DataSet: Amazon_Sales_Analysis[kaggle].

Discription: Analyze Amazon sales data to check the buyers preferred choice in the sales

Importing Libraries

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
%matplotlib inline
import seaborn as sns
```

Double-click (or enter) to edit

Load Dataset

```
df=pd.read_csv('/content/Amazon Sale Report.csv')
df.head(3)
```

	index	Order ID	Date	Status	Fulfilment	Sales Channel	ship-service-level	Category	Size	Courier Status	..
0	0	405-8078784-5731545	04-30-22	Cancelled	Merchant	Amazon.in	Standard	T-shirt	S	On the Way	
1	1	171-9198151-1101146	04-30-22	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	Shirt	3XL	Shipped	
2	2	404-0687676-7273146	04-30-22	Shipped	Amazon	Amazon.in	Expedited	Shirt	XL	Shipped	

3 rows × 21 columns

```
df.shape
```

```
(128976, 21)
```

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 128976 entries, 0 to 128975
Data columns (total 21 columns):
 #   Column              Non-Null Count   Dtype
---  ------              --------------   -----
 0   index               128976 non-null  int64
 1   Order ID            128976 non-null  object
 2   Date                128976 non-null  object
 3   Status              128976 non-null  object
 4   Fulfilment          128976 non-null  object
 5   Sales Channel       128976 non-null  object
 6   ship-service-level  128976 non-null  object
 7   Category            128976 non-null  object
 8   Size                128976 non-null  object
 9   Courier Status      128976 non-null  object
 10  Qty                 128976 non-null  int64
 11  currency            121176 non-null  object
 12  Amount              121176 non-null  float64
 13  ship-city           128941 non-null  object
 14  ship-state          128941 non-null  object
 15  ship-postal-code    128941 non-null  float64
 16  ship-country        128941 non-null  object
 17  B2B                 128976 non-null  bool
 18  fulfilled-by        39263 non-null   object
 19  New                 0 non-null       float64
 20  PendingS            0 non-null       float64
dtypes: bool(1), float64(4), int64(2), object(14)
memory usage: 19.8+ MB
```

row 19&20 are outliers

Cleaning And Analysis

```
#drop unrelated/blank columns
df.drop(['New','PendingS'], axis=1, inplace=True)
```

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 128976 entries, 0 to 128975
Data columns (total 19 columns):
 #   Column              Non-Null Count   Dtype  
---  ------              --------------   -----  
 0   index               128976 non-null  int64  
 1   Order ID            128976 non-null  object 
 2   Date                128976 non-null  object 
 3   Status              128976 non-null  object 
 4   Fulfilment          128976 non-null  object 
 5   Sales Channel       128976 non-null  object 
 6   ship-service-level  128976 non-null  object 
 7   Category            128976 non-null  object 
 8   Size                128976 non-null  object 
 9   Courier Status      128976 non-null  object 
 10  Qty                 128976 non-null  int64  
 11  currency            121176 non-null  object 
 12  Amount              121176 non-null  float64
 13  ship-city           128941 non-null  object 
 14  ship-state          128941 non-null  object 
 15  ship-postal-code    128941 non-null  float64
 16  ship-country        128941 non-null  object 
 17  B2B                 128976 non-null  bool   
 18  fulfilled-by        39263 non-null   object 
dtypes: bool(1), float64(2), int64(2), object(14)
memory usage: 17.8+ MB
```

Checking null value

```
pd.isnull(df)
```

Show hidden output

```
pd.isnull(df).sum()
```

```
index                   0
Order ID                0
Date                    0
Status                  0
Fulfilment              0
Sales Channel           0
ship-service-level      0
Category                0
Size                    0
Courier Status          0
Qty                     0
currency             7800
Amount               7800
ship-city              35
ship-state             35
ship-postal-code       35
ship-country           35
B2B                     0
fulfilled-by        89713
dtype: int64
```

null values detect

1. currency
2. Amount
3. fulfilled_by

```
df.dropna(inplace=True)
```

```
df.columns
```

```
Index(['index', 'Order ID', 'Date', 'Status', 'Fulfilment', 'Sales Channel',
       'ship-service-level', 'Category', 'Size', 'Courier Status', 'Qty',
       'currency', 'Amount', 'ship-city', 'ship-state', 'ship-postal-code',
       'ship-country', 'B2B', 'fulfilled-by'],
      dtype='object')
```

```
# change data type
df['ship-postal-code']=df['ship-postal-code'].astype('int')
```

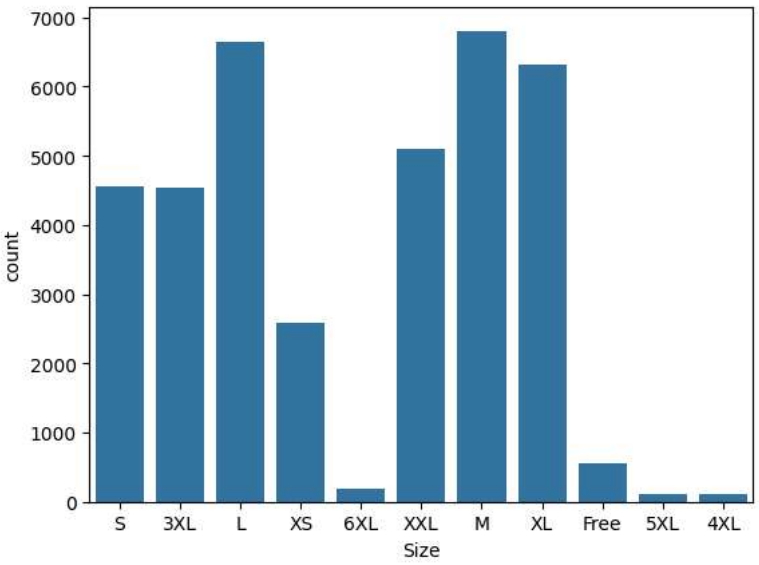
```
#use describe() for specific columns
df[['Qty','Amount']].describe()
```

	Qty	Amount
count	37514.000000	37514.000000
mean	0.867383	646.553960
std	0.354160	279.952414
min	0.000000	0.000000
25%	1.000000	458.000000
50%	1.000000	629.000000
75%	1.000000	771.000000
max	5.000000	5495.000000

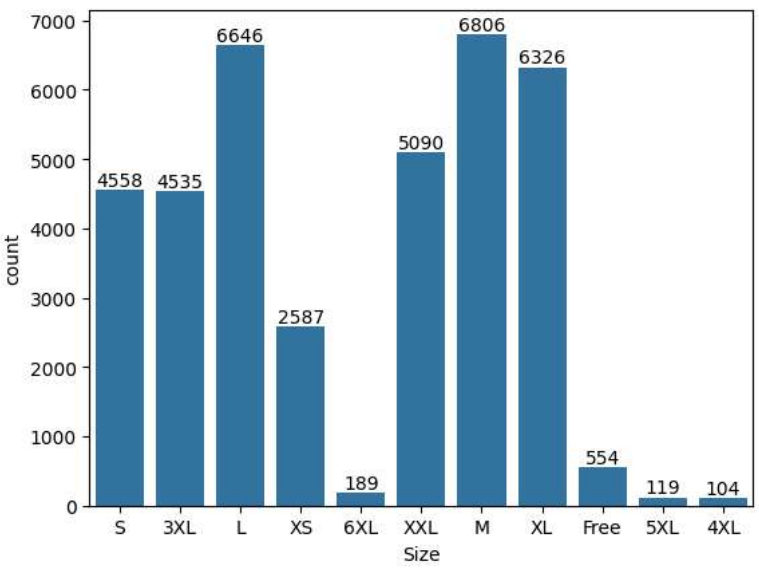
Exploratory Data Analysis & Visualization

Size

```
ax=sns.countplot(x='Size' ,data=df)
```




```
ax=sns.countplot(x='Size' ,data=df)

for bars in ax.containers:
    ax.bar_label(bars)
```



Note: From above Graph you can see that most of the people buys M-Size

Group By

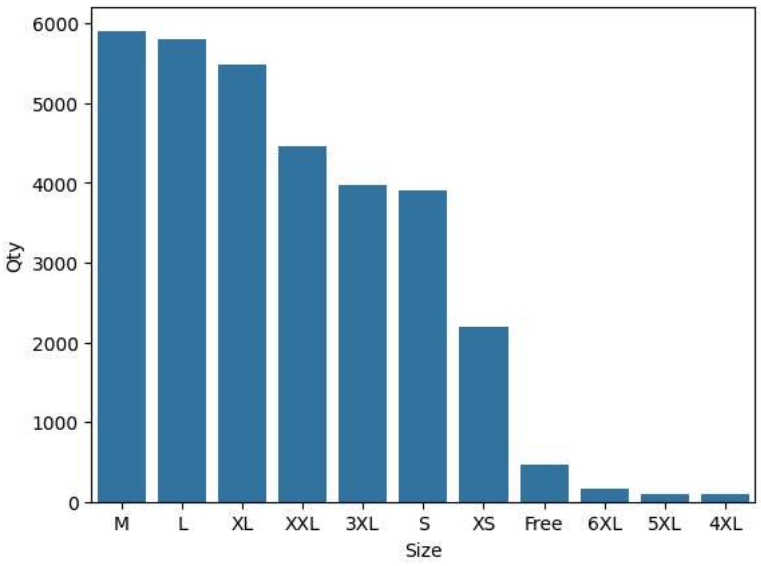
The groupby() function in pandas is used to group data based on one or more columns in a DataFrame

```
df.groupby(['Size'], as_index=False)['Qty'].sum().sort_values(by='Qty',ascending=False)
```

	Size	Qty
6	M	5905
5	L	5795
8	XL	5481
10	XXL	4465
0	3XL	3972
7	S	3896
9	XS	2191
4	Free	467
3	6XL	170
2	5XL	104
1	4XL	93

```
S_Qty=df.groupby(['Size'], as_index=False)['Qty'].sum().sort_values(by='Qty',ascending=False)

sns.barplot(x='Size',y='Qty', data=S_Qty)
```

```
<Axes: xlabel='Size', ylabel='Qty'>
```

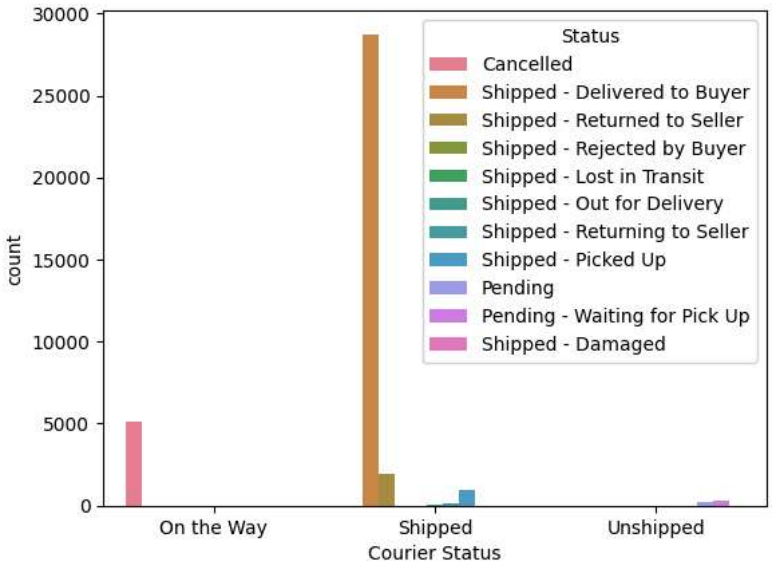


Note: From above Graph you can see that most of the Qty buys M-Size in the sales

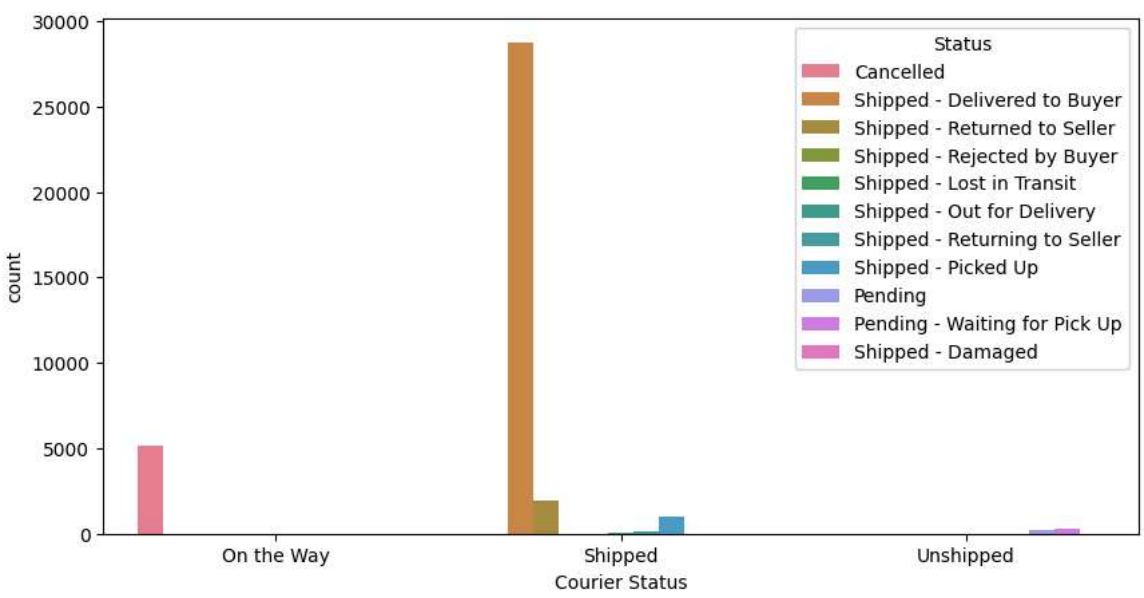
Courier Status

```
sns.countplot(data=df, x='Courier Status',hue= 'Status')
```

```
<Axes: xlabel='Courier Status', ylabel='count'>
```



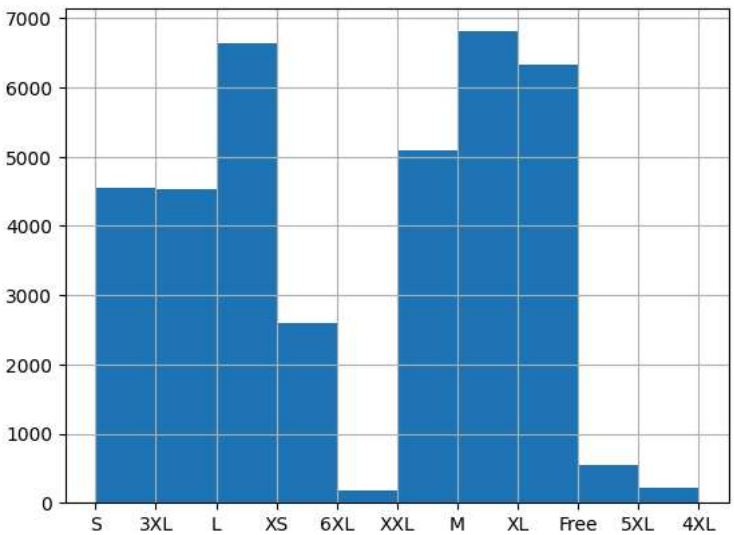

```
plt.figure(figsize=(10,5))

ax=sns.countplot(data=df, x='Courier Status',hue= 'Status')

plt.show()
```



Note: From above Graph the majority of the orders are shipped through the courier.

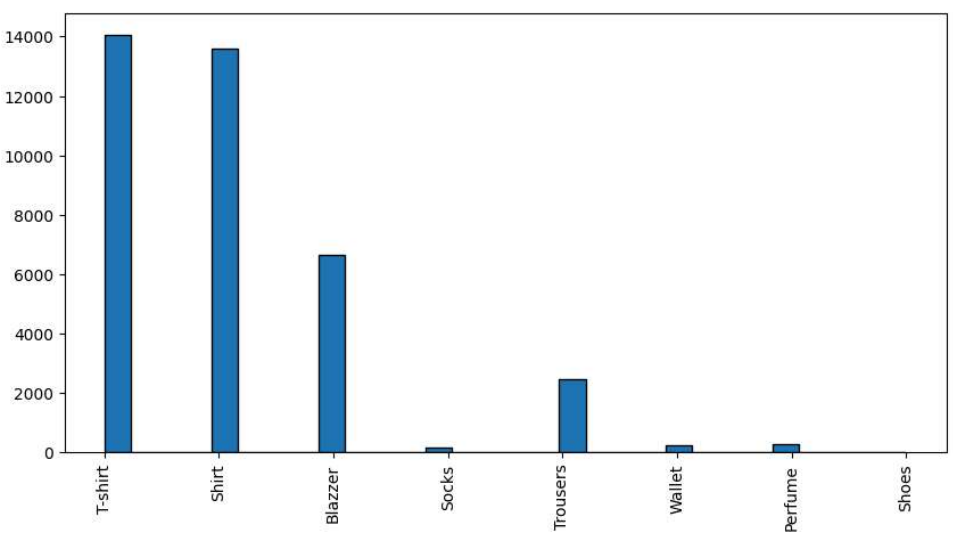
```
#histogram
df['Size'].hist()
```

```
<Axes: >
```



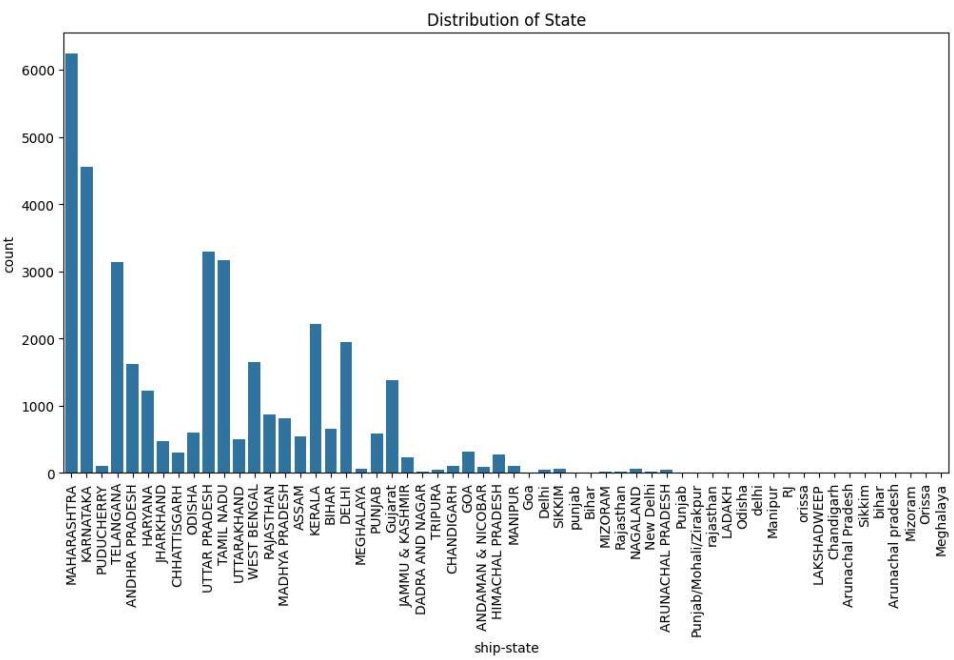

```
df['Category'] = df['Category'].astype(str)
```

```
column_data = df['Category']
plt.figure(figsize=(10, 5))
plt.hist(column_data, bins=30, edgecolor='Black')
plt.xticks(rotation=90)
plt.show()
```



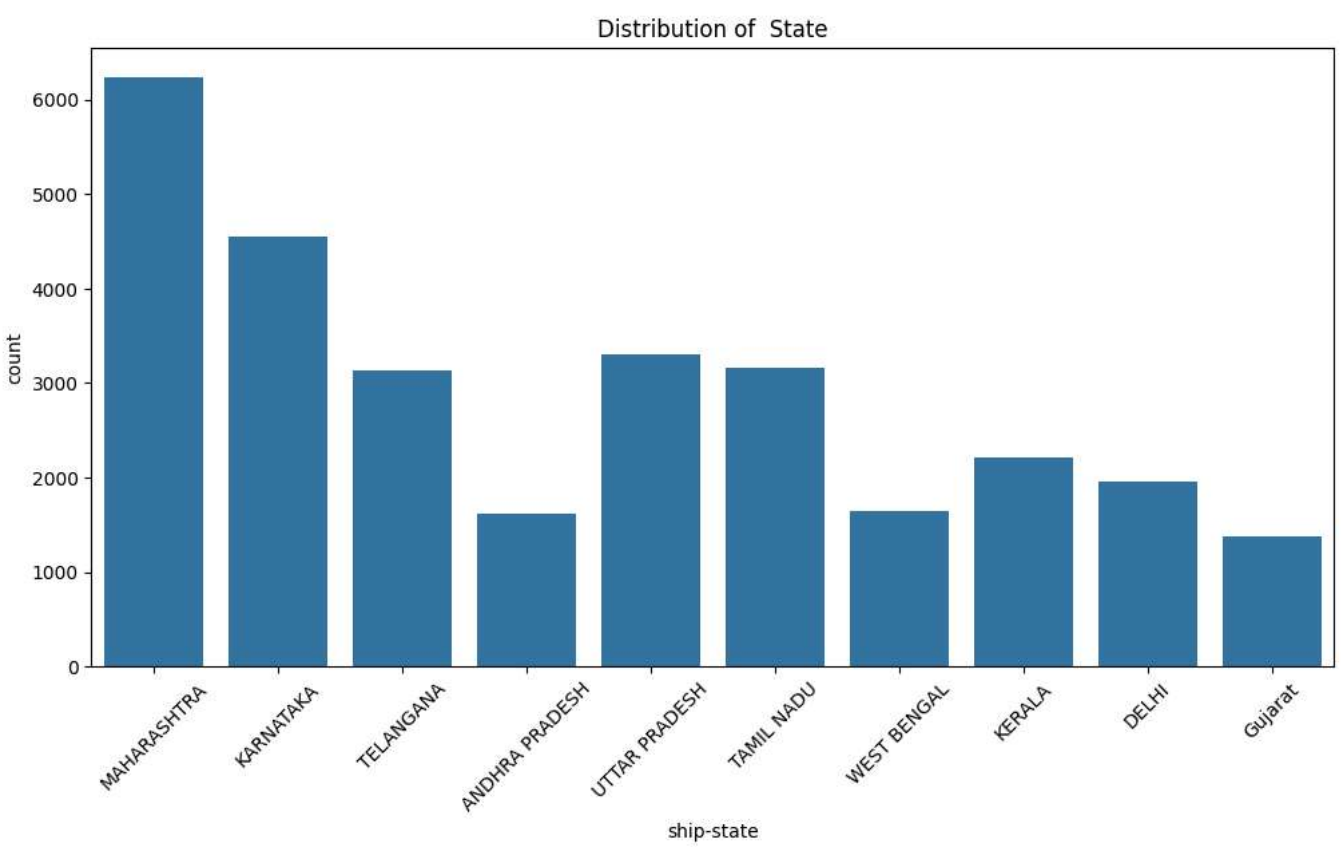
Note: From above Graph you can see that most of the buyers are T-shirt

```
# Plot count of cities by state
plt.figure(figsize=(12, 6))
sns.countplot(data=df, x='ship-state')
plt.xlabel('ship-state')
plt.ylabel('count')
plt.title('Distribution of State')
plt.xticks(rotation=90)
plt.show()
```




```
# top_10_States
top_10_state = df['ship-state'].value_counts().head(10)
# Plot count of cities by state
plt.figure(figsize=(12, 6))
```

```
sns.countplot(data=df[df['ship-state'].isin(top_10_state.index)], x='ship-state')
plt.xlabel('ship-state')
plt.ylabel('count')
plt.title('Distribution of  State')
plt.xticks(rotation=45)
plt.show()
```



Note: From above Graph you can see that most of the buyers are Maharashtra state

Conclusion

The data analysis reveals that the business has a significant customer base in Maharashtra state, mainly serves retailers, fulfills orders through Amazon, experiences high demand for T-shirts, and sees M-Size as the preferred choice among buyers.