28]:

```
data = pd.read_csv("shootings_2022.csv")
```

In [29]:

```
data
```

Out[29]:

	Date	State	Dead	Injured	Total	Description
0	03-03-2022	Nevada	1	6	7	A dispute between neighbors led to a shooting ...
1	02-03-2022	Maryland	1	3	4	Four men were shot in the Walbrook neighborhoo...
2	28-02-2022	California	5	0	5	A man fatally shot himself, his three children...
3	27-02-2022	California	0	4	4	An argument between two groups of people at a ...
4	27-02-2022	Louisiana	0	4	4	An argument at a business in the southeast par...
...	...	...	...	...	...	...
76	01-01-2022	Georgia	1	3	4	After officers were dispatched to respond to a...
77	01-01-2022	Wisconsin	1	3	4	A man was killed and three others wounded in a...
78	01-01-2022	Indiana	0	4	4	Four people were wounded at a New Years party ...
79	01-01-2022	Colorado	2	2	4	Two adults were killed and two wounded in an e...
80	01-01-2022	Missouri	0	4	4	Four adults were wounded in the early morning ...

81 rows × 6 columns

In [30]:

```
data.shape
```

Out[30]:

```
(81, 6)
```

In [31]:

```
data.head()
```

Out[31]:

	Date	State	Dead	Injured	Total	Description
0	03-03-2022	Nevada	1	6	7	A dispute between neighbors led to a shooting ...
1	02-03-2022	Maryland	1	3	4	Four men were shot in the Walbrook neighborhoo...
2	28-02-2022	California	5	0	5	A man fatally shot himself, his three children...
3	27-02-2022	California	0	4	4	An argument between two groups of people at a ...
4	27-02-2022	Louisiana	0	4	4	An argument at a business in the southeast par...

In [32]:

```
data.tail()
```

Out[32]:

	Date	State	Dead	Injured	Total	Description
76	01-01-2022	Georgia	1	3	4	After officers were dispatched to respond to a...
77	01-01-2022	Wisconsin	1	3	4	A man was killed and three others wounded in a...
78	01-01-2022	Indiana	0	4	4	Four people were wounded at a New Years party ...
79	01-01-2022	Colorado	2	2	4	Two adults were killed and two wounded in an e...
80	01-01-2022	Missouri	0	4	4	Four adults were wounded in the early morning ...

In [33]:

```
data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 81 entries, 0 to 80
Data columns (total 6 columns):
 #   Column       Non-Null Count  Dtype 
---  ------       --------------  ----- 
 0   Date         81 non-null     object
 1   State        81 non-null     object
 2   Dead         81 non-null     int64 
 3   Injured      81 non-null     int64 
 4   Total        81 non-null     int64 
 5   Description  81 non-null     object
dtypes: int64(3), object(3)
memory usage: 3.9+ KB
```

In [34]:

```
data.describe()
```

Out[34]:

	Dead	Injured	Total
count	81.000000	81.000000	81.000000
mean	1.135802	3.802469	4.938272
std	1.339338	2.288120	2.063648
min	0.000000	0.000000	4.000000
25%	0.000000	3.000000	4.000000
50%	1.000000	4.000000	4.000000
75%	1.000000	4.000000	5.000000
max	6.000000	14.000000	16.000000

In [35]:

```
data.isnull().sum()
```

Out[35]:

```
Date           0
State          0
Dead           0
Injured        0
Total          0
Description    0
dtype: int64
```

In [36]:

```
total_victims_state = data.groupby('State').sum()
print('Total Victims = ' ,total_victims_state['Total'].sum())
total_victims_state.sort_values(by = 'Total', ascending = False)
```

```
Total Victims =  400
```

Out[36]:

State	Dead	Injured	Total
California	15	38	53
Texas	15	22	37
Georgia	9	25	34
Missouri	5	23	28
Louisiana	2	20	22
Wisconsin	8	13	21
Nevada	2	19	21
Florida	3	15	18
Illinois	3	15	18
Oregon	2	14	16
Tennessee	5	8	13
North Carolina	2	10	12
Arizona	2	9	11
Alabama	1	10	11
Mississippi	2	7	9
Pennsylvania	1	8	9
South Carolina	1	8	9
New Mexico	1	7	8
Maryland	4	4	8
Colorado	4	4	8
Virginia	1	4	5
Washington D.C.	1	4	5
Minnesota	1	3	4
New York	0	4	4
Indiana	0	4	4
Arkansas	1	3	4
Washington	1	3	4
Nebraska	0	4	4

In [37]:

```
total_victims_state.sort_values(by = 'Total', ascending = False).head()
```

Out[37]:

State	Dead	Injured	Total
California	15	38	53
Texas	15	22	37
Georgia	9	25	34
Missouri	5	23	28
Louisiana	2	20	22

In [38]:

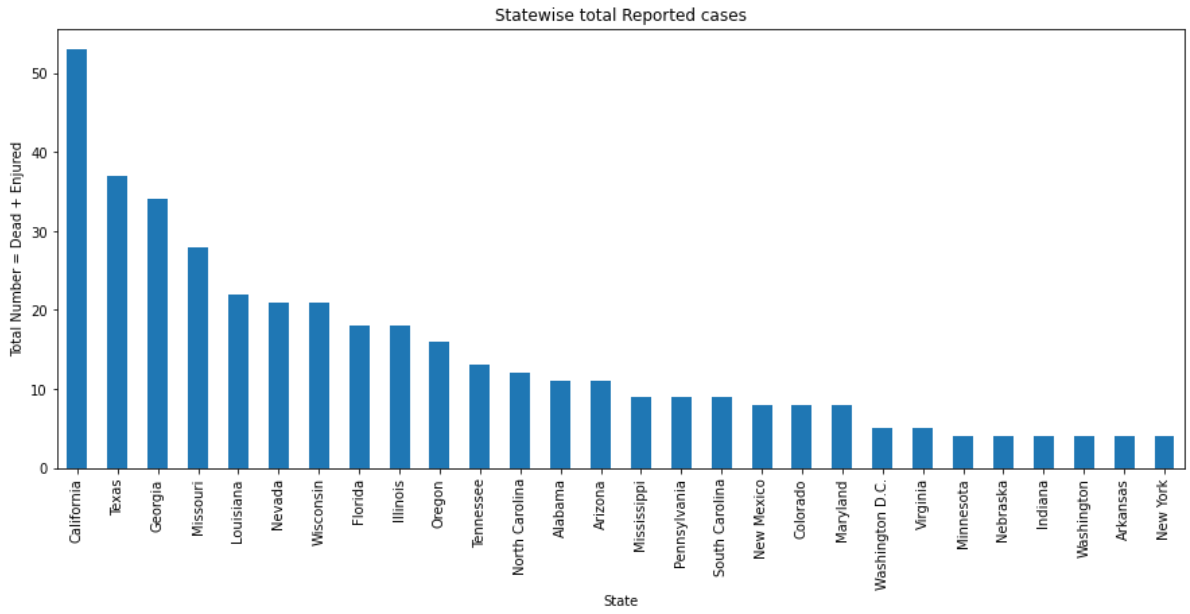
```
total_victims_state.sort_values(by = 'Total', ascending = False).tail()
```

Out[38]:

State	Dead	Injured	Total
New York	0	4	4
Indiana	0	4	4
Arkansas	1	3	4
Washington	1	3	4
Nebraska	0	4	4

In [39]:

```
plt.subplots(figsize = (15, 6))
cr = total_victims_state['Total'].sort_values(ascending = False)
ax = cr.plot.bar()
ax.set_xlabel('State')
ax.set_ylabel('Total Number = Dead + Enjured')
ax.set_title('Statewise total Reported cases')
plt.show()
print(cr)
```




```
State
California          53
Texas               37
Georgia             34
Missouri            28
Louisiana           22
Nevada              21
Wisconsin           21
Florida             18
Illinois            18
Oregon              16
Tennessee           13
North Carolina      12
Alabama             11
Arizona             11
Mississippi          9
Pennsylvania         9
South Carolina       9
New Mexico           8
Colorado             8
Maryland             8
Washington D.C.      5
Virginia             5
Minnesota            4
Nebraska             4
Indiana              4
Washington           4
Arkansas             4
```

```
New York            4
Name: Total, dtype: int64
```

In [40]:

```
california_victims = data[data['State'] == 'California']
```

In [41]:

```
california_victims.head()
```

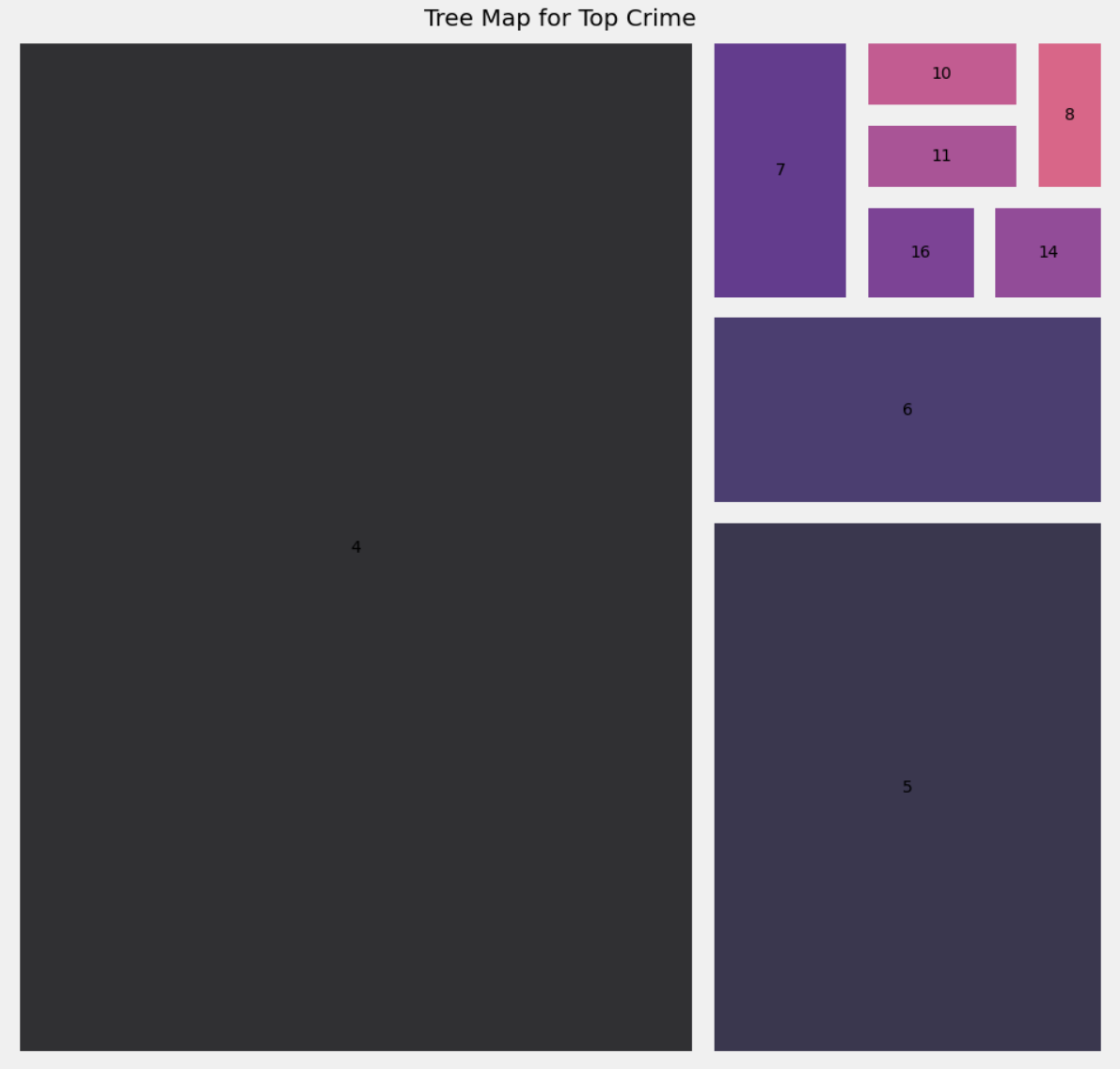
Out[41]:

	Date	State	Dead	Injured	Total	Description
2	28-02-2022	California	5	0	5	A man fatally shot himself, his three children...
3	27-02-2022	California	0	4	4	An argument between two groups of people at a ...
21	19-02-2022	California	0	7	7	A man shot seven people outside a bar in the e...
28	12-02-2022	California	0	4	4	Outside an Italian restaurant hosting a party ...
33	06-02-2022	California	2	2	4	A chance encounter between two rival gangs at ...

In [45]:

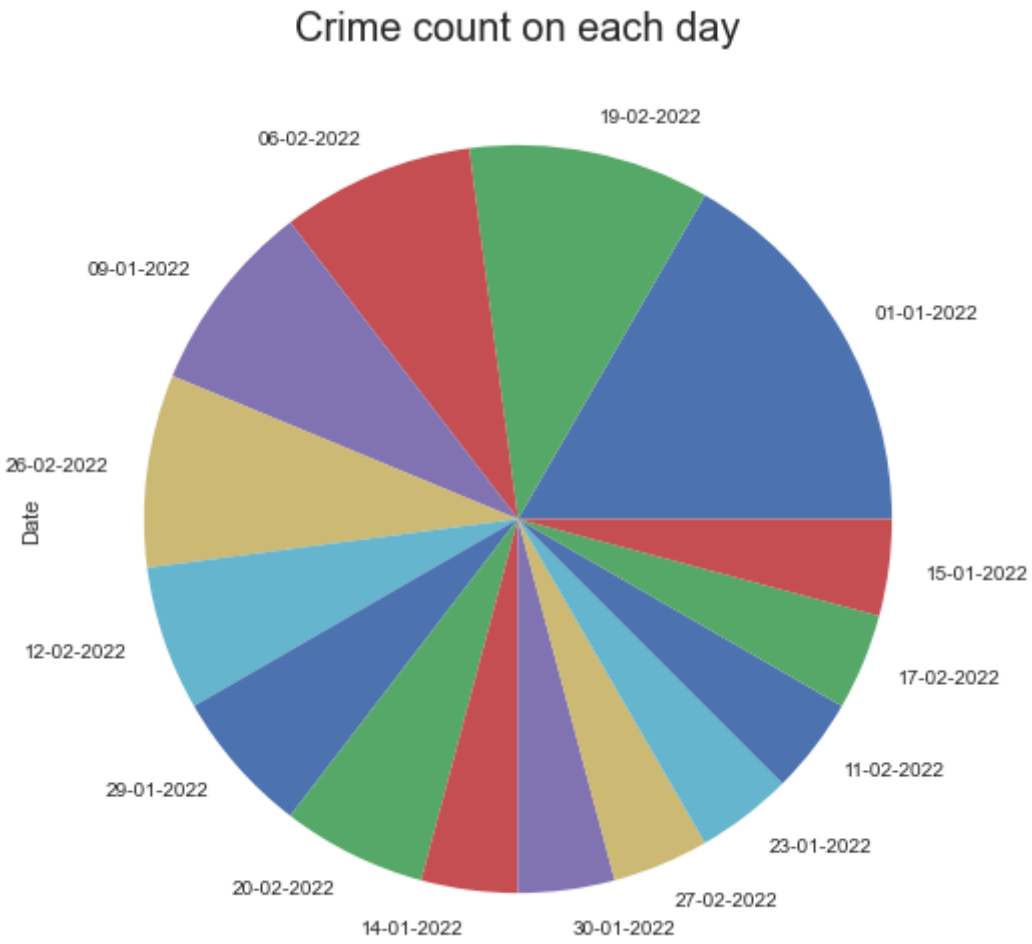
```
import squarify

y = data['Total'].value_counts().head(25)
plt.rcParams['figure.figsize'] = (15, 15)
plt.style.use('fivethirtyeight')
color = plt.cm.magma(np.linspace(0, 1, 15))
squarify.plot(sizes = y.values, label = y.index, alpha=.8, color = color, pad = True)
plt.title('Tree Map for Top Crime', fontsize = 20)
plt.axis('off')
plt.show()
```



In [47]:

```
plt.style.use('seaborn')
data['Date'].value_counts().head(15).plot.pie(figsize = (15, 8))
plt.title('Crime count on each day',fontsize = 20)
plt.xticks(rotation = 90)
plt.show()
```



In [48]:

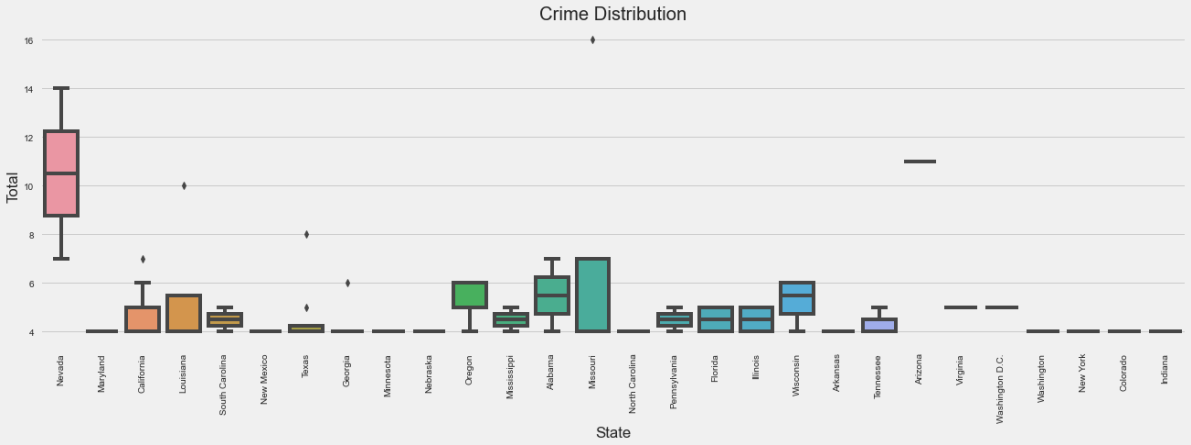
```
data['Date'] = pd.to_datetime(data['Date'])
data['Month'] = data['Date'].dt.month
plt.style.use('fivethirtyeight')
plt.rcParams['figure.figsize'] = (15, 8)
sns.countplot(data['Month'], palette = 'autumn',)
plt.title('Crimes in each Months', fontsize = 20)
plt.show()
```

In [58]:

```
plt.figure(figsize=(20,6))
ax = sns.boxplot(x='State',y='Total',data=data)
plt.xticks(rotation=90)
ax.set_title("Crime Distribution")
```

Out[58]:

```
Text(0.5, 1.0, 'Crime Distribution')
```

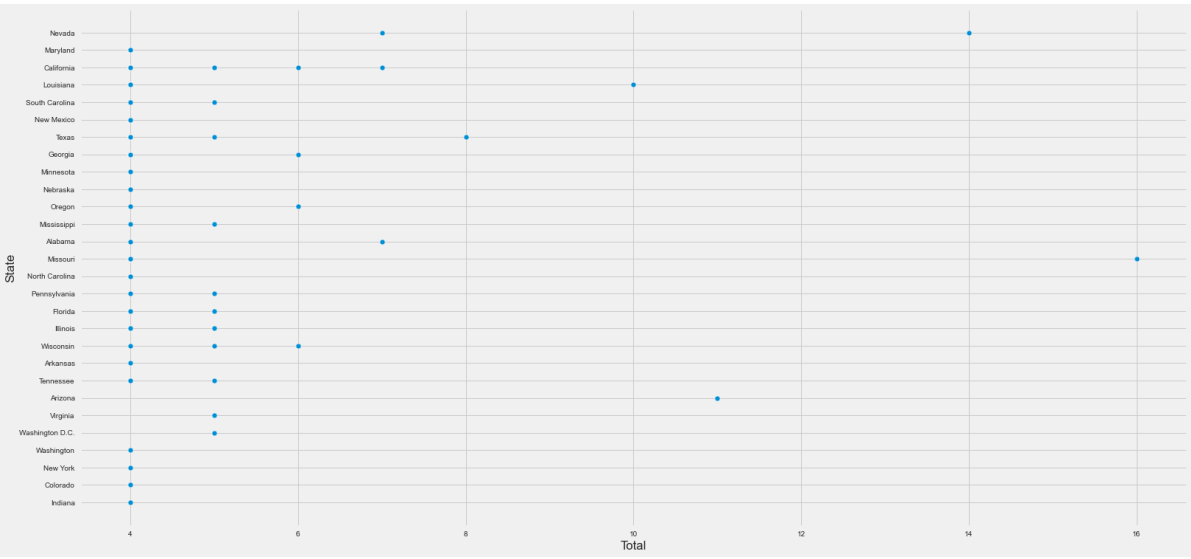


In [60]:

```
plt.figure(figsize=(24,12))
sns.scatterplot(x="Total",y="State",data=data)
```

Out[60]:

```
<matplotlib.axes._subplots.AxesSubplot at 0x819a575e0>
```



In [50]:

```
data.head()
```

Out[50]:

	Date	State	Dead	Injured	Total	Description	Month
0	2022-03-03	Nevada	1	6	7	A dispute between neighbors led to a shooting ...	3
1	2022-02-03	Maryland	1	3	4	Four men were shot in the Walbrook neighborhoo...	2
2	2022-02-28	California	5	0	5	A man fatally shot himself, his three children...	2
3	2022-02-27	California	0	4	4	An argument between two groups of people at a ...	2
4	2022-02-27	Louisiana	0	4	4	An argument at a business in the southeast par...	2

In [51]:

```
x = data.drop(['Date', 'State', 'Description'], axis = 1)
y = data['Total']
```

In [52]:

```
x.shape
```

Out[52]:

```
(81, 4)
```

In [53]:

```
y.shape
```

Out[53]:

```
(81,)
```

In [54]:

```
from sklearn.linear_model import LogisticRegression
from sklearn.model_selection import train_test_split
X_train, X_test, y_train, y_test = train_test_split(x, y, test_size = 0.2)
```

In [55]:

```
model = LogisticRegression()
model.fit(X_train, y_train)
```

Out[55]:

```
LogisticRegression()
```

In [56]:

```
y_pred = model.predict(X_test)
```

In [57]:

```
print("Training Accuracy :", model.score(X_train, y_train))
print("Testing Accuracy :", model.score(X_test, y_test))
```

```
Training Accuracy : 0.9375
Testing Accuracy : 0.8235294117647058
```

In [61]:

```
from sklearn.linear_model import LinearRegression
from sklearn.model_selection import train_test_split
X_train, X_test, y_train, y_test = train_test_split(x, y, test_size = 0.2)
```

In [62]:

```
model1= LinearRegression()
model1.fit(X_train, y_train)
```

Out[62]:

```
LinearRegression()
```

In [63]:

```
y_pred = model1.predict(X_test)
```

In [64]:

```
print("Training Accuracy :", model1.score(X_train, y_train))
print("Testing Accuracy :", model1.score(X_test, y_test))
```

```
Training Accuracy : 1.0
Testing Accuracy : 1.0
```