```
from google.colab import files


uploaded = files.upload()
```

```
Choose Files ecommerce…er_data.csv
```

- **ecommerce_customer_data.csv**(text/csv) - 19084 bytes, last modified: 1/17/2025 - 100% done

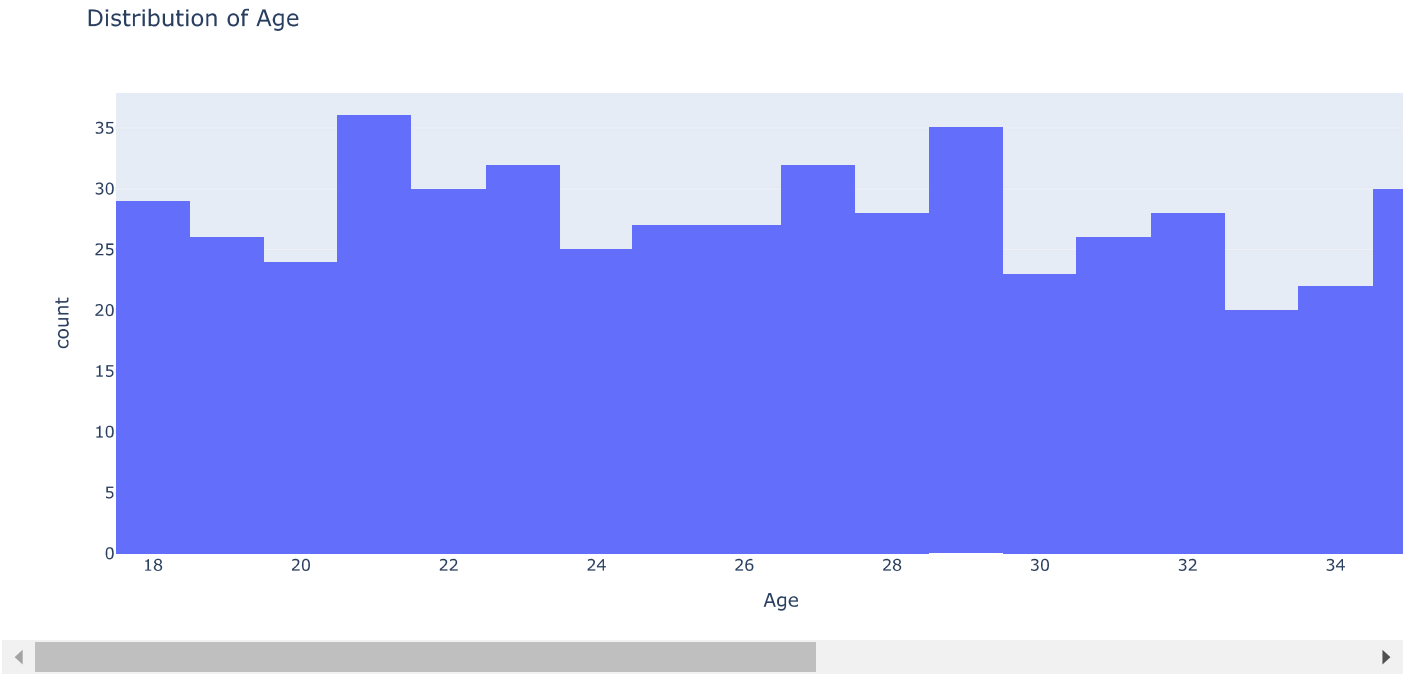
```
# Importing the Python Libraries
import pandas as pd
import plotly.express as px
import plotly.graph_objects as go

# Loading the Customer Data
data = pd.read_csv("ecommerce_customer_data.csv")
print(data.head())
```

```
   User_ID  Gender  Age   Location Device_Type  Product_Browsing_Time  \
0        1  Female   23  Ahmedabad      Mobile                     60
1        2    Male   25    Kolkata      Tablet                     30
2        3    Male   32  Bangalore     Desktop                     37
3        4    Male   35      Delhi      Mobile                      7
4        5    Male   27  Bangalore      Tablet                     35

   Total_Pages_Viewed  Items_Added_to_Cart  Total_Purchases
0                  30                    1                0
1                  38                    9                4
2                  13                    5                0
3                  20                   10                3
4                  20                    8                2
```

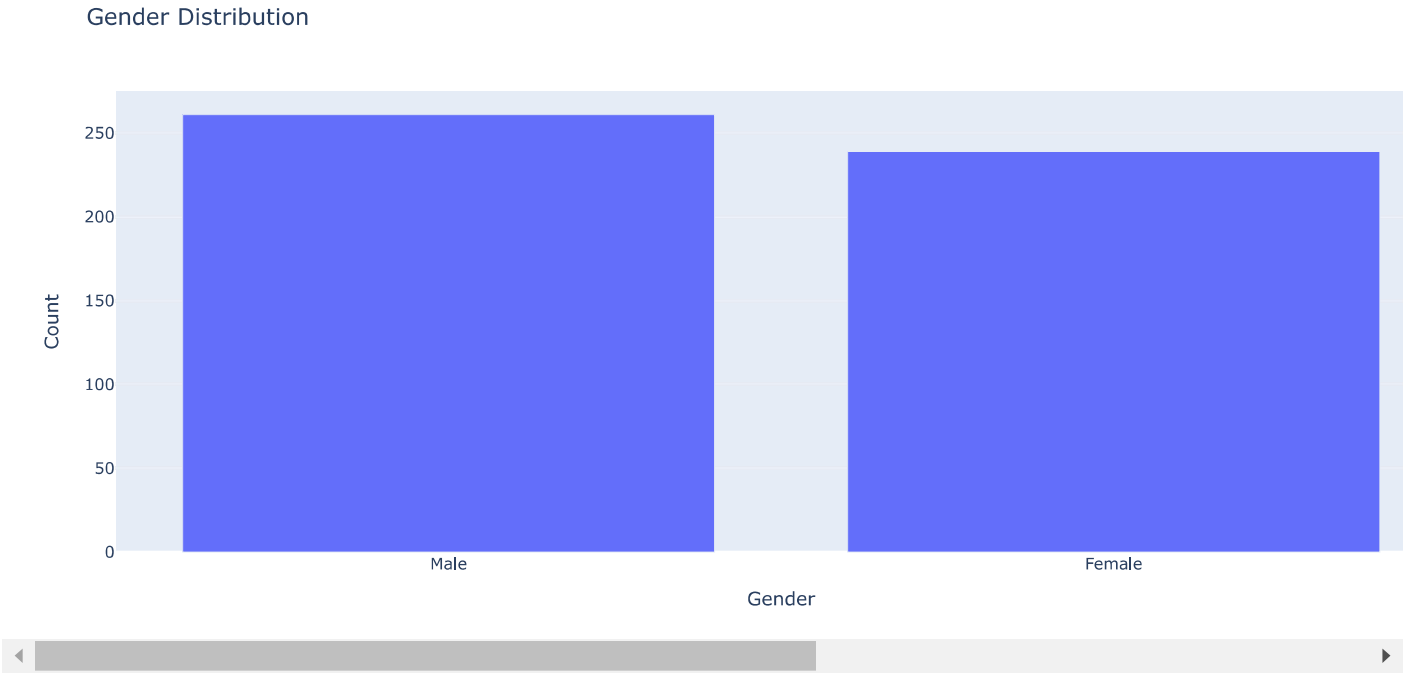
```
#Summary Statistics for numeric columns
numeric_summary = data.describe()
print(numeric_summary)
```

```
           User_ID         Age  Product_Browsing_Time  Total_Pages_Viewed  \
count  500.000000  500.000000             500.000000          500.000000
mean   250.500000   26.276000              30.740000           27.182000
std    144.481833    5.114699              15.934246           13.071596
min      1.000000   18.000000               5.000000            5.000000
25%    125.750000   22.000000              16.000000           16.000000
50%    250.500000   26.000000              31.000000           27.000000
75%    375.250000   31.000000              44.000000           38.000000
max    500.000000   35.000000              60.000000           50.000000

       Items_Added_to_Cart  Total_Purchases
count           500.000000       500.000000
mean              5.150000         2.464000
std               3.203127         1.740909
min               0.000000         0.000000
25%               2.000000         1.000000
50%               5.000000         2.000000
75%               8.000000         4.000000
max              10.000000         5.000000
```

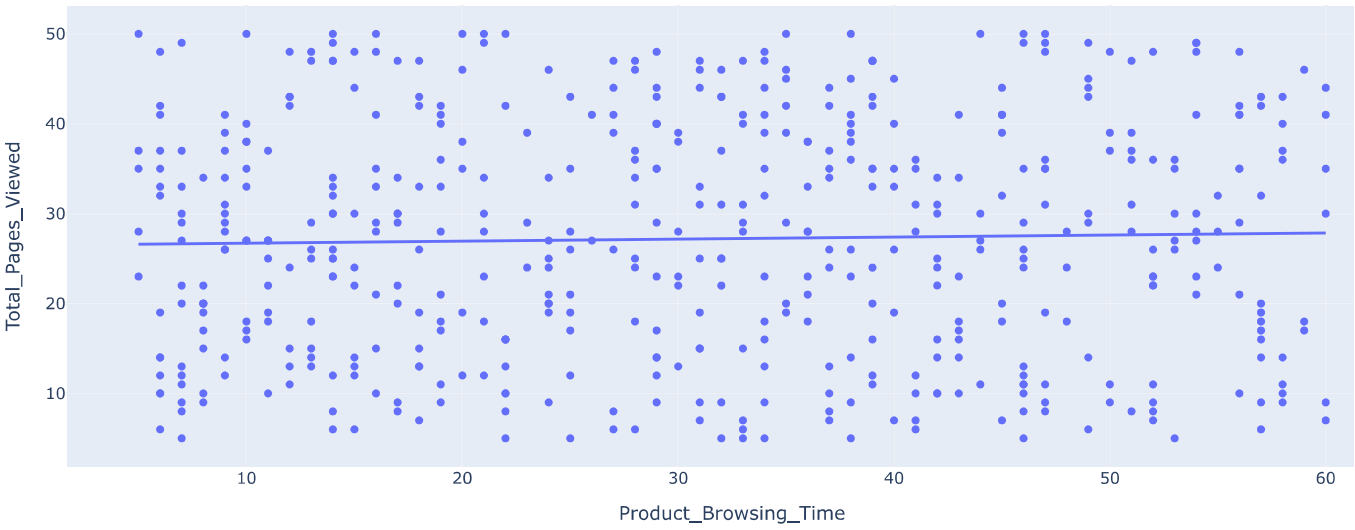
```
# Histogram for 'Age'
fig = px.histogram(data, x='Age', title ='Distribution of Age')
fig.show()
```



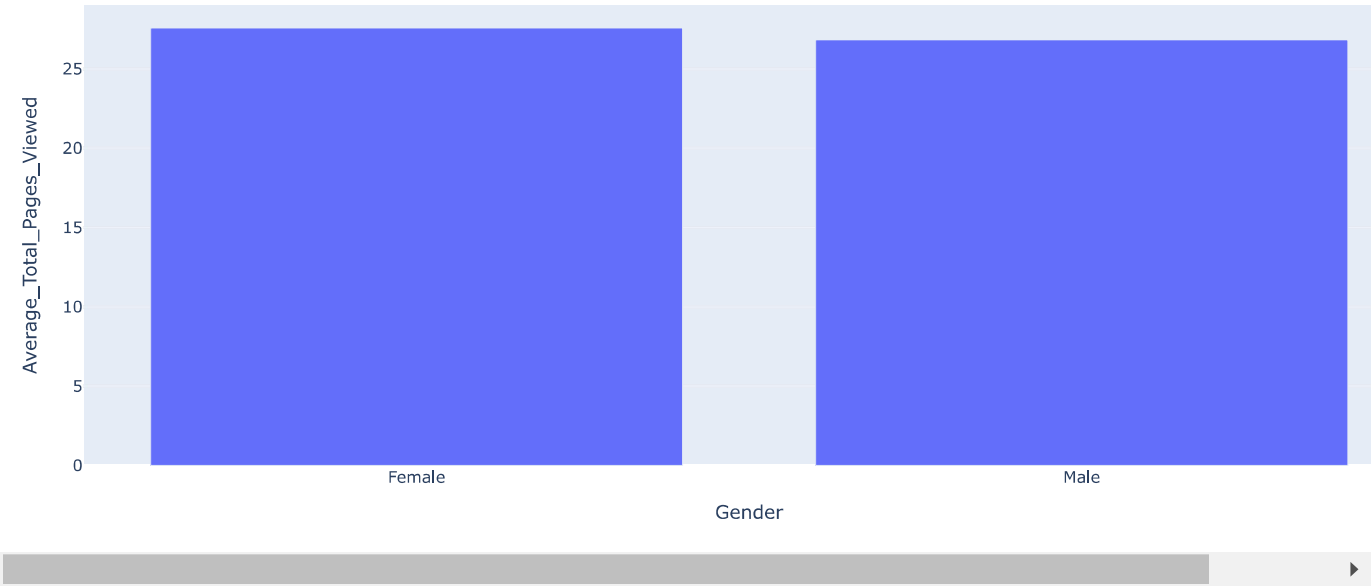

```
# Barchart for Gender Distribution
gender_counts = data['Gender'].value_counts().reset_index()
gender_counts.columns = ['Gender', 'Count']
fig = px.bar(gender_counts, x='Gender', y='Count', title='Gender Distribution')
fig.show()
```



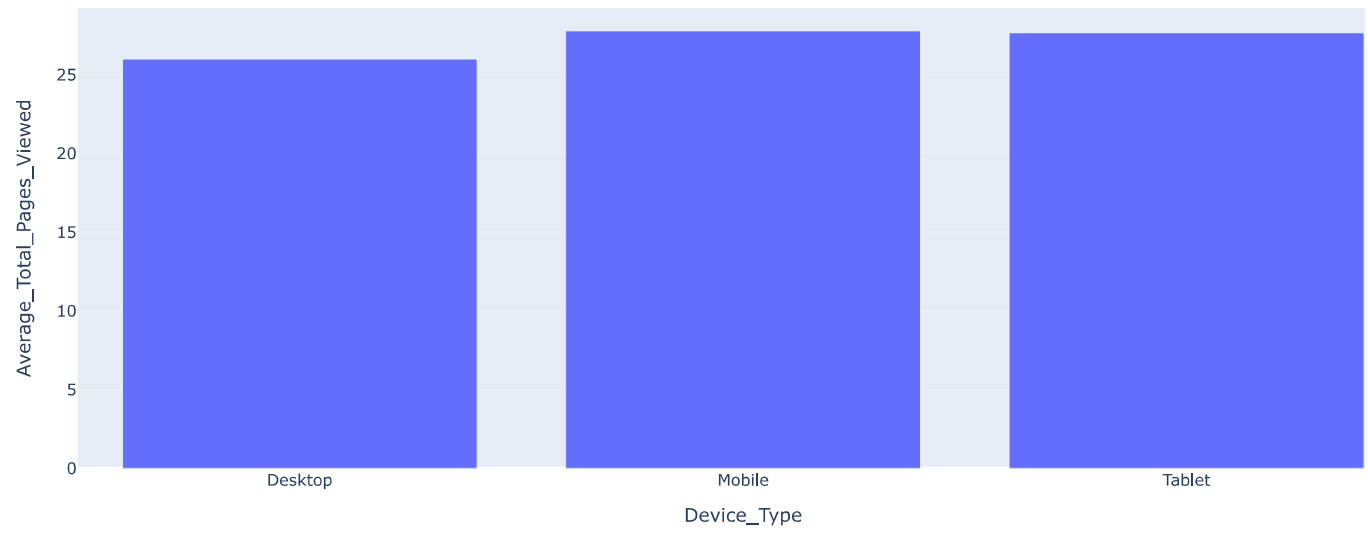

```
# 'Product_Browsing_Time' vs 'Total_Pages_Viewed'
fig = px.scatter(data, x='Product_Browsing_Time', y='Total_Pages_Viewed',
                 title='Product Browsing Time vs. Total Pages Viewed',
                 trendline='ols')
fig.show()
```



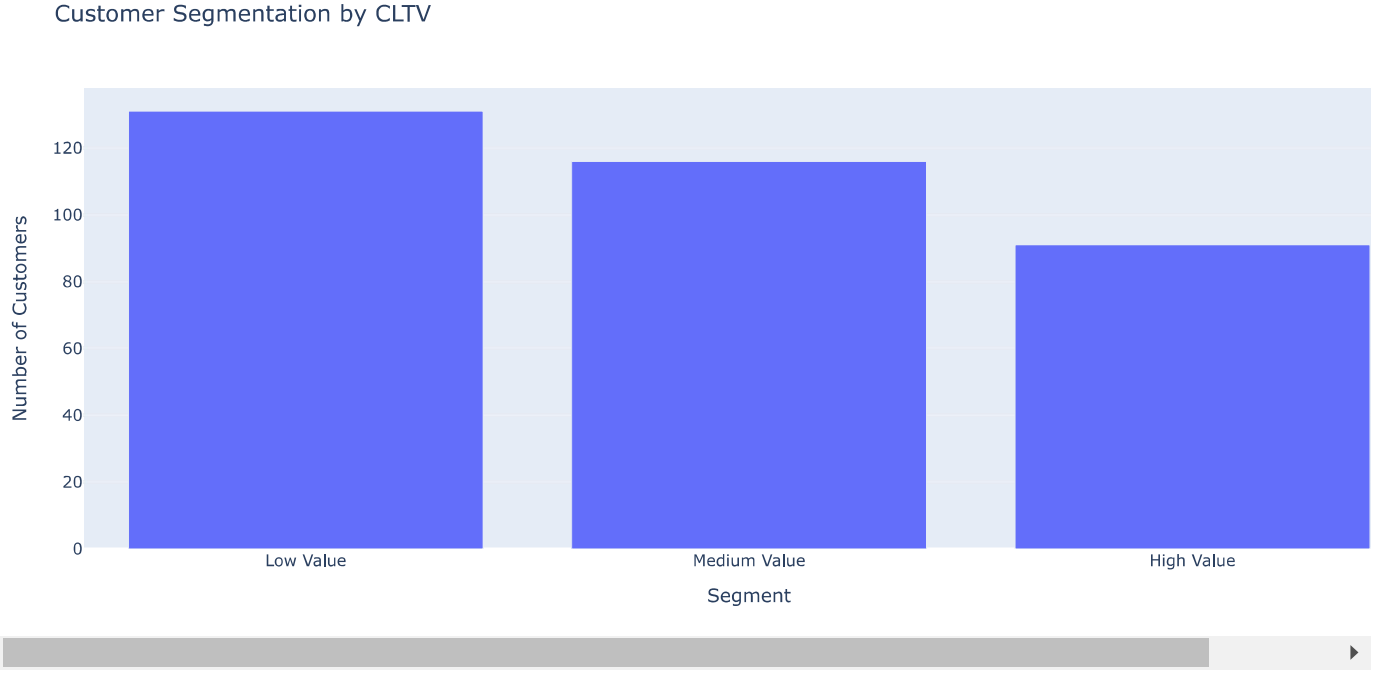

```
#Average total pages viewed by Gender
#Grouped Analysis
gender_grouped = data.groupby('Gender')['Total_Pages_Viewed'].mean().reset_index()
gender_grouped.columns = ['Gender', 'Average_Total_Pages_Viewed']
fig =  px.bar(gender_grouped, x='Gender', y='Average_Total_Pages_Viewed', title='Average Total Pages Viewed by Gender')
fig.show()
```




```
#Average total pages Viewed by Devices

devices_grouped = data.groupby('Device_Type')['Total_Pages_Viewed'].mean().reset_index()
devices_grouped.columns = ['Device_Type', 'Average_Total_Pages_Viewed']
fig = px.bar(devices_grouped, x='Device_Type', y='Average_Total_Pages_Viewed', title='Average Total Pages Viewed by Devices')
fig.show()
```

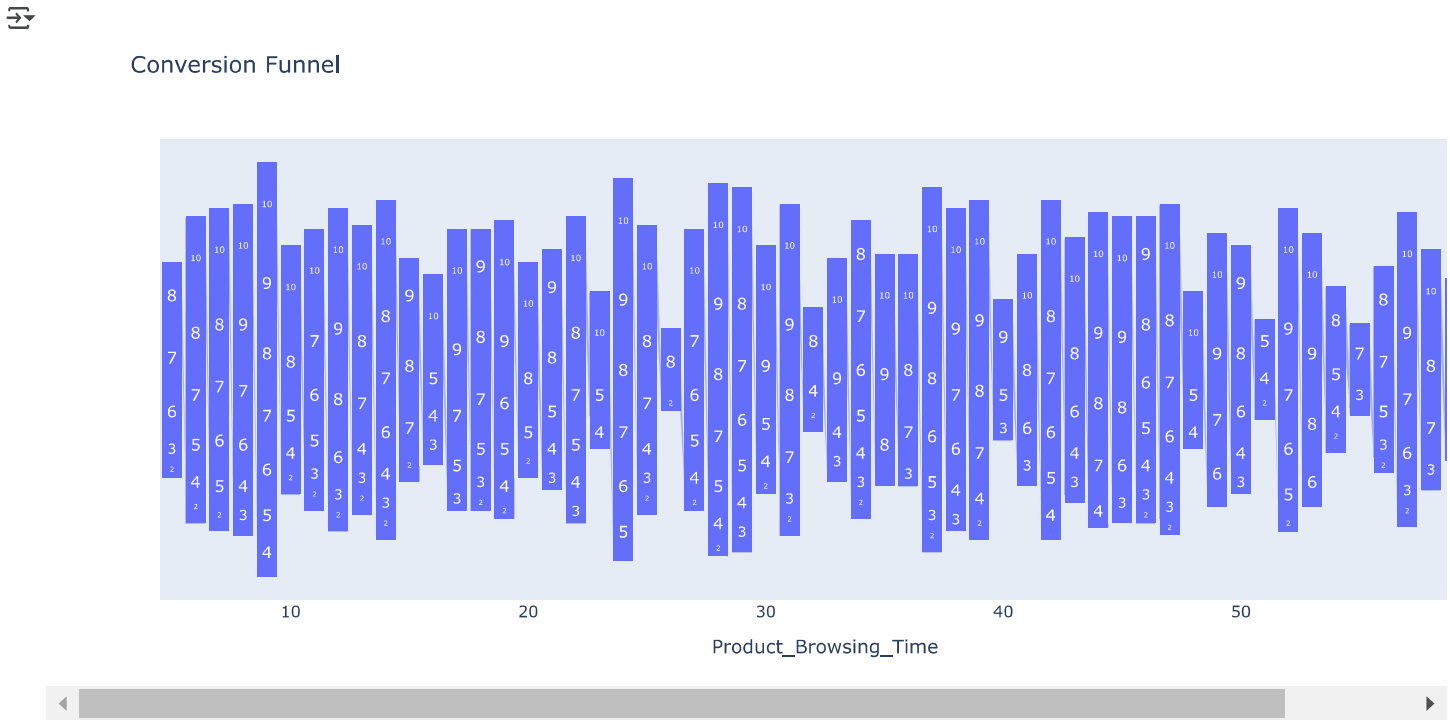



```
#Calculating the Customer Life Time Value (CLTV) and visualizing segments based on CLTV
data['CLTV'] = (data['Total_Purchases'] * data['Total_Pages_Viewed']) / data['Age']

data['Segment'] = pd.cut(data['CLTV'], bins=[1, 2.5, 5, float('inf')],
                         labels=['Low Value', 'Medium Value', 'High Value'])

segment_counts = data['Segment'].value_counts().reset_index()
segment_counts.columns = ['Segment', 'Count']

# Create a bar chart to visualize the customer segments
fig = px.bar(segment_counts, x='Segment', y='Count',
             title='Customer Segmentation by CLTV')
fig.update_xaxes(title='Segment')
fig.update_yaxes(title='Number of Customers')
fig.show()
```




```
#Conversion Funnel of Customers
# Funnel analysis
funnel_data = data[['Product_Browsing_Time', 'Items_Added_to_Cart', 'Total_Purchases']]
```

```
funnel_data = data[['Product_Browsing_Time', 'Items_Added_to_Cart', 'Total_Purchases']]
funnel_data = funnel_data.groupby(['Product_Browsing_Time', 'Items_Added_to_Cart']).sum().reset_index()

fig = px.funnel(funnel_data, x='Product_Browsing_Time', y='Items_Added_to_Cart', title='Conversion Funnel')
fig.show()
```




```
#Calculate churn rate
data['Churned'] = data['Total_Purchases'] == 0
```