```
**Python Diwali Sales Analysis**

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

df = pd.read_csv(r'F:\DATA ANALYST MATERIALS\python\
Python_Diwali_Sales_Analysis-main\Python_Diwali_Sales_Analysis-main\
Diwali Sales Data.csv', encoding= 'unicode_escape')

df.shape
```

```
(11251, 15)
```

```
df.head()
```

```
   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


            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


    Amount  Status  unnamed1
0  23952.0     NaN       NaN
1  23934.0     NaN       NaN
2  23924.0     NaN       NaN
3  23912.0     NaN       NaN
4  23877.0     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
```

```
#drop unrelated/blank columns
df.drop(['Status', 'unnamed1'], axis=1, inplace=True)
```

```
#check for null values
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
```

```
# drop null values
df.dropna(inplace=True)
```

```
df.shape
```

```
(11239, 13)
```

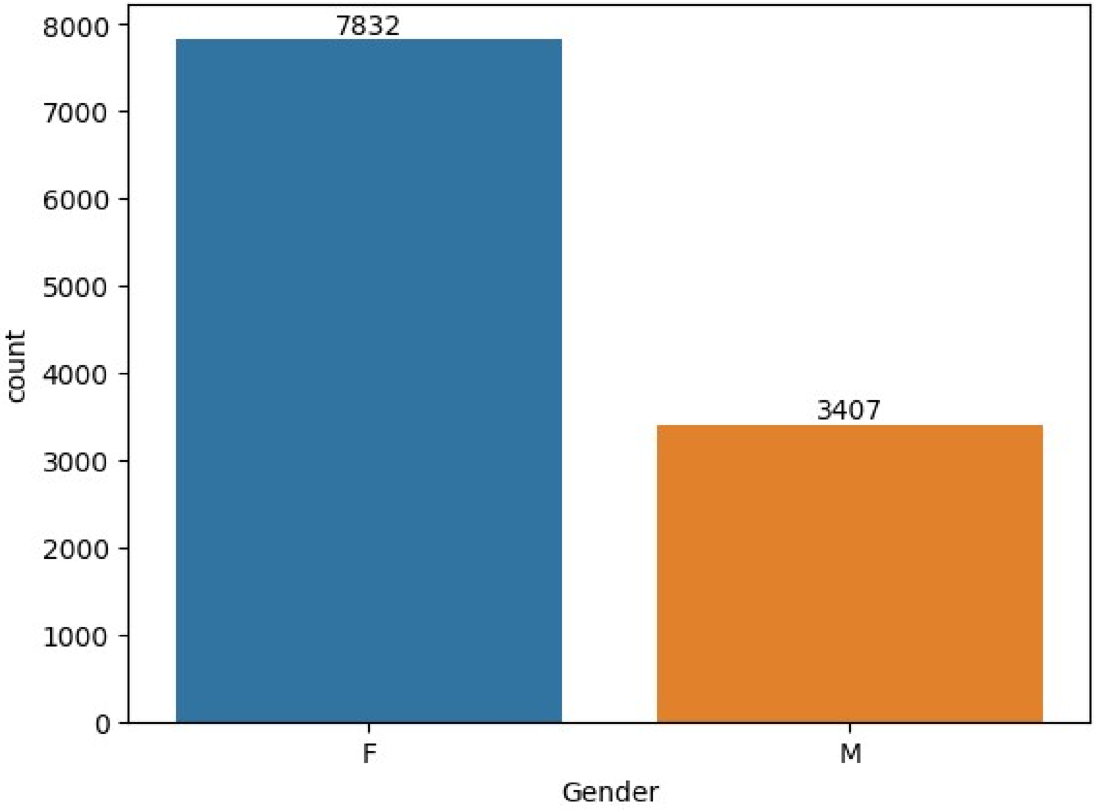
```
# change data type
df['Amount'] = df['Amount'].astype('int')

df['Amount'].dtypes

dtype('int32')

# describe() method returns description of the data in the DataFrame
(i.e. count, mean, std, etc)
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

# for specific columns
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
```

Exploratory Data Analysis

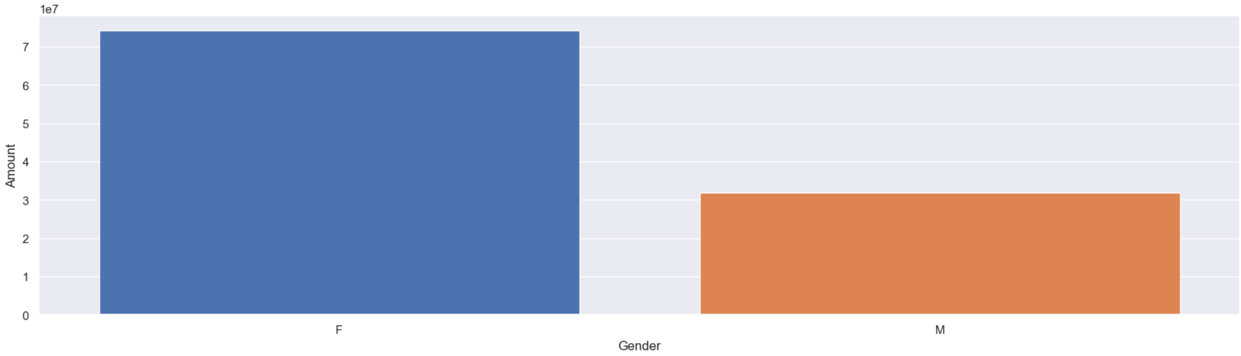
Gender

```
# plotting a bar chart for Gender and it's count

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

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

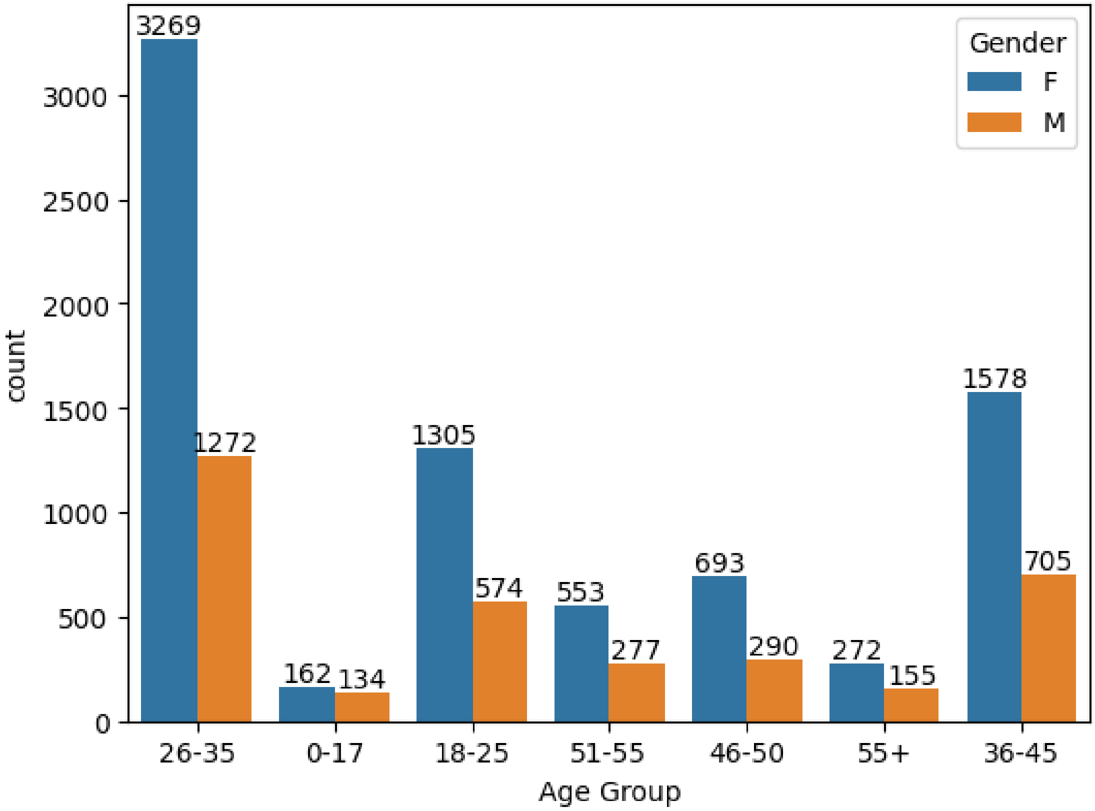


```
# plotting a bar chart for gender vs total amount

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

sns.barplot(x = 'Gender',y= 'Amount' ,data = sales_gen, hue =
"Gender", saturation=100)
plt.show()
```

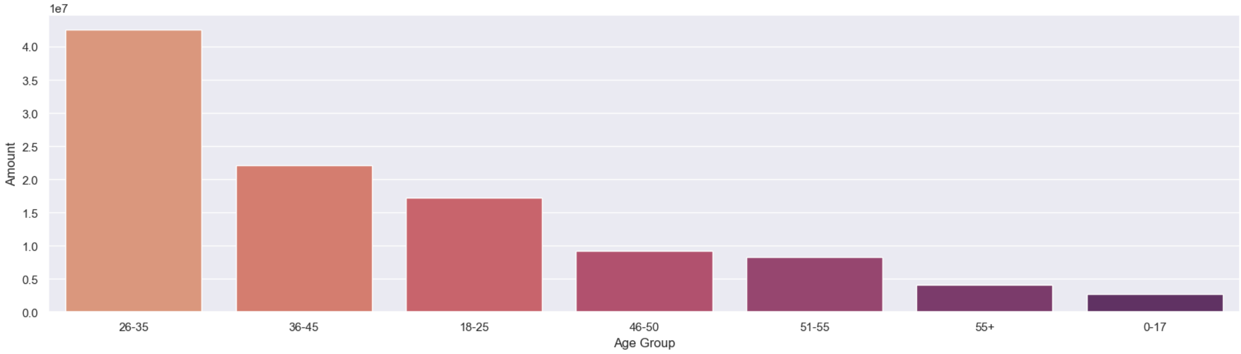


Age Group

```
ax = sns.countplot(data = df, x = 'Age Group', hue = 'Gender')

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

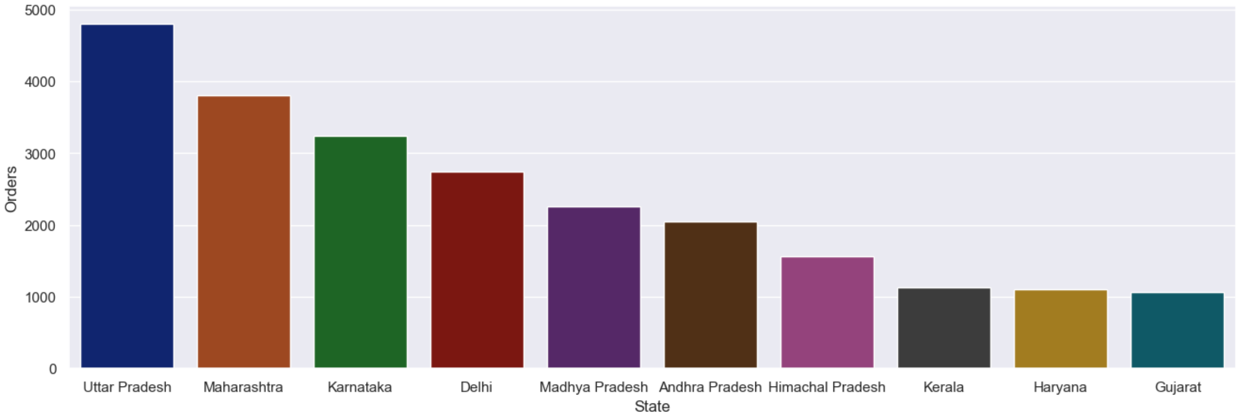


```
# Total Amount vs Age Group
sales_age = df.groupby(['Age Group'], as_index=False)
['Amount'].sum().sort_values(by='Amount', ascending=False)

sns.barplot(x = 'Age Group',y= 'Amount' ,data = sales_age, hue = "Age
Group", palette="flare")
plt.show()
```

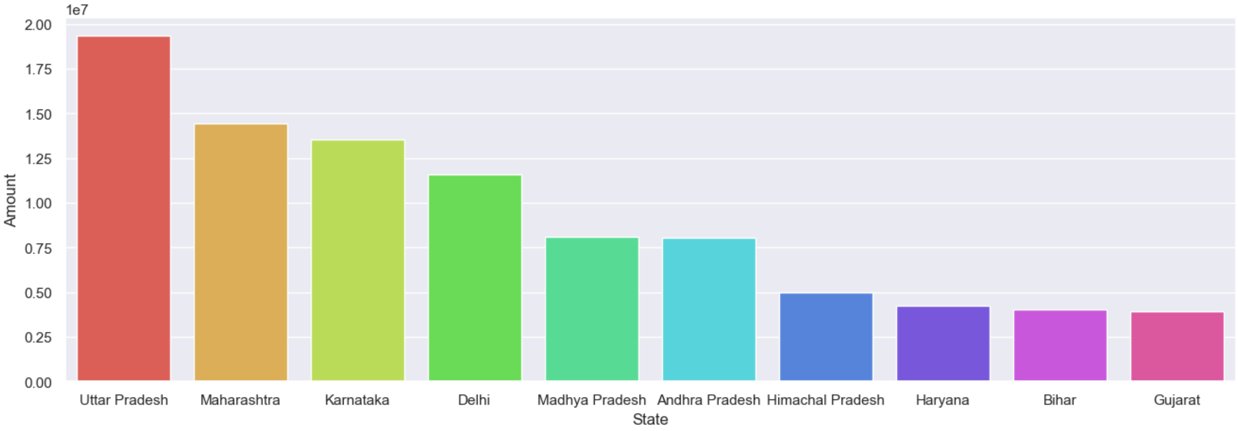


State

```
# total number of orders from top 10 states

sales_state = df.groupby(['State'], as_index=False)
['Orders'].sum().sort_values(by='Orders', ascending=False).head(10)

sns.set(rc={'figure.figsize':(16,5)})
sns.barplot(data = sales_state, x = 'State',y= 'Orders', hue =
"State", alpha = 1, palette= "dark")
plt.show()
```

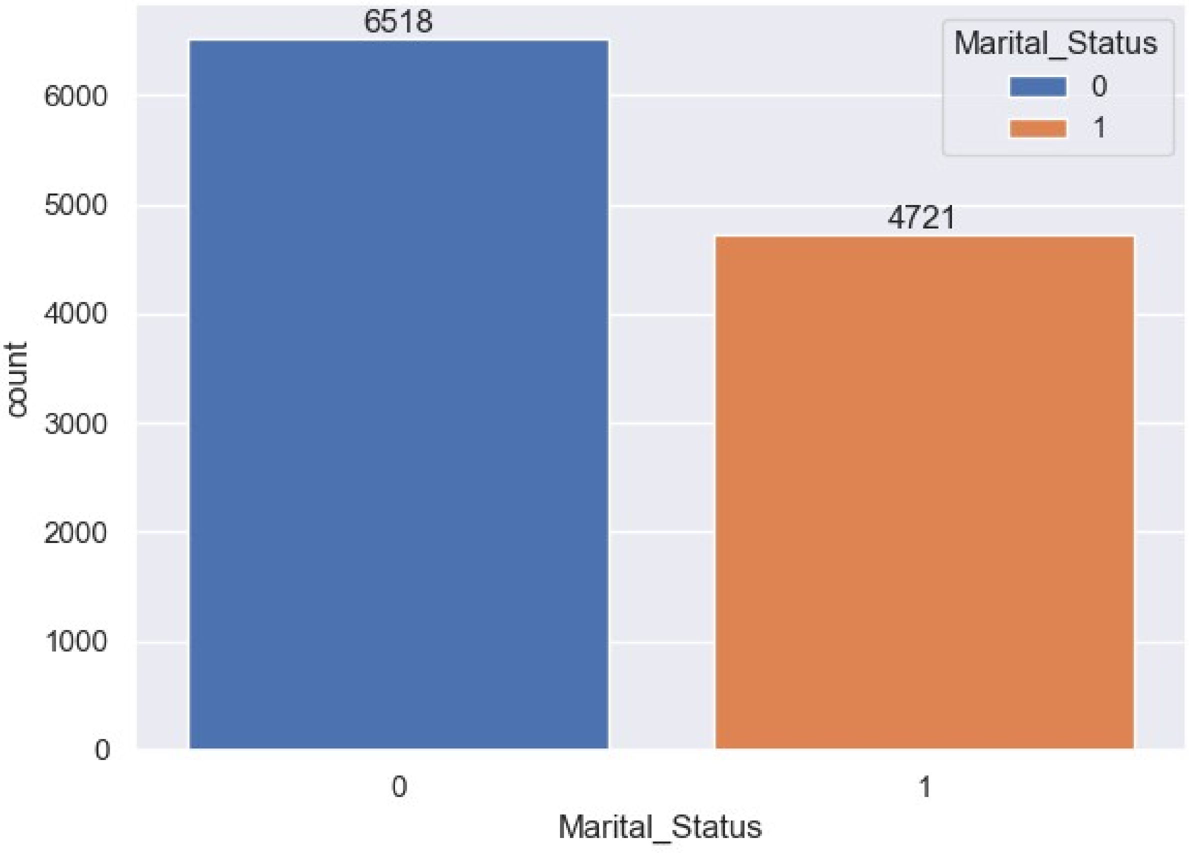


```
# total amount/sales from top 10 states

sales_state = df.groupby(['State'], as_index=False)
['Amount'].sum().sort_values(by='Amount', ascending=False).head(10)
sns.set(rc={'figure.figsize':(16,5)})
sns.barplot(data = sales_state, x = 'State',y= 'Amount', hue =
"State", palette= "hls", saturation=100)
plt.show()
```

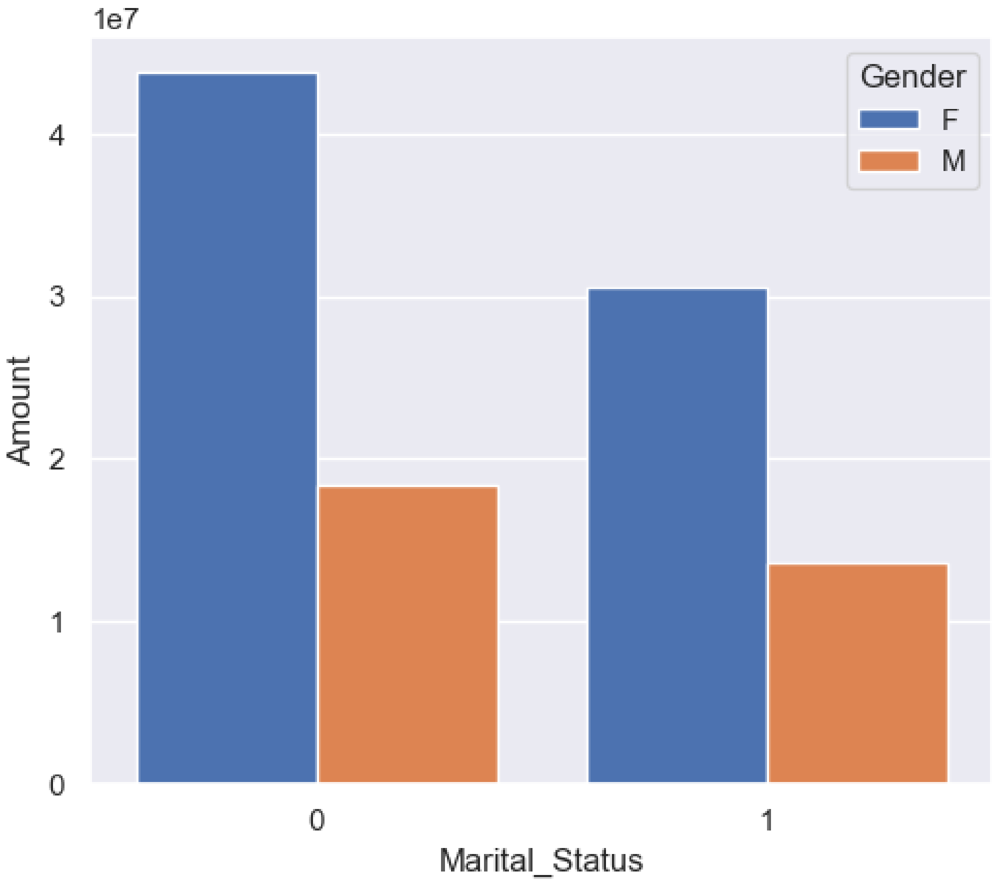


Marital Status

```python
ax = sns.countplot(data = df, x = 'Marital_Status', hue =
'Marital_Status', saturation=100)

sns.set(rc={'figure.figsize':(7,5)})
for bars in ax.containers:
    ax.bar_label(bars)
```

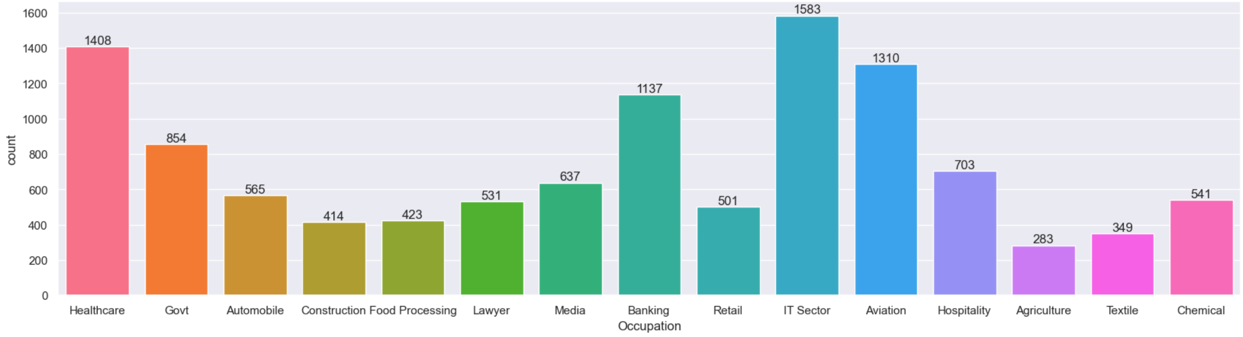


```python
sales_state = df.groupby(['Marital_Status', 'Gender'], as_index=False)
['Amount'].sum().sort_values(by='Amount', ascending=False)

sns.set(rc={'figure.figsize':(6,5)})
sns.barplot(data = sales_state, x = 'Marital_Status',y= 'Amount',
hue='Gender', saturation=100)
plt.show()
```



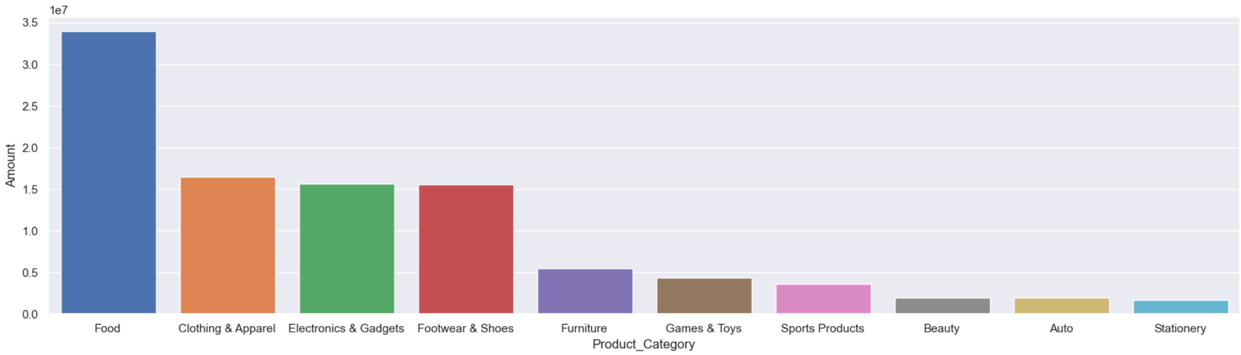
Occupation

```
sns.set(rc={'figure.figsize':(20,5)})
ax = sns.countplot(data = df, x = 'Occupation', hue = 'Occupation',
saturation=100 )

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

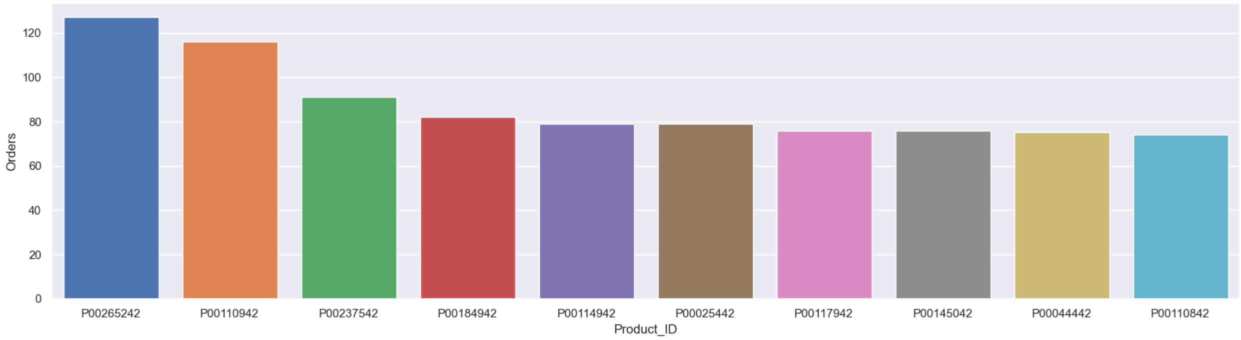


```
sales_state = df.groupby(['Product_Category'], as_index=False)
['Amount'].sum().sort_values(by='Amount', ascending=False).head(10)
```

```
sns.set(rc={'figure.figsize':(20,5)})
sns.barplot(data = sales_state, x = 'Product_Category',y= 'Amount',
hue = 'Product_Category', saturation=100)
plt.show()
```



```
sales_state = df.groupby(['Product_ID'], as_index=False)
['Orders'].sum().sort_values(by='Orders', ascending=False).head(10)

sns.set(rc={'figure.figsize':(20,5)})
sns.barplot(data = sales_state, x = 'Product_ID',y= 'Orders', hue =
'Product_ID', saturation=100)
plt.show()
```



Conclusion:

Married women age group 26-35 yrs from UP, Maharastra and Karnataka working in IT, Healthcare and Aviation are more likely to buy products from Food, Clothing and Electronics category