diwali-sales-analysis

April 14, 2024

[ ]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
%matplotlib inline
import seaborn as sns
import csv
import pathlib as Path
```

[ ]:
```
df=pd.read_csv('Diwali Sales Data.csv',encoding="unicode_escape")
```

[ ]:
```
df.shape
```

[ ]:
```
(11251, 15)
```

[ ]:
```
df.head(10)
```

[ ]:

	User_ID	Cust_name	Product_ID	Gender	Age Group	Age	Marital_Status	\
0	1002903	Sanskriti	P00125942	F	26-35	28	0	
1	1000732	Kartik	P00110942	F	26-35	35	1	
2	1001990	Bindu	P00118542	F	26-35	35	1	
3	1001425	Sudevi	P00237842	M	0-17	16	0	
4	1000588	Joni	P00057942	M	26-35	28	1	
5	1000588	Joni	P00057942	M	26-35	28	1	
6	1001132	Balk	P00018042	F	18-25	25	1	
7	1002092	Shivangi	P00273442	F	55+	61	0	
8	1003224	Kushal	P00205642	M	26-35	35	0	
9	1003650	Ginny	P00031142	F	26-35	26	1	

	State	Zone	Occupation	Product_Category	Orders	\
0	Maharashtra	Western	Healthcare	Auto	1	
1	Andhra Pradesh	Southern	Govt	Auto	3	
2	Uttar Pradesh	Central	Automobile	Auto	3	
3	Karnataka	Southern	Construction	Auto	2	
4	Gujarat	Western	Food Processing	Auto	2	
5	Himachal Pradesh	Northern	Food Processing	Auto	1	
6	Uttar Pradesh	Central	Lawyer	Auto	4	
7	Maharashtra	Western	IT Sector	Auto	1	

```
 8     Uttar Pradesh   Central              Govt              Auto       2
 9    Andhra Pradesh  Southern             Media              Auto       4

      Amount  Status  unnamed1
 0  23952.00     NaN       NaN
 1  23934.00     NaN       NaN
 2  23924.00     NaN       NaN
 3  23912.00     NaN       NaN
 4  23877.00     NaN       NaN
 5  23877.00     NaN       NaN
 6  23841.00     NaN       NaN
 7       NaN     NaN       NaN
 8  23809.00     NaN       NaN
 9  23799.99     NaN       NaN
```

[ ]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 11251 entries, 0 to 11250
Data columns (total 15 columns):
 #   Column            Non-Null Count  Dtype
---  ------            --------------  -----
 0   User_ID           11251 non-null  int64
 1   Cust_name         11251 non-null  object
 2   Product_ID        11251 non-null  object
 3   Gender            11251 non-null  object
 4   Age Group         11251 non-null  object
 5   Age               11251 non-null  int64
 6   Marital_Status    11251 non-null  int64
 7   State             11251 non-null  object
 8   Zone              11251 non-null  object
 9   Occupation        11251 non-null  object
 10  Product_Category  11251 non-null  object
 11  Orders            11251 non-null  int64
 12  Amount            11239 non-null  float64
 13  Status            0 non-null      float64
 14  unnamed1          0 non-null      float64
dtypes: float64(3), int64(4), object(8)
memory usage: 1.3+ MB
```

[ ]:
```
df.drop(['Status', 'unnamed1'], axis=1, inplace=True)
```

[ ]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 11251 entries, 0 to 11250
Data columns (total 13 columns):
```

```
 #   Column            Non-Null Count  Dtype
---  ------            --------------  -----
 0   User_ID           11251 non-null  int64
 1   Cust_name         11251 non-null  object
 2   Product_ID        11251 non-null  object
 3   Gender            11251 non-null  object
 4   Age Group         11251 non-null  object
 5   Age               11251 non-null  int64
 6   Marital_Status    11251 non-null  int64
 7   State             11251 non-null  object
 8   Zone              11251 non-null  object
 9   Occupation        11251 non-null  object
 10  Product_Category  11251 non-null  object
 11  Orders            11251 non-null  int64
 12  Amount            11239 non-null  float64
dtypes: float64(1), int64(4), object(8)
memory usage: 1.1+ MB
```

[ ]:
```
pd.isnull(df)
```

[ ]:

	User_ID	Cust_name	Product_ID	Gender	Age Group	Age	\
0	False	False	False	False	False	False	
1	False	False	False	False	False	False	
2	False	False	False	False	False	False	
3	False	False	False	False	False	False	
4	False	False	False	False	False	False	
…	…	…	…	…	…	…	
11246	False	False	False	False	False	False	
11247	False	False	False	False	False	False	
11248	False	False	False	False	False	False	
11249	False	False	False	False	False	False	
11250	False	False	False	False	False	False	

	Marital_Status	State	Zone	Occupation	Product_Category	Orders	\
0	False	False	False	False	False	False	
1	False	False	False	False	False	False	
2	False	False	False	False	False	False	
3	False	False	False	False	False	False	
4	False	False	False	False	False	False	
…	…	…	…	…	…	…	
11246	False	False	False	False	False	False	
11247	False	False	False	False	False	False	
11248	False	False	False	False	False	False	
11249	False	False	False	False	False	False	
11250	False	False	False	False	False	False	

	Amount

```
0       False
1       False
2       False
3       False
4       False
…       …
11246   False
11247   False
11248   False
11249   False
11250   False

[11251 rows x 13 columns]
```

[ ]:
```
pd.isnull(df).sum()
```

[ ]:
```
User_ID             0
Cust_name           0
Product_ID          0
Gender              0
Age Group           0
Age                 0
Marital_Status      0
State               0
Zone                0
Occupation          0
Product_Category    0
Orders              0
Amount             12
dtype: int64
```

[ ]:
```
df.shape
```

[ ]:
```
(11251, 13)
```

[ ]:
```
df.dropna( inplace=True)
```

[ ]:
```
df.shape
```

[ ]:
```
(11239, 13)
```

[ ]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 11239 entries, 0 to 11250
Data columns (total 13 columns):
 #   Column            Non-Null Count  Dtype
```

```
---  ------            --------------  -----
 0   User_ID           11239 non-null  int64
 1   Cust_name         11239 non-null  object
 2   Product_ID        11239 non-null  object
 3   Gender            11239 non-null  object
 4   Age Group         11239 non-null  object
 5   Age               11239 non-null  int64
 6   Marital_Status    11239 non-null  int64
 7   State             11239 non-null  object
 8   Zone              11239 non-null  object
 9   Occupation        11239 non-null  object
 10  Product_Category  11239 non-null  object
 11  Orders            11239 non-null  int64
 12  Amount            11239 non-null  float64
dtypes: float64(1), int64(4), object(8)
memory usage: 1.2+ MB
```

[ ]:
```
df['Amount']=df['Amount'].astype('int')
```

[ ]:
```
df['Amount'].dtypes
```

[ ]:
```
dtype('int64')
```

[ ]:
```
df.describe()
```

[ ]:

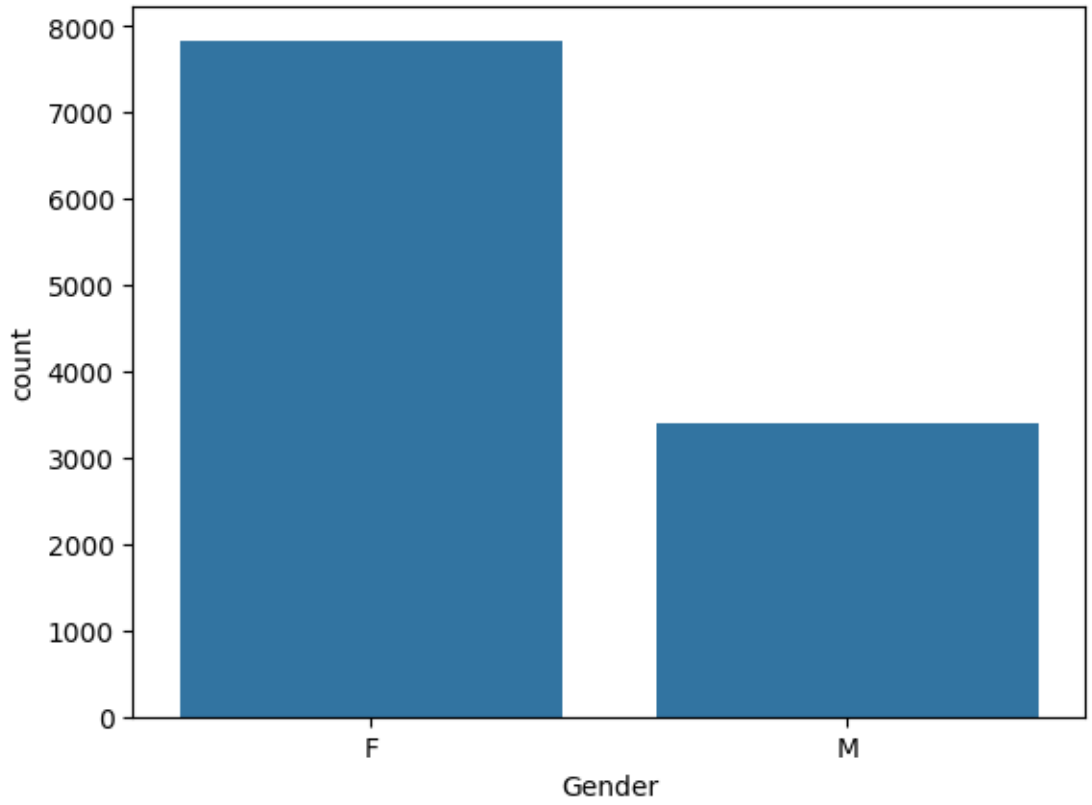
	User_ID	Age	Marital_Status	Orders	Amount
count	1.123900e+04	11239.000000	11239.000000	11239.000000	11239.000000
mean	1.003004e+06	35.410357	0.420055	2.489634	9453.610553
std	1.716039e+03	12.753866	0.493589	1.114967	5222.355168
min	1.000001e+06	12.000000	0.000000	1.000000	188.000000
25%	1.001492e+06	27.000000	0.000000	2.000000	5443.000000
50%	1.003064e+06	33.000000	0.000000	2.000000	8109.000000
75%	1.004426e+06	43.000000	1.000000	3.000000	12675.000000
max	1.006040e+06	92.000000	1.000000	4.000000	23952.000000

[ ]:
```
df[['Age','Orders','Amount']].describe()
```

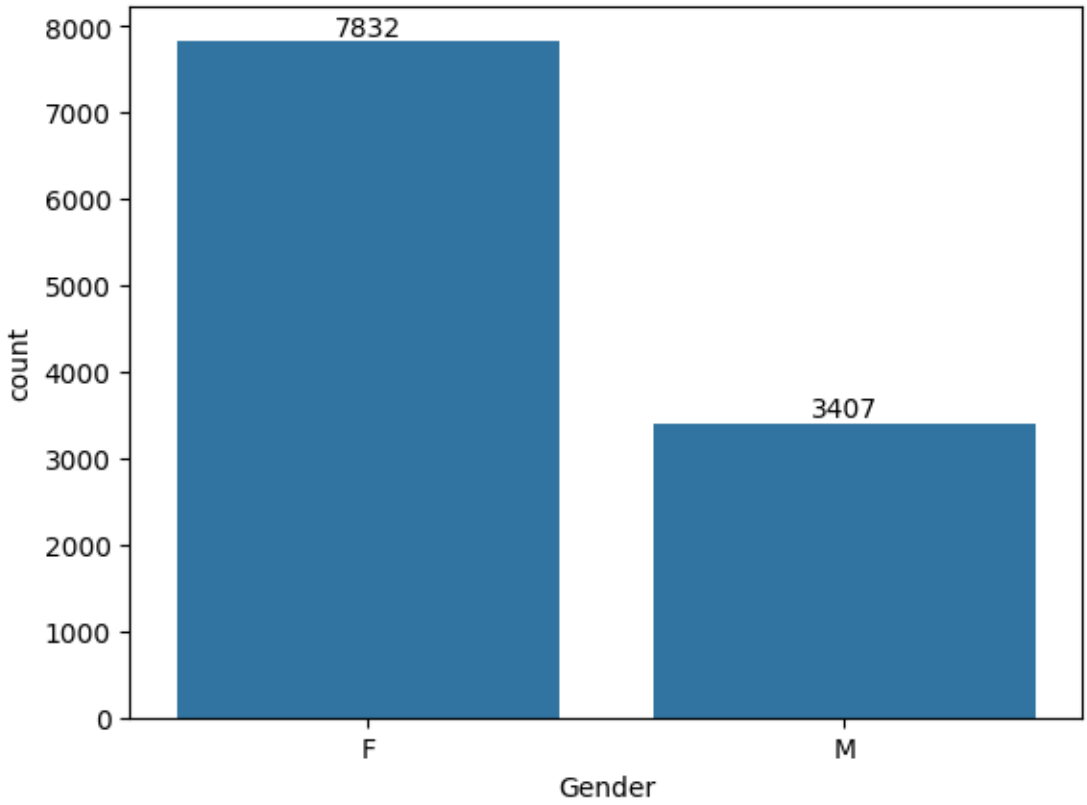
[ ]:

	Age	Orders	Amount
count	11239.000000	11239.000000	11239.000000
mean	35.410357	2.489634	9453.610553
std	12.753866	1.114967	5222.355168
min	12.000000	1.000000	188.000000
25%	27.000000	2.000000	5443.000000
50%	33.000000	2.000000	8109.000000
75%	43.000000	3.000000	12675.000000
max	92.000000	4.000000	23952.000000

[ ]:
```
ax=sns.countplot(x='Gender',data=df)
```



[ ]:
```
ax=sns.countplot(x='Gender',data=df)
for bars in ax.containers:
  ax.bar_label(bars)
```

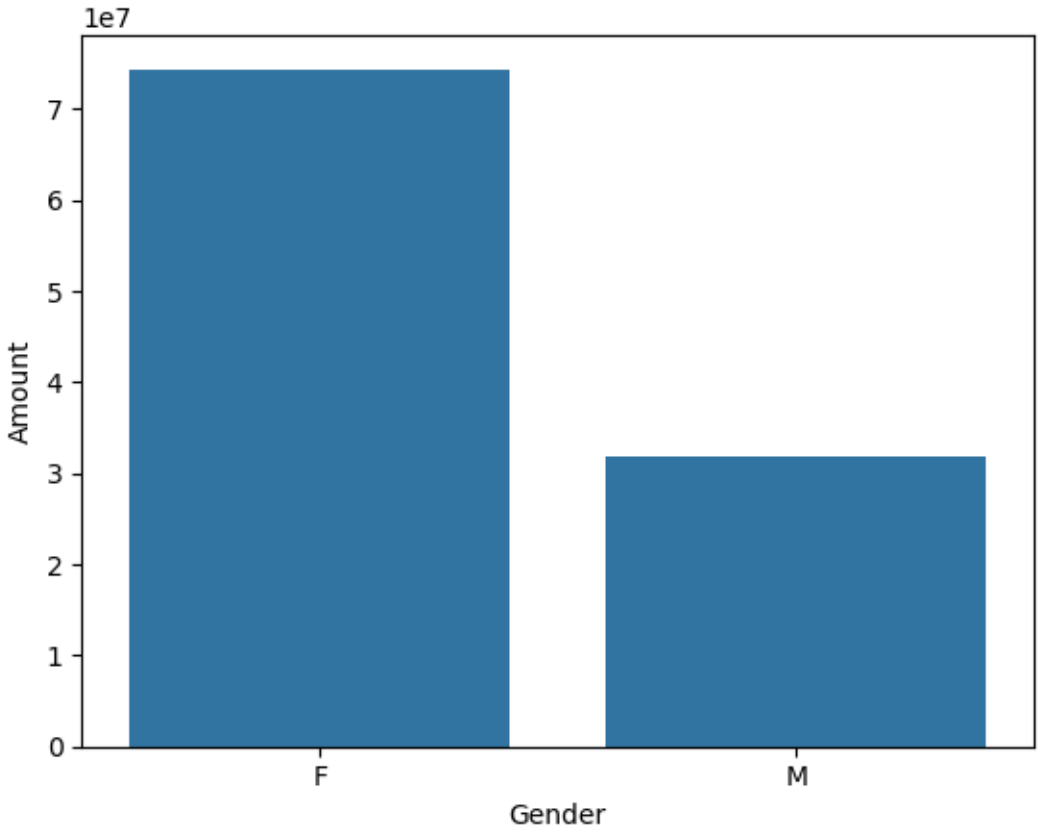


[ ]:
```
df.groupby(['Gender'],as_index=False)['Amount'].sum().
  ↪sort_values(by='Amount',ascending=False)
```

[ ]:
```
  Gender    Amount
0      F  74335853
1      M  31913276
```

[ ]:
```
Sales=df.groupby(['Gender'],as_index=False)['Amount'].sum().
  ↪sort_values(by='Amount',ascending=False)
sns.barplot(x='Gender',y='Amount',data=Sales)
```

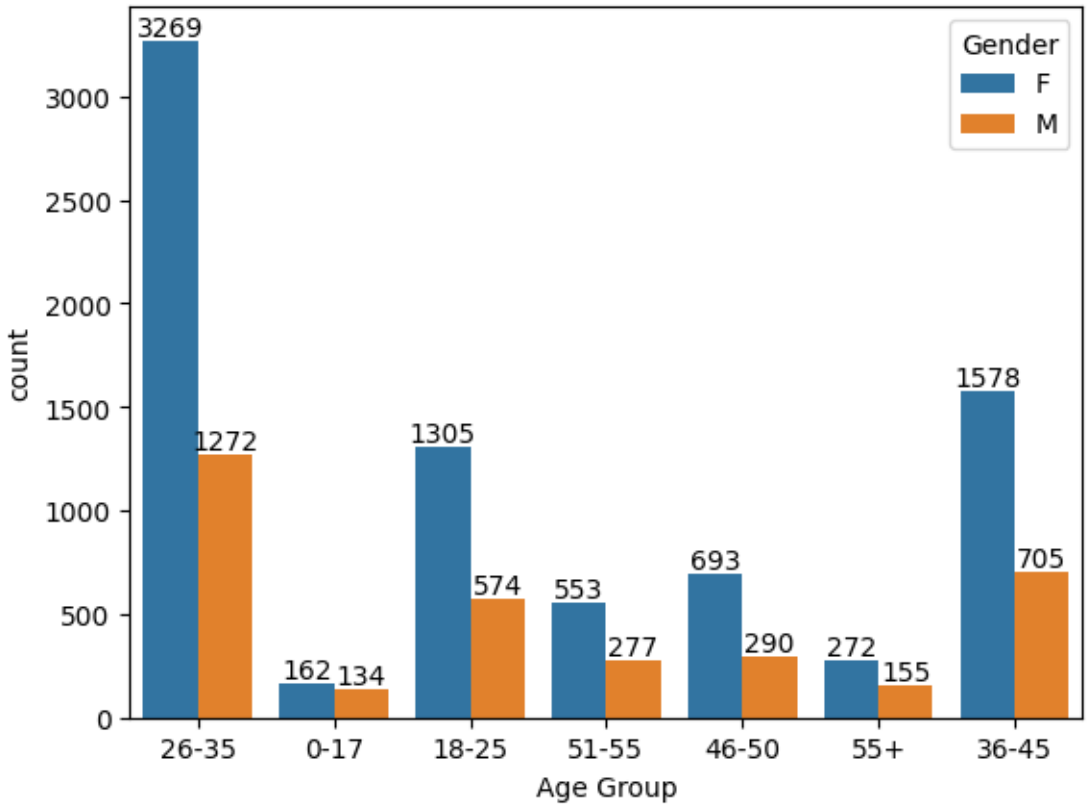
[ ]:
```
<Axes: xlabel='Gender', ylabel='Amount'>
```



[ ]:
```
df.columns
```

[ ]:
```
Index(['User_ID', 'Cust_name', 'Product_ID', 'Gender', 'Age Group', 'Age',
       'Marital_Status', 'State', 'Zone', 'Occupation', 'Product_Category',
       'Orders', 'Amount'],
      dtype='object')
```

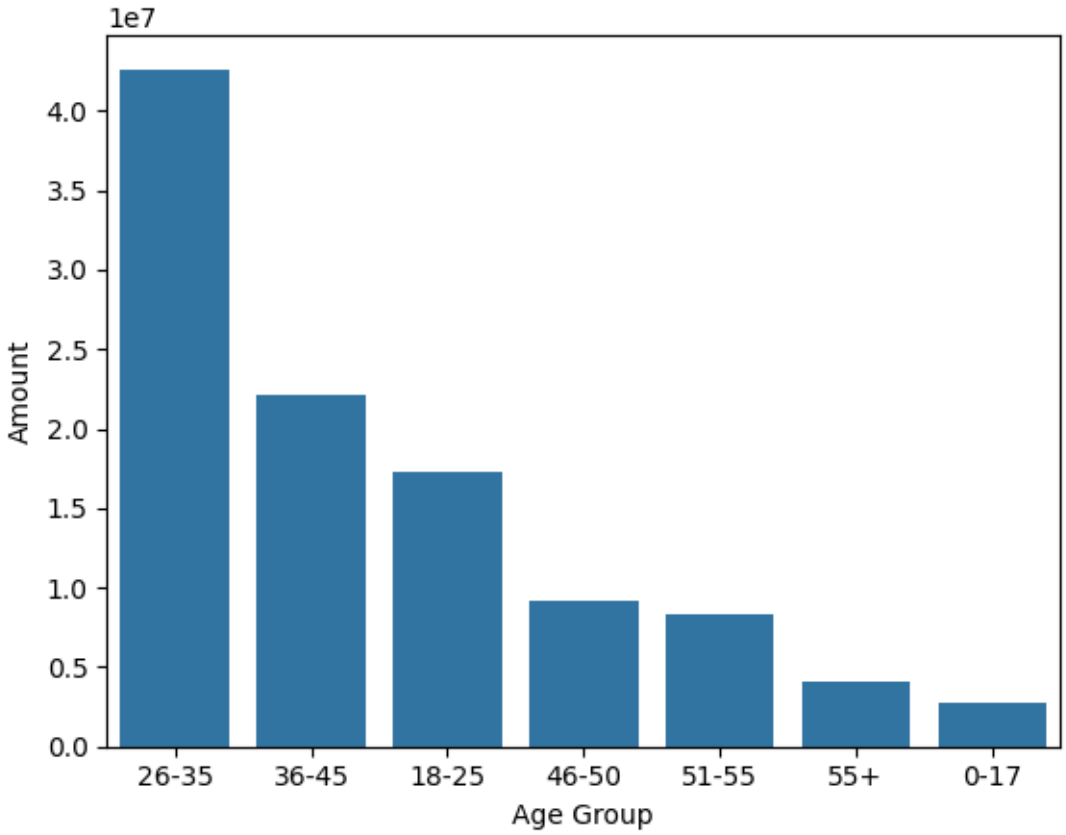
[ ]:
```
ax=sns.countplot(data=df,x='Age Group',hue='Gender')
for bars in ax.containers:
  ax.bar_label(bars)
```



[ ]:

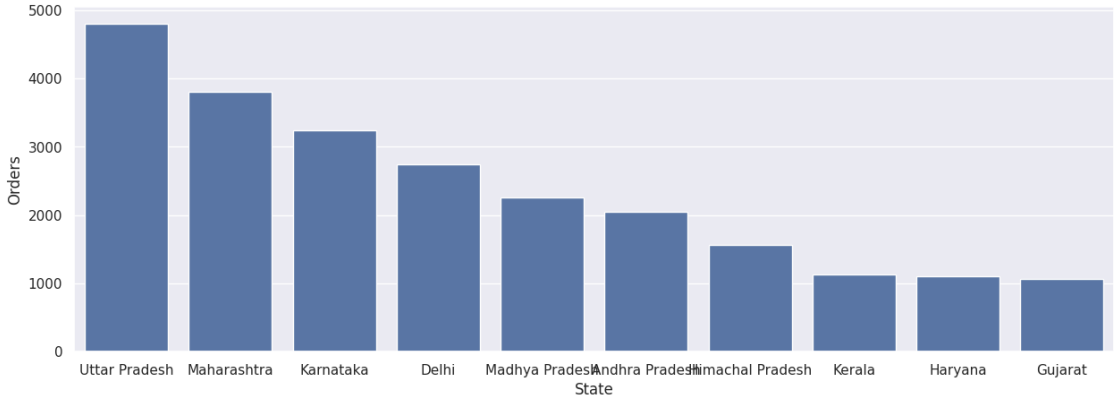
[ ]:
```
Sales_age=df.groupby(['Age Group'],as_index=False)['Amount'].sum().
 ↪sort_values(by='Amount',ascending=False)
sns.barplot(x='Age Group',y='Amount',data=Sales_age)
```

[ ]: <Axes: xlabel='Age Group', ylabel='Amount'>



[ ]:
```
Sales_state = df.groupby(['State'], as_index=False)['Orders'].sum().
  ↪sort_values(by='Orders', ascending=False).head(10)
sns.set(rc={'figure.figsize':(15,5)})
sns.barplot(data=Sales_state, x='State', y='Orders')
```

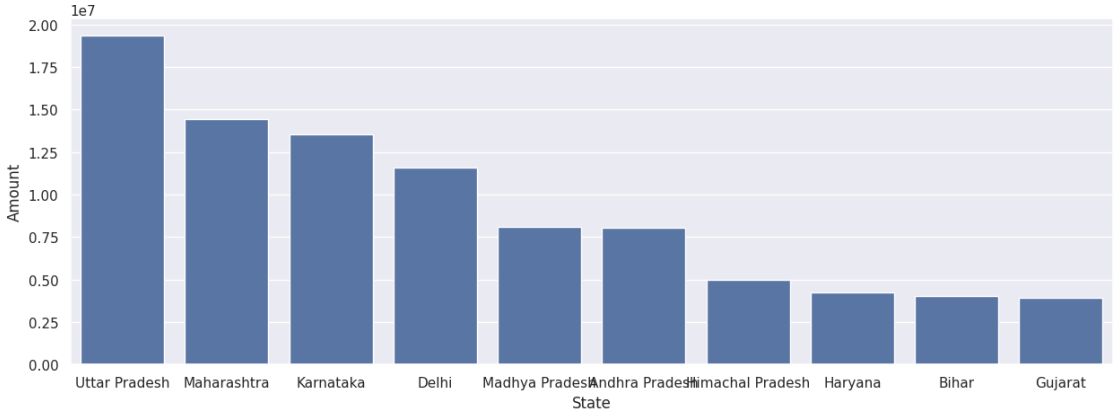
[ ]:
```
<Axes: xlabel='State', ylabel='Orders'>
```



[ ]:

[ ]:
```
Sales_state = df.groupby(['State'], as_index=False)['Amount'].sum().
 ↪sort_values(by='Amount', ascending=False).head(10)
sns.set(rc={'figure.figsize':(15,5)})
sns.barplot(data=Sales_state, x='State', y='Amount')
```

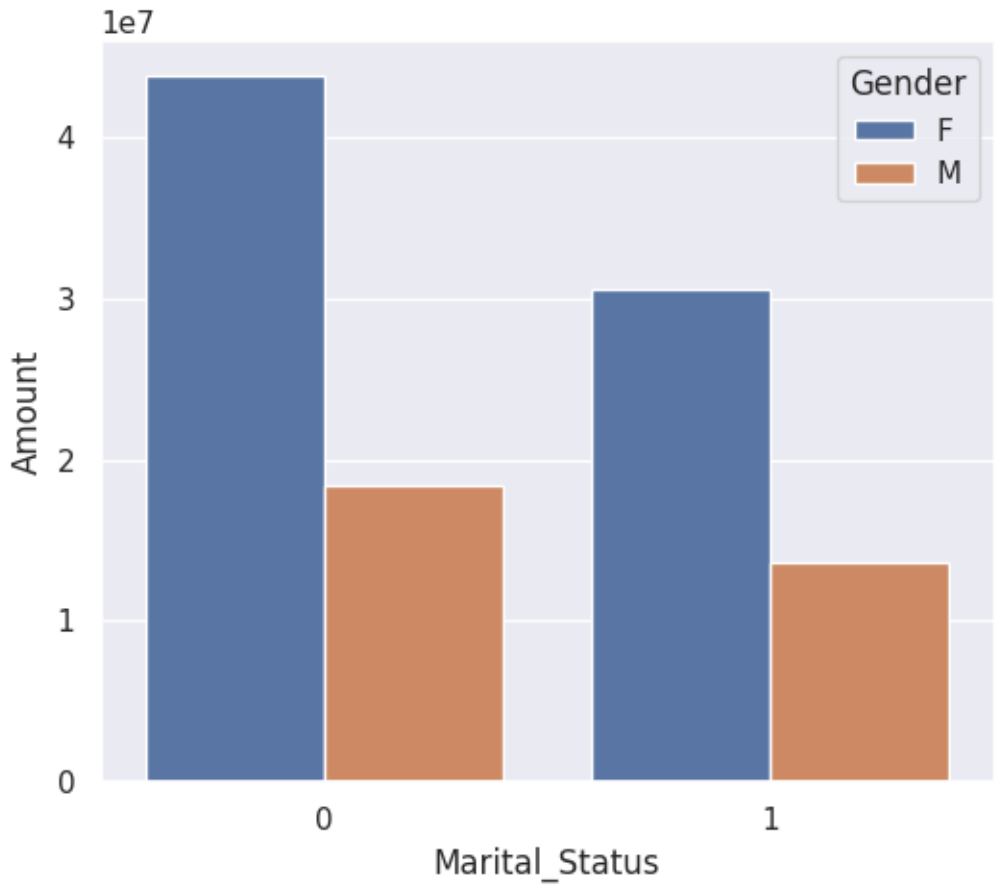
[ ]: <Axes: xlabel='State', ylabel='Amount'>



[ ]:
```
Sales_state=df.groupby(['Marital_Status','Gender'],as_index=False)['Amount'].
 ↪sum().sort_values(by='Amount',ascending=False)

sns.set(rc={'figure.figsize':(6,5)})
sns.barplot(data=Sales_state,x='Marital_Status',y='Amount',hue='Gender')
```

[ ]: <Axes: xlabel='Marital_Status', ylabel='Amount'>

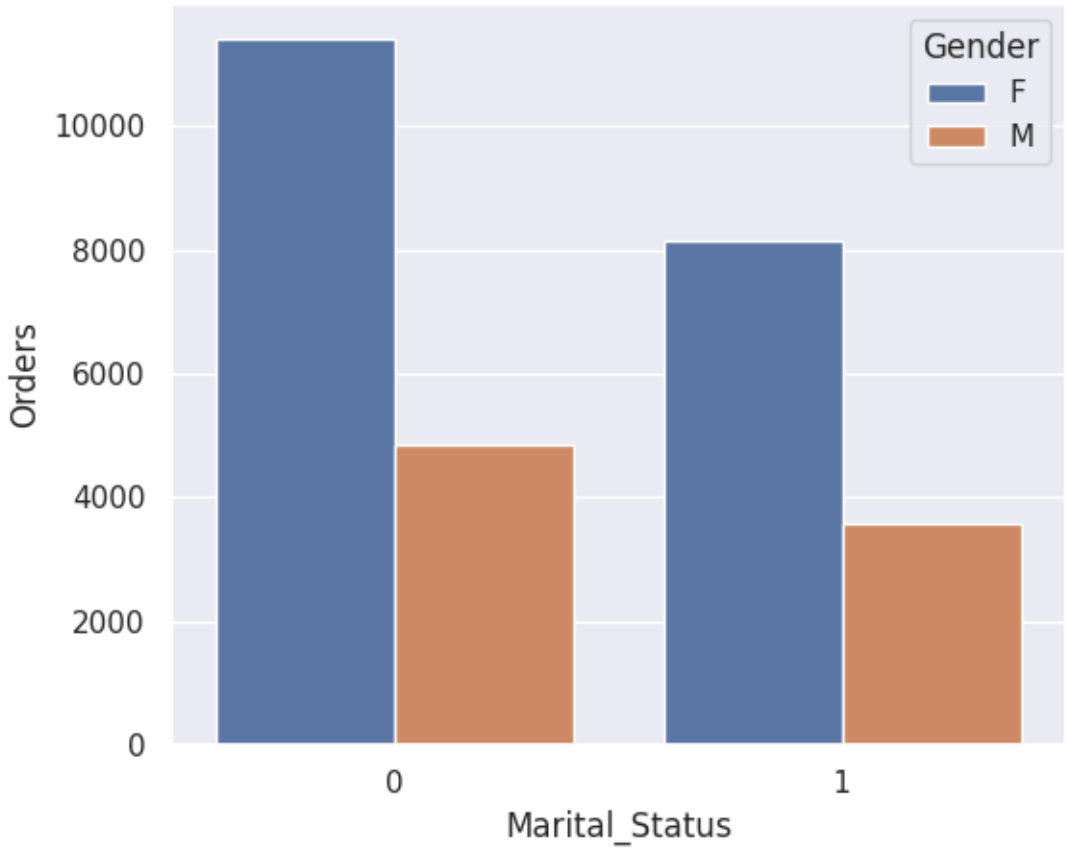


[ ]:

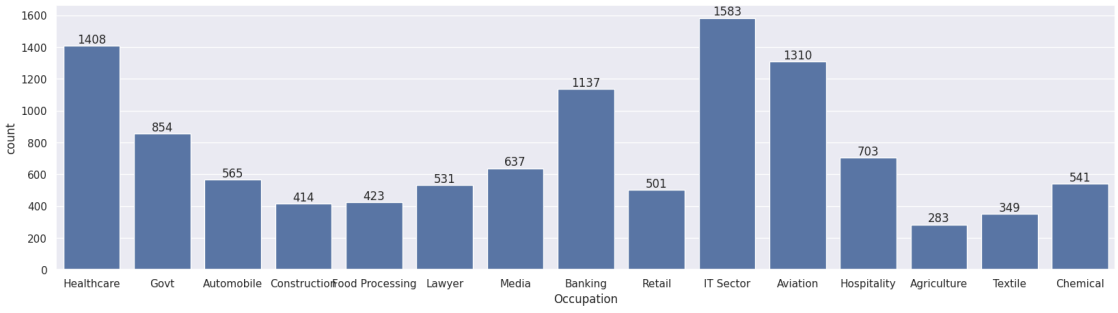
[ ]:
```
Sales_state=df.groupby(['Marital_Status','Gender'],as_index=False)['Orders'].
↪sum().sort_values(by='Orders',ascending=False)

sns.set(rc={'figure.figsize':(6,5)})
sns.barplot(data=Sales_state,x='Marital_Status',y='Orders',hue='Gender')
```

[ ]: <Axes: xlabel='Marital_Status', ylabel='Orders'>



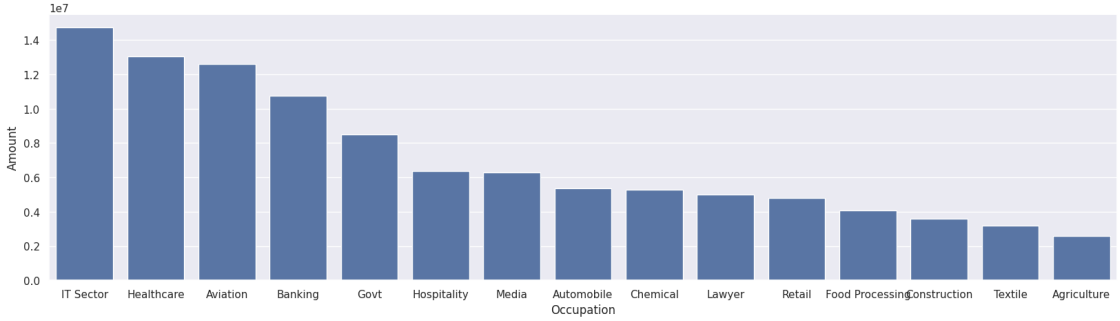
[ ]:
```
sns.set(rc={'figure.figsize':(20,5)})
ax=sns.countplot(data=df,x='Occupation')
for bars in ax.containers:
  ax.bar_label(bars)
```



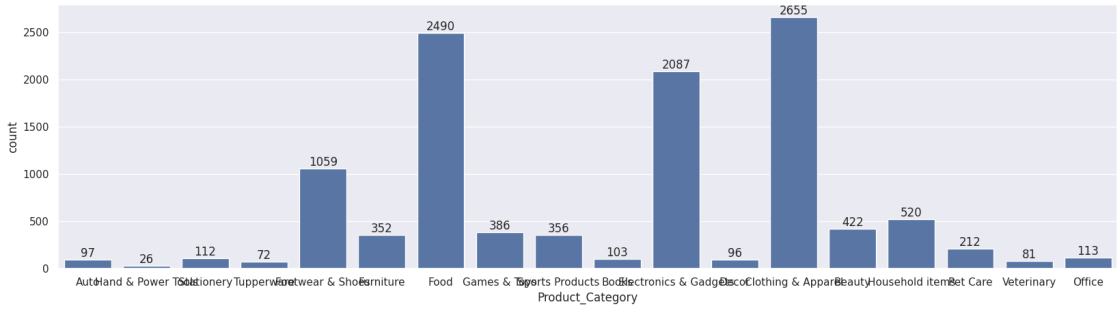
[ ]:
```
State=df.groupby(['Occupation'],as_index=False)['Amount'].sum().
  ↪sort_values(by='Amount',ascending=False)
sns.set(rc={'figure.figsize':(20,5)})
```

```
sns.barplot(data=State,x='Occupation',y='Amount')
```

[ ]: <Axes: xlabel='Occupation', ylabel='Amount'>

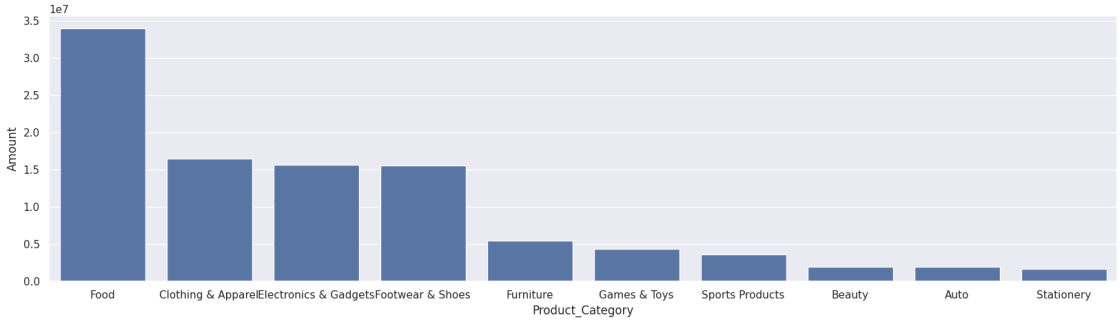


[ ]:
```
sns.set(rc={'figure.figsize':(20,5)})
ax=sns.countplot(data=df,x='Product_Category')
for bars in ax.containers:
  ax.bar_label(bars)
```



[ ]:
```
State=df.groupby(['Product_Category'],as_index=False)['Amount'].sum().
  ↪sort_values(by='Amount',ascending=False).head(10)
sns.set(rc={'figure.figsize':(20,5)})
sns.barplot(data=State,x='Product_Category',y='Amount')
```

[ ]: <Axes: xlabel='Product_Category', ylabel='Amount'>



[ ]:
```
State=df.groupby(['Product_Category'],as_index=False)['Orders'].sum().
  ↪sort_values(by='Orders',ascending=False).head(10)
sns.set(rc={'figure.figsize':(20,5)})
sns.barplot(data=State,x='Product_Category',y='Orders')
```

[ ]:
```
<Axes: xlabel='Product_Category', ylabel='Orders'>
```