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

df = pd.read_csv("Amazon Sale Report.csv", encoding='unicode_escape')

df.shape
```

```
(128976, 21)
```

```
df.head()
```

```
   index             Order ID      Date                          Status
\
0      0  405-8078784-5731545  04-30-22                       Cancelled

1      1  171-9198151-1101146  04-30-22  Shipped - Delivered to Buyer

2      2  404-0687676-7273146  04-30-22                        Shipped

3      3  403-9615377-8133951  04-30-22                       Cancelled

4      4  407-1069790-7240320  04-30-22                        Shipped


  Fulfilment Sales Channel ship-service-level  Category Size Courier
Status  \
0   Merchant     Amazon.in           Standard   T-shirt    S     On
the Way
1   Merchant     Amazon.in           Standard     Shirt  3XL
Shipped
2     Amazon     Amazon.in          Expedited     Shirt   XL
Shipped
3   Merchant     Amazon.in           Standard   Blazzer    L     On
the Way
4     Amazon     Amazon.in          Expedited  Trousers  3XL
Shipped

   ...  currency  Amount    ship-city   ship-state ship-postal-code  \
0  ...       INR  647.62       MUMBAI  MAHARASHTRA         400081.0
1  ...       INR  406.00    BENGALURU    KARNATAKA         560085.0
2  ...       INR  329.00  NAVI MUMBAI  MAHARASHTRA         410210.0
3  ...       INR  753.33   PUDUCHERRY   PUDUCHERRY         605008.0
4  ...       INR  574.00      CHENNAI   TAMIL NADU         600073.0

   ship-country    B2B  fulfilled-by New  PendingS
0            IN  False     Easy Ship NaN       NaN
1            IN  False     Easy Ship NaN       NaN
2            IN   True           NaN NaN       NaN
```

```
3            IN  False     Easy Ship NaN       NaN
4            IN  False           NaN NaN       NaN

[5 rows x 21 columns]
```

```
df.tail()
```

```
         index             Order ID      Date   Status Fulfilment  \
128971  128970  406-6001380-7673107  05-31-22  Shipped     Amazon
128972  128971  402-9551604-7544318  05-31-22  Shipped     Amazon
128973  128972  407-9547469-3152358  05-31-22  Shipped     Amazon
128974  128973  402-6184140-0545956  05-31-22  Shipped     Amazon
128975  128974  408-7436540-8728312  05-31-22  Shipped     Amazon

       Sales Channel ship-service-level Category Size Courier
Status  ...  \
128971     Amazon.in          Expedited    Shirt   XL
Shipped  ...
128972     Amazon.in          Expedited  T-shirt    M
Shipped  ...
128973     Amazon.in          Expedited  Blazzer  XXL
Shipped  ...
128974     Amazon.in          Expedited  T-shirt   XS
Shipped  ...
128975     Amazon.in          Expedited  T-shirt    S
Shipped  ...

        currency  Amount  ship-city    ship-state ship-postal-code  \
128971       INR   517.0  HYDERABAD     TELANGANA         500013.0
128972       INR   999.0   GURUGRAM       HARYANA         122004.0
128973       INR   690.0  HYDERABAD     TELANGANA         500049.0
128974       INR  1199.0      Halol       Gujarat         389350.0
128975       INR   696.0     Raipur  CHHATTISGARH         492014.0

        ship-country    B2B  fulfilled-by New  PendingS
128971            IN  False           NaN NaN       NaN
128972            IN  False           NaN NaN       NaN
128973            IN  False           NaN NaN       NaN
128974            IN  False           NaN NaN       NaN
128975            IN  False           NaN NaN       NaN

[5 rows x 21 columns]
```

```
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
```

```
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
```

```
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
```

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

```
df.shape
```

```
(37514, 19)
```

```
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')
```

```
df['ship-postal-code']=df['ship-postal-code'].astype('int')
```

```
df['ship-postal-code'].dtype
```

```
dtype('int32')
```

```
df['Date']=pd.to_datetime(df['Date'])
```

```
C:\Users\ASUS TUF GAMING\AppData\Local\Temp\
ipykernel_26020\3023999556.py:1: UserWarning: Could not infer format,
so each element will be parsed individually, falling back to
`dateutil`. To ensure parsing is consistent and as-expected, please
specify a format.
  df['Date']=pd.to_datetime(df['Date'])
```

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Index: 37514 entries, 0 to 128892
Data columns (total 19 columns):
 #   Column              Non-Null Count  Dtype
---  ------              --------------  -----
 0   index               37514 non-null  int64
 1   Order ID            37514 non-null  object
 2   Date                37514 non-null  datetime64[ns]
 3   Status              37514 non-null  object
 4   Fulfilment          37514 non-null  object
 5   Sales Channel       37514 non-null  object
 6   ship-service-level  37514 non-null  object
 7   Category            37514 non-null  object
 8   Size                37514 non-null  object
 9   Courier Status      37514 non-null  object
 10  Qty                 37514 non-null  int64
 11  currency            37514 non-null  object
 12  Amount              37514 non-null  float64
 13  ship-city           37514 non-null  object
 14  ship-state          37514 non-null  object
 15  ship-postal-code    37514 non-null  int32
 16  ship-country        37514 non-null  object
 17  B2B                 37514 non-null  bool
 18  fulfilled-by        37514 non-null  object
dtypes: bool(1), datetime64[ns](1), float64(1), int32(1), int64(2),
object(13)
memory usage: 5.3+ MB
```

```
df.rename(columns={'Qty':"Quantity"})
```

```
         index             Order ID       Date
Status  \
0            0  405-8078784-5731545 2022-04-30
Cancelled
1            1  171-9198151-1101146 2022-04-30  Shipped - Delivered to
Buyer
3            3  403-9615377-8133951 2022-04-30
Cancelled
7            7  406-7807733-3785945 2022-04-30  Shipped - Delivered to
Buyer
12          12  405-5513694-8146768 2022-04-30  Shipped - Delivered to
```

```
Buyer
...        ...                   ...        ...
...
128875  128874  405-4724097-1016369 2022-06-01  Shipped - Delivered to
Buyer
128876  128875  403-9524128-9243508 2022-06-01
Cancelled
128888  128887  405-6493630-8542756 2022-05-31  Shipped - Delivered to
Buyer
128891  128890  407-0116398-1810752 2022-05-31
Cancelled
128892  128891  403-0317423-9322704 2022-05-31  Shipped - Delivered to
Buyer

       Fulfilment Sales Channel ship-service-level  Category  Size  \
0        Merchant     Amazon.in           Standard   T-shirt     S
1        Merchant     Amazon.in           Standard     Shirt   3XL
3        Merchant     Amazon.in           Standard   Blazzer     L
7        Merchant     Amazon.in           Standard     Shirt     S
12       Merchant     Amazon.in           Standard     Shirt    XS
...           ...           ...                ...       ...   ...
128875   Merchant     Amazon.in           Standard   T-shirt     S
128876   Merchant     Amazon.in           Standard   Blazzer    XL
128888   Merchant     Amazon.in           Standard  Trousers     M
128891   Merchant     Amazon.in           Standard    Wallet  Free
128892   Merchant     Amazon.in           Standard   Blazzer     M

       Courier Status  Quantity currency  Amount       ship-city  \
0          On the Way         0      INR  647.62          MUMBAI
1             Shipped         1      INR  406.00       BENGALURU
3          On the Way         0      INR  753.33      PUDUCHERRY
7             Shipped         1      INR  399.00       HYDERABAD
12            Shipped         1      INR  399.00       Amravati.
...               ...       ...      ...     ...            ...
128875        Shipped         1      INR  854.00           ALLUR
128876     On the Way         0      INR  734.29       Barabanki
128888        Shipped         1      INR  518.00           NOIDA
128891     On the Way         0      INR  398.10         MADURAI
128892        Shipped         1      INR  721.00  UTTAR BAGDOGRA

            ship-state  ship-postal-code ship-country    B2B
fulfilled-by
0          MAHARASHTRA            400081           IN  False    Easy
Ship
1            KARNATAKA            560085           IN  False    Easy
Ship
3           PUDUCHERRY            605008           IN  False    Easy
Ship
7            TELANGANA            500032           IN  False    Easy
Ship
```

```
12          MAHARASHTRA             444606           IN  False    Easy
Ship
...                 ...                ...          ...    ...
...
128875  ANDHRA PRADESH             524315           IN  False    Easy
Ship
128876   UTTAR PRADESH             225001           IN  False    Easy
Ship
128888   UTTAR PRADESH             201301           IN  False    Easy
Ship
128891      TAMIL NADU             625007           IN  False    Easy
Ship
128892     WEST BENGAL             734014           IN  False    Easy
Ship

[37514 rows x 19 columns]
```

```
df.describe()
```

```
                index                           Date           Qty  \
count   37514.000000                          37514  37514.000000
mean    60953.809858  2022-05-11 07:56:47.303939840      0.867383
min         0.000000            2022-03-31 00:00:00      0.000000
25%     27235.250000            2022-04-20 00:00:00      1.000000
50%     63470.500000            2022-05-09 00:00:00      1.000000
75%     91790.750000            2022-06-01 00:00:00      1.000000
max    128891.000000            2022-06-29 00:00:00      5.000000
std     36844.853039                            NaN      0.354160

             Amount  ship-postal-code
count  37514.000000      37514.000000
mean     646.553960     463291.552754
min        0.000000     110001.000000
25%      458.000000     370465.000000
50%      629.000000     500019.000000
75%      771.000000     600042.000000
max     5495.000000     989898.000000
std      279.952414     194550.425637
```

```
df.describe(include='object')
```

```
                   Order ID                           Status
Fulfilment  \
count                 37514                            37514      37514

unique                34664                               11          1

top     171-5057375-2831560  Shipped - Delivered to Buyer   Merchant

freq                     12                            28741      37514
```

```
       Sales Channel ship-service-level Category   Size Courier Status
\
count          37514               37514    37514  37514          37514

unique             1                   1        8     11              3

top        Amazon.in            Standard  T-shirt      M        Shipped

freq           37514               37514    14062   6806          31859


       currency  ship-city   ship-state ship-country fulfilled-by
count     37514      37514        37514        37514        37514
unique        1       4698           58            1            1
top         INR  BENGALURU  MAHARASHTRA           IN    Easy Ship
freq      37514       2839         6236        37514        37514
```

```
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
```

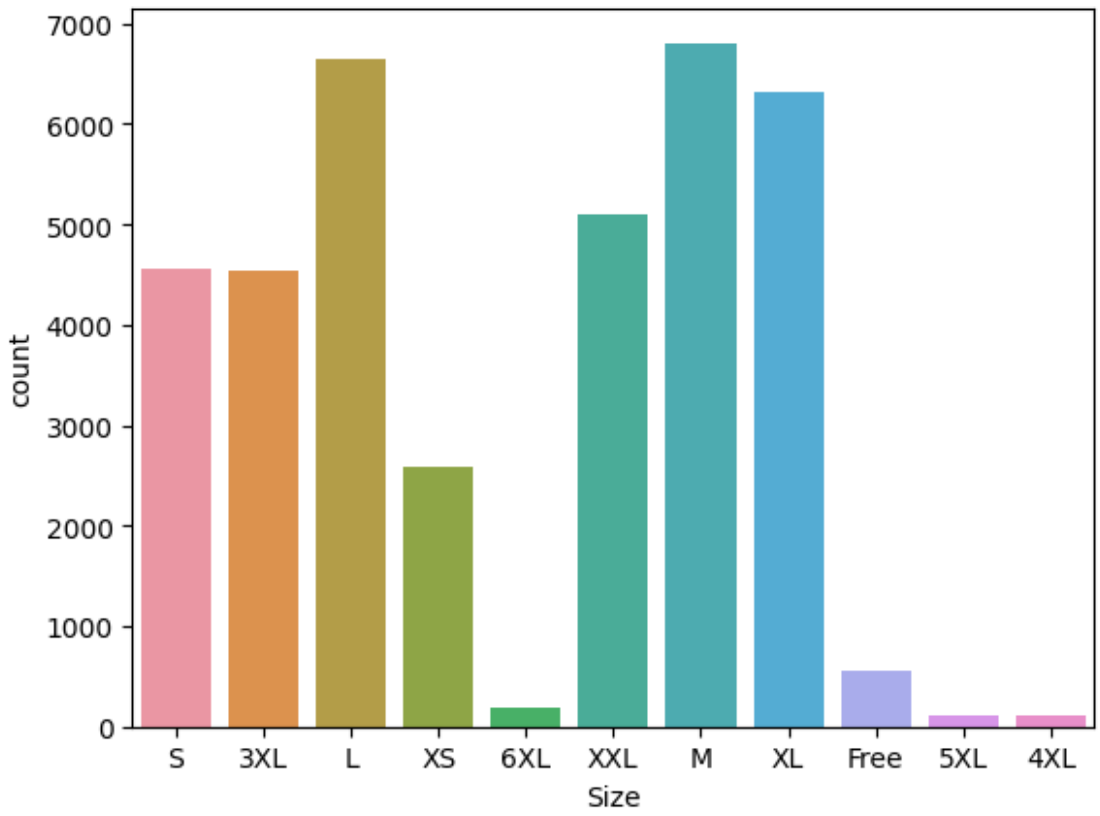
EDA

```
df.columns
```

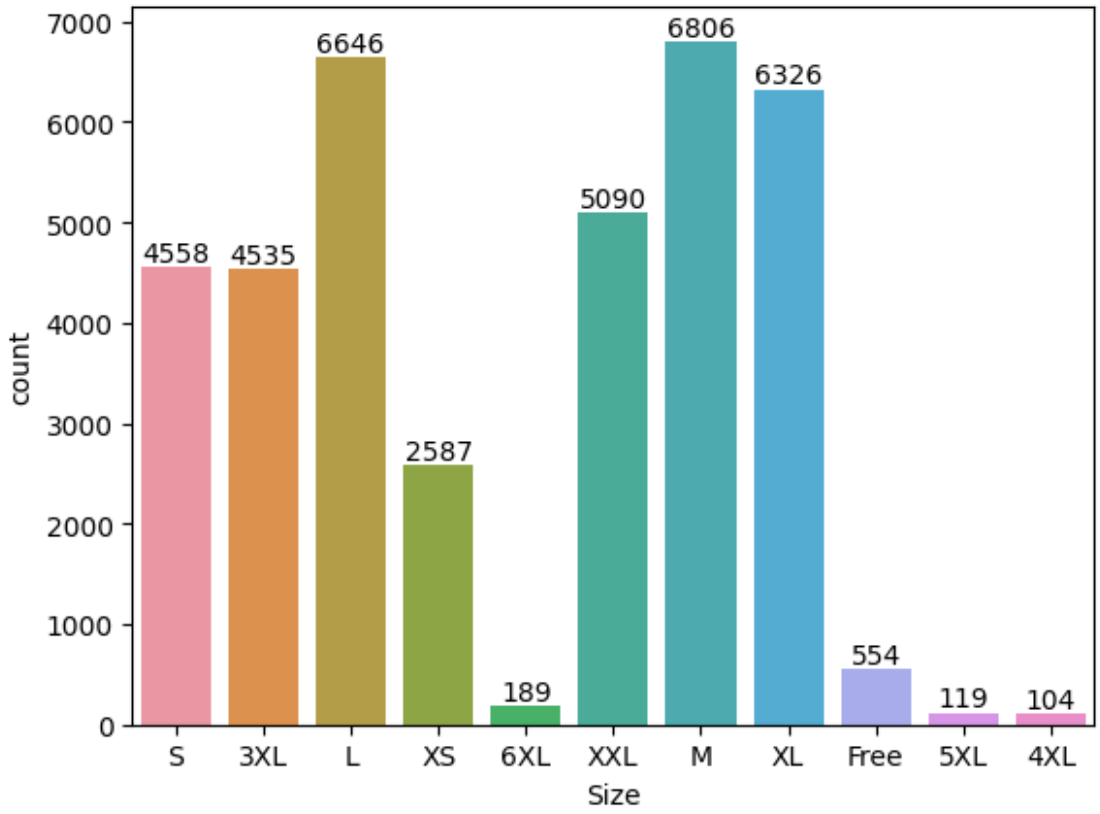
```
Index(['index', 'Order ID', 'Date', 'Status', 'Fulfilment', 'Sales
Channel',
       'ship-service-level', 'Category', 'Size', 'Courier Status',
'Qty',
       'currency', 'Amount', 'ship-city', 'ship-state', 'ship-postal-
code',
       'ship-country', 'B2B', 'fulfilled-by'],
      dtype='object')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

Size

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




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

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



Most of the people by M size

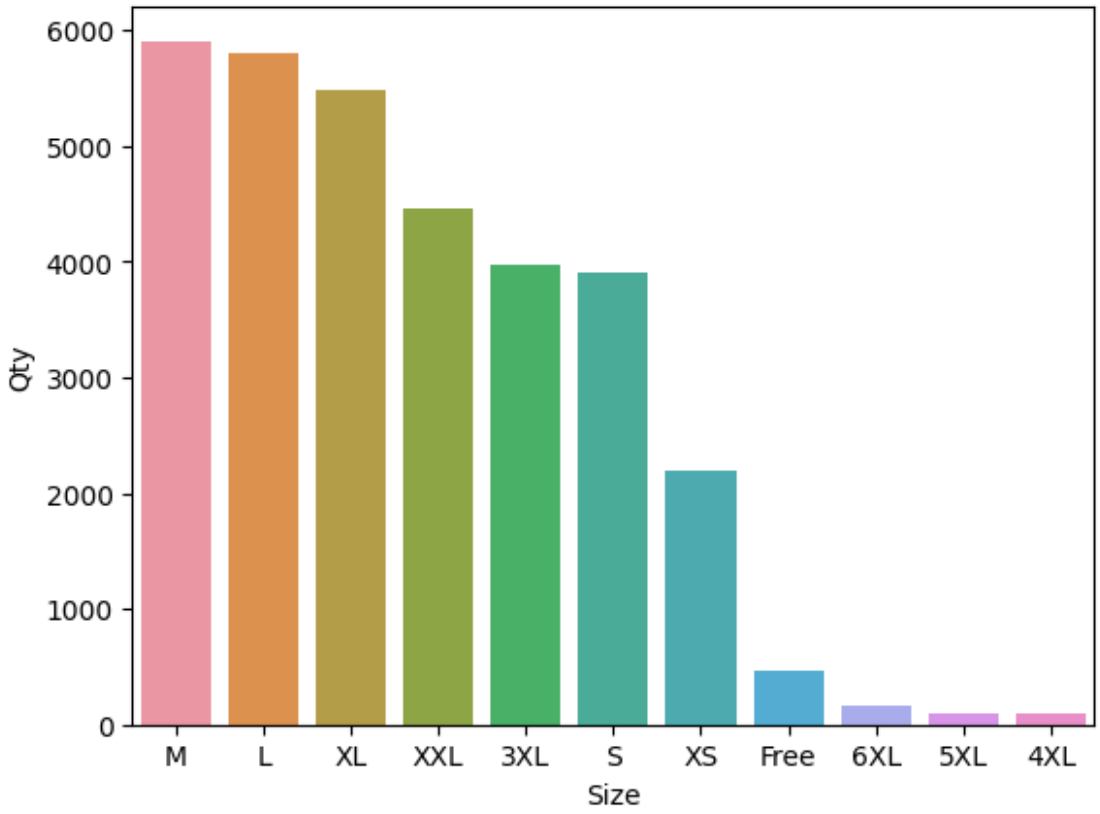
Group By Qty

```
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

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

sns.barplot(x="Size", y="Qty", data=Qty_by_Size)
```

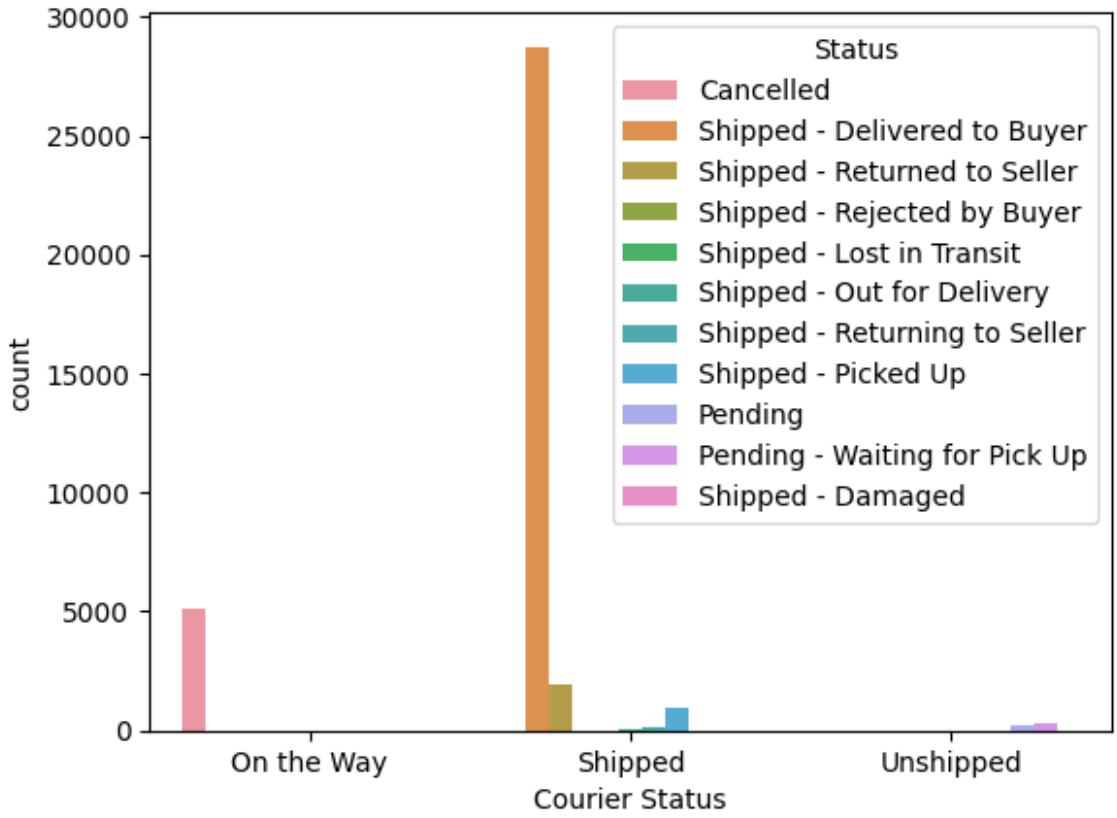
```
<Axes: xlabel='Size', ylabel='Qty'>
```



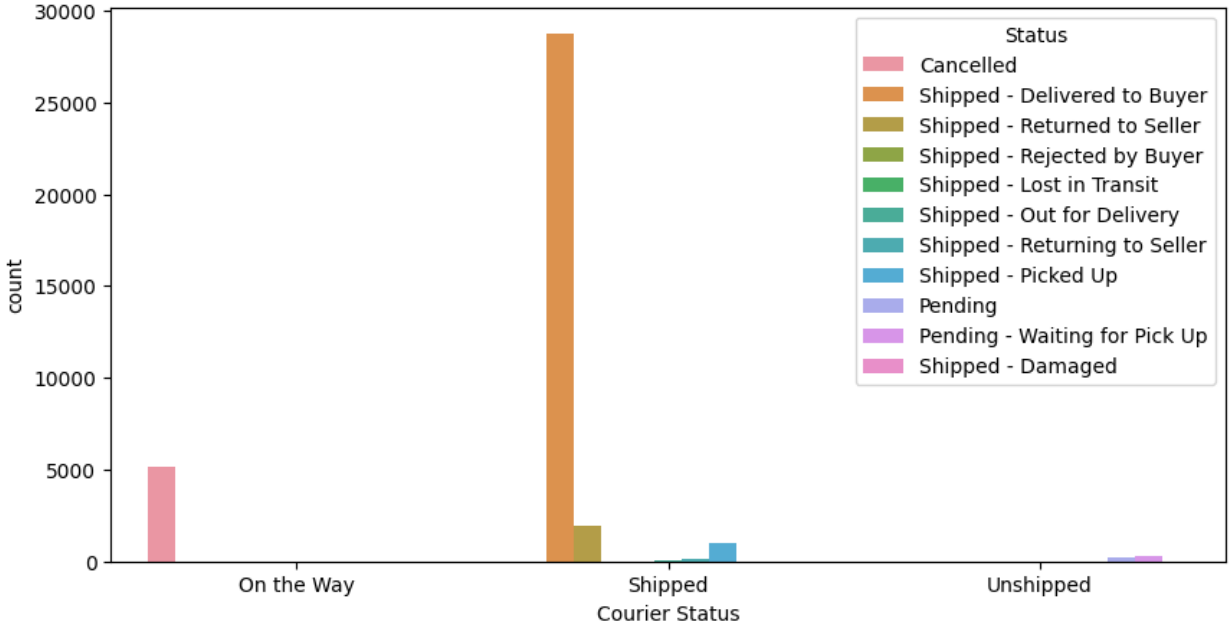
Most of the Quantity buys M size in sales

Courier Status

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



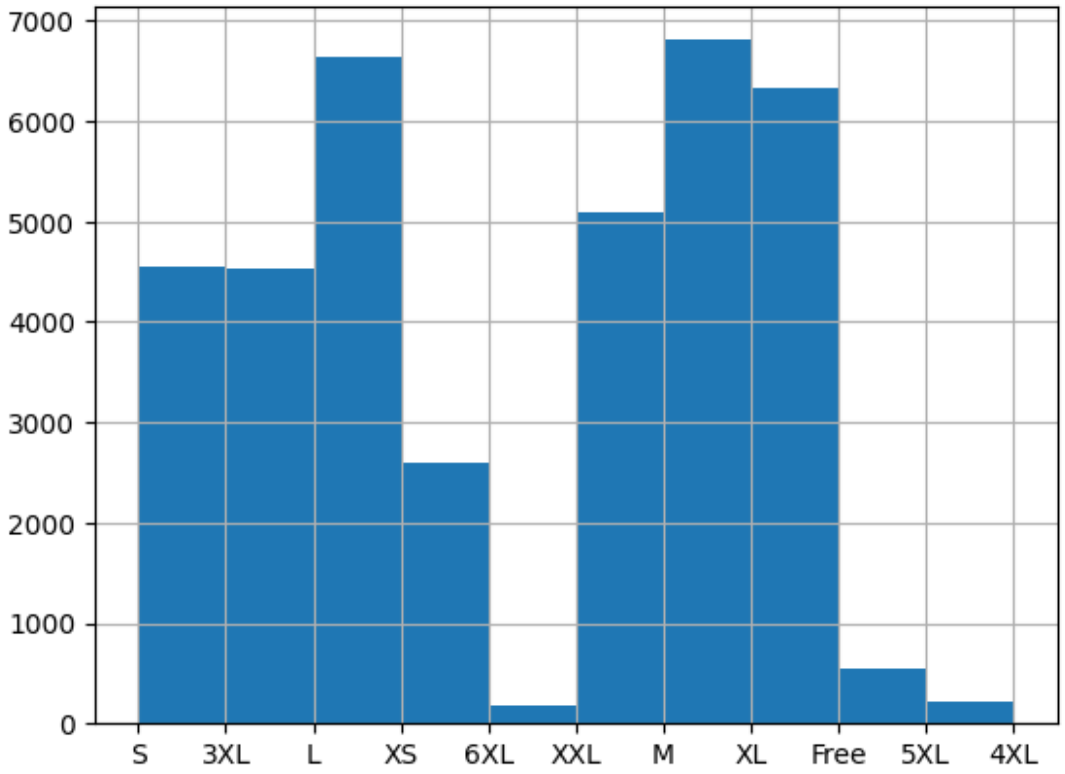

```
plt.figure(figsize=(10,5))

ax=sns.countplot(x="Courier Status", data=df, hue="Status")
plt.show()
```



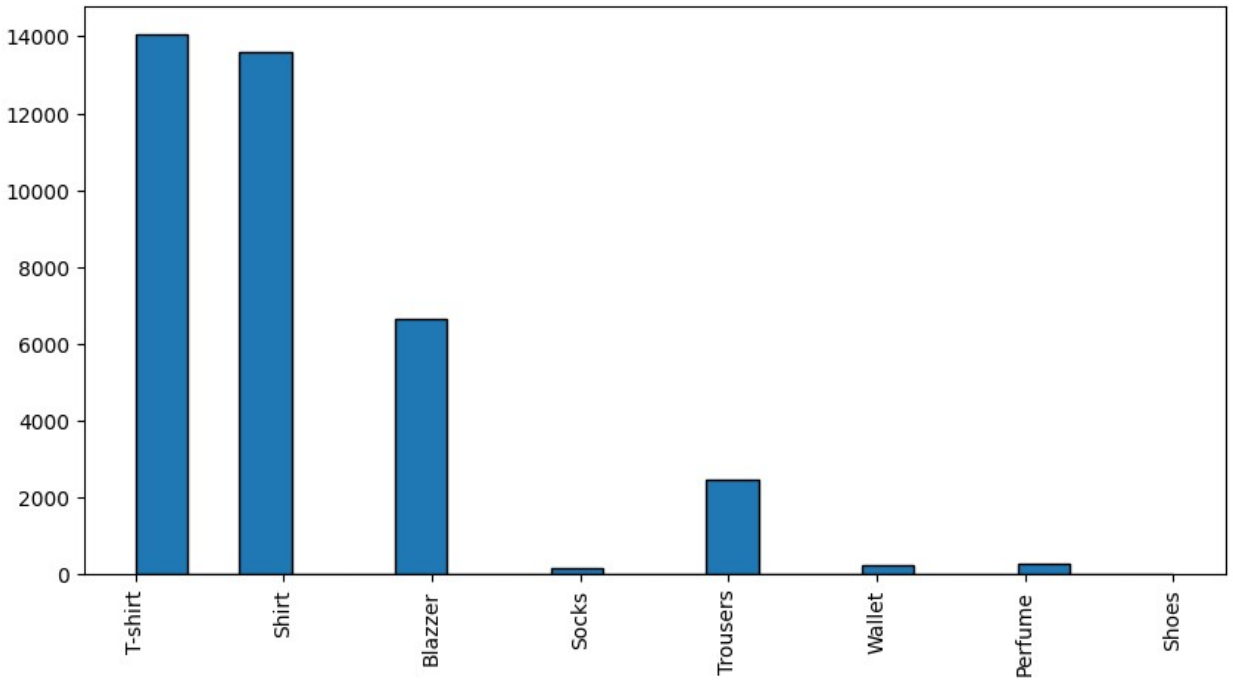
Most of the Orders are shipped

```
df["Size"].hist()
```

```
<Axes: >
```

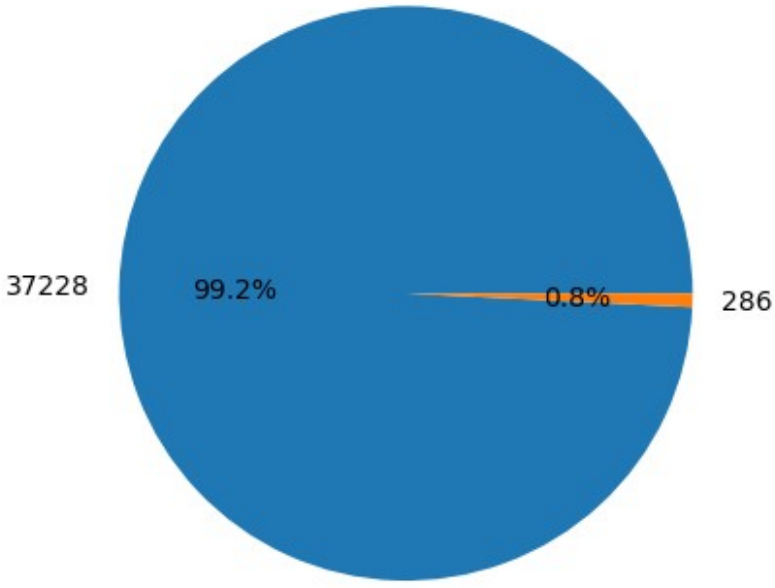



```
df["Category"]=df["Category"].astype(str)

column_data = df["Category"]
plt.figure(figsize=(10,5))
plt.hist(column_data, bins=20, edgecolor="black")
plt.xticks(rotation=90)
plt.show()
```



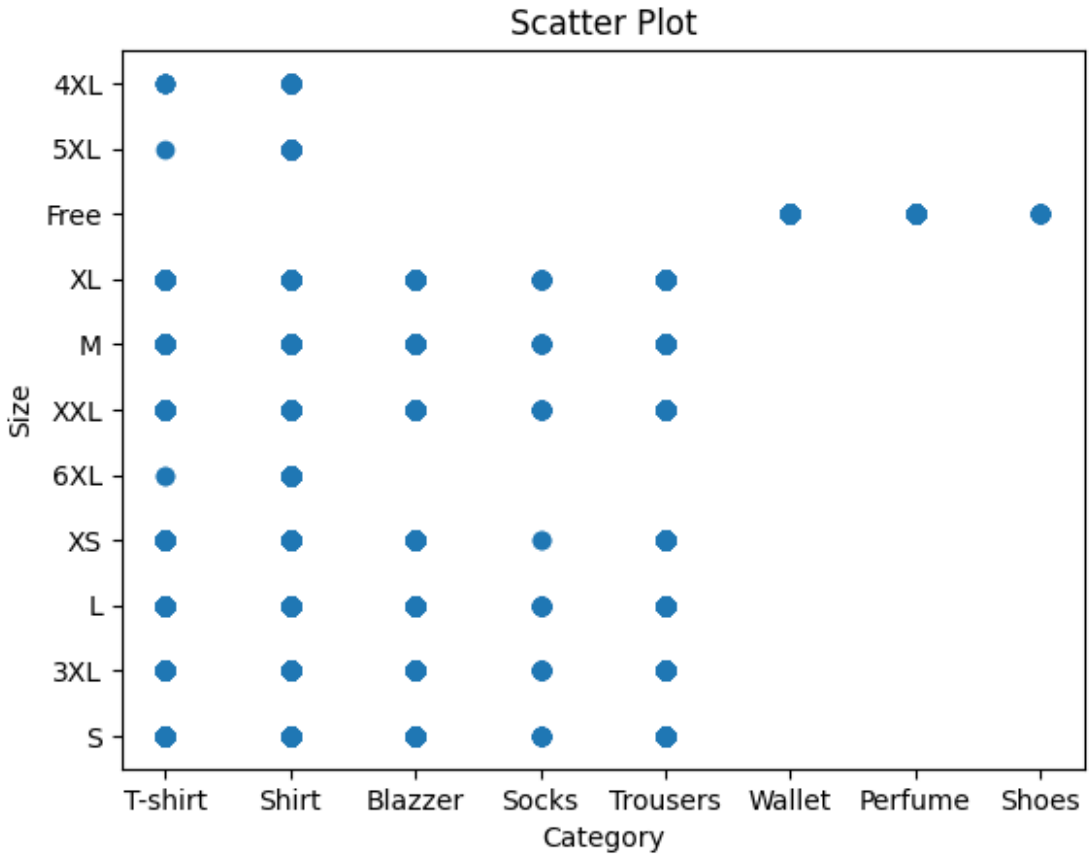
Most of the T-shirts are bought during the sale

```
B2B_Check = df["B2B"].value_counts()

plt.pie(B2B_Check, labels=B2B_Check, autopct="%1.1f%%")
plt.show()
```

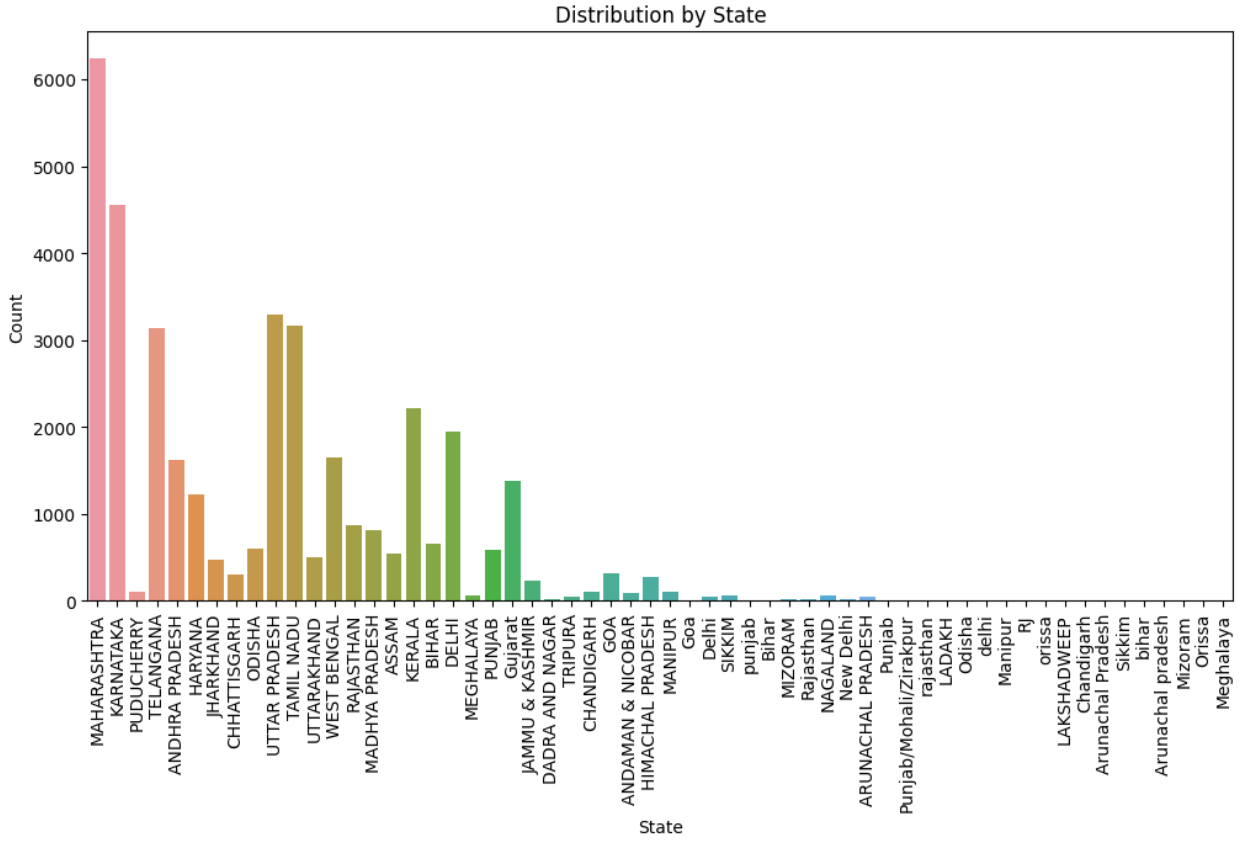


From above we can say that 99.1% are retailers and 0.8% are B2B

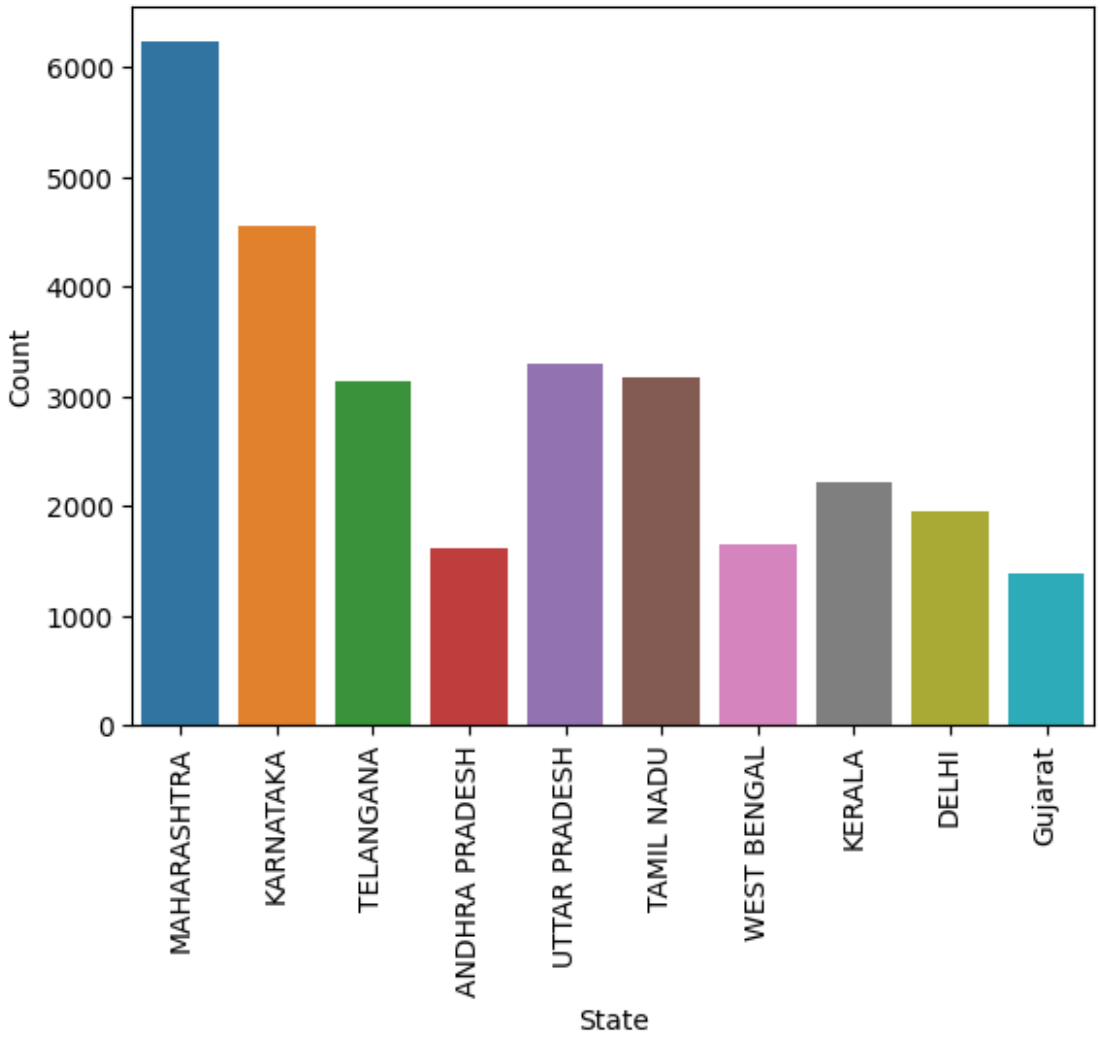
```
x_data = df["Category"]
y_data = df["Size"]

plt.xlabel('Category')
plt.ylabel('Size')
plt.scatter(x_data,y_data)
plt.title("Scatter Plot")
plt.show()
```




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




```
Top_10_State = df["ship-state"].value_counts().head(10)

sns.countplot(data=df[df['ship-state'].isin(Top_10_State.index)],
x="ship-state")
plt.xlabel("State")
plt.ylabel("Count")
plt.xticks(rotation=90)
plt.show()
```



Most the buyers are from Maharashtra

Conclusion

From the data analysis it can be conclude that the business has a significant customer are from 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.