Project Report

About Dataset

This dataset contains information on customer purchase behavior across various attributes, aiming to help data scientists and analysts understand the factors influencing purchase decisions. It includes demographic information, purchasing habits, and other relevant features.

Project Plan

1) Data visualization and reporting

    Exploratory Data Analysis (EDA)

    a) Visualize key aspects of the dataset:
        i) **Customer segmentation**: Which customer groups make more purchases?
        ii) **Correlation analysis**: Analyze the relationship between features and the target (purchase).

2) Develop a model to predict whether a customer is making a purchase or not.
3) Deploy the model in a web app.

Data Dictionary

- **Age:** Customer's age
- **Gender:** Customer's gender
  - 0: Male
  - 1: Female
- **Annual Income:** Annual income of the customer in dollars
- **Number of Purchases:** Total number of purchases made by the customer
- **Product Category:** Category of the purchased product
  - 0: Electronics
  - 1: Clothing
  - 2: Home Goods
  - 3: Beauty
  - 4: Sports
- **Time Spent on Website:** Time spent by the customer on the website in minutes
- **Loyalty Program:** Whether the customer is a member of the loyalty program
  - 0: No
  - 1: Yes
- **Discounts Availed:** Number of discounts availed by the customer
  - Range: 0-5
- **Purchase Status (Target Variable):** Likelihood of the customer making a purchase
  - 0: No Purchase
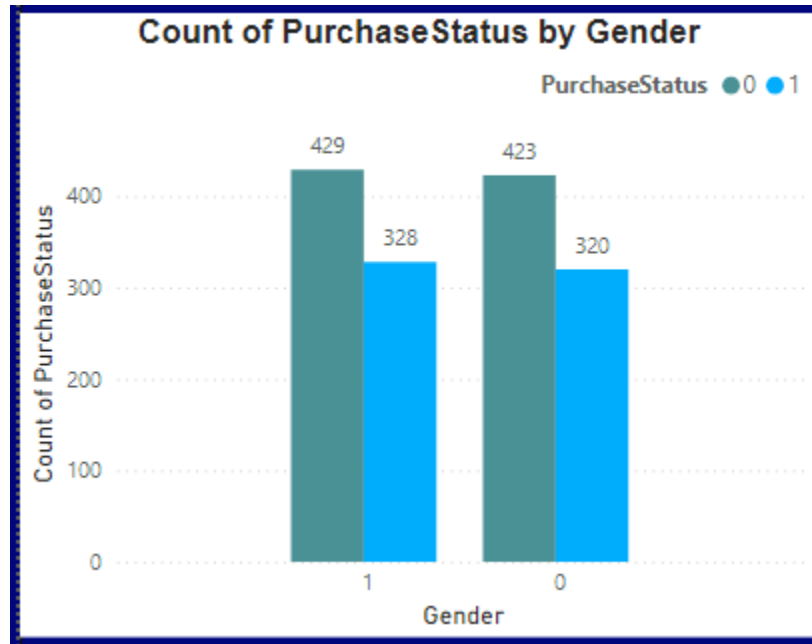 - 1: Purchase

Data analyzing
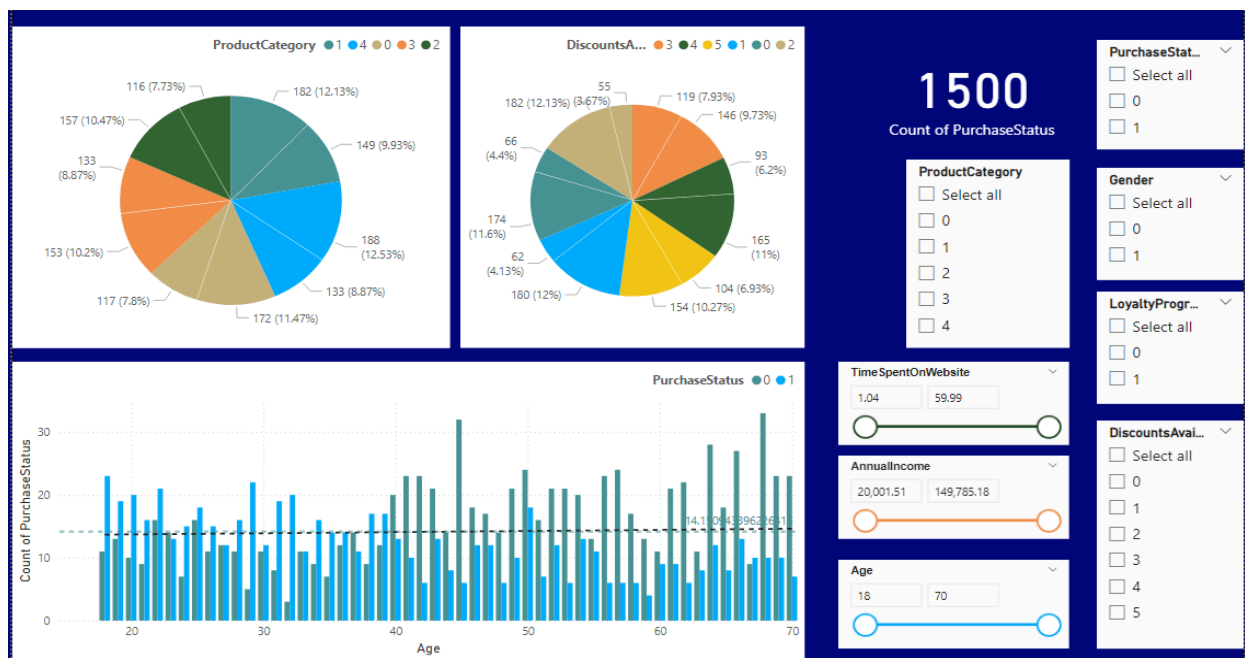
In total, we have 1,500 purchases:

- **No Purchase:** 852 (56.8%)
- **Purchase:** 648 (43.2%)

By focusing on customers who made a purchase, we can identify key information about our target customers.

1) By Gender
   - The distribution is as follows: 328 females and 320 males, indicating that there is not a significant difference between genders. This suggests that gender may not be a useful factor for customer segmentation.

Count of PurchaseStatus by Gender

PurchaseStatus ● 0 ● 1

429 | 423
328 | 320

Count of PurchaseStatus (y-axis: 0, 100, 200, 300, 400)

Gender (x-axis: 1, 0)

2) By Age
   Customer ages range from 18 to 70.
   - **Purchases:** 417 (64.3%) are from customers aged 18-45.
   - Most customers between the ages of 18 and 40 are above average in terms of purchases, and this group contains the maximum value.
   - In the age range of 40 to 70, the number of purchases is lower, although some customers in this group are still close to the average.
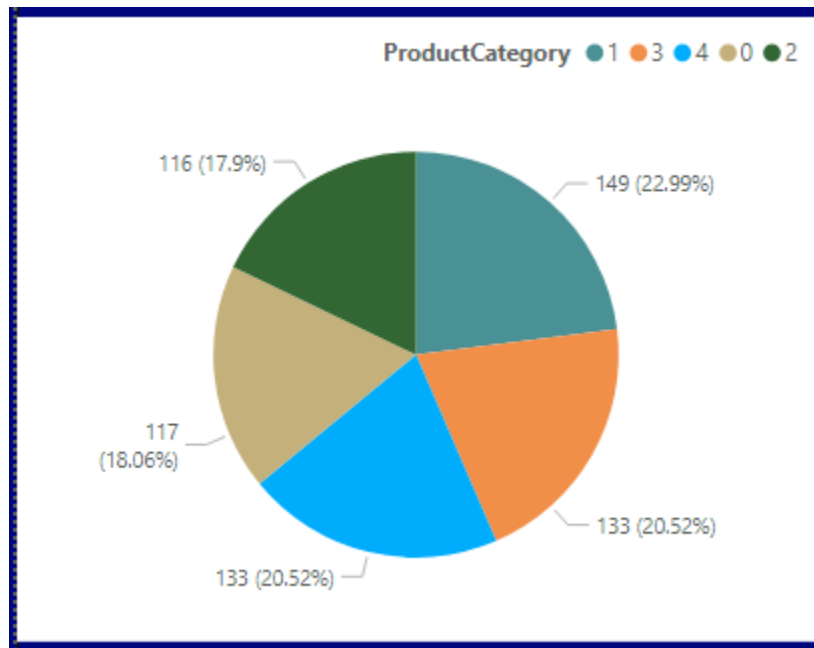
Target customers are most likely to be between the ages of 18 and 40.
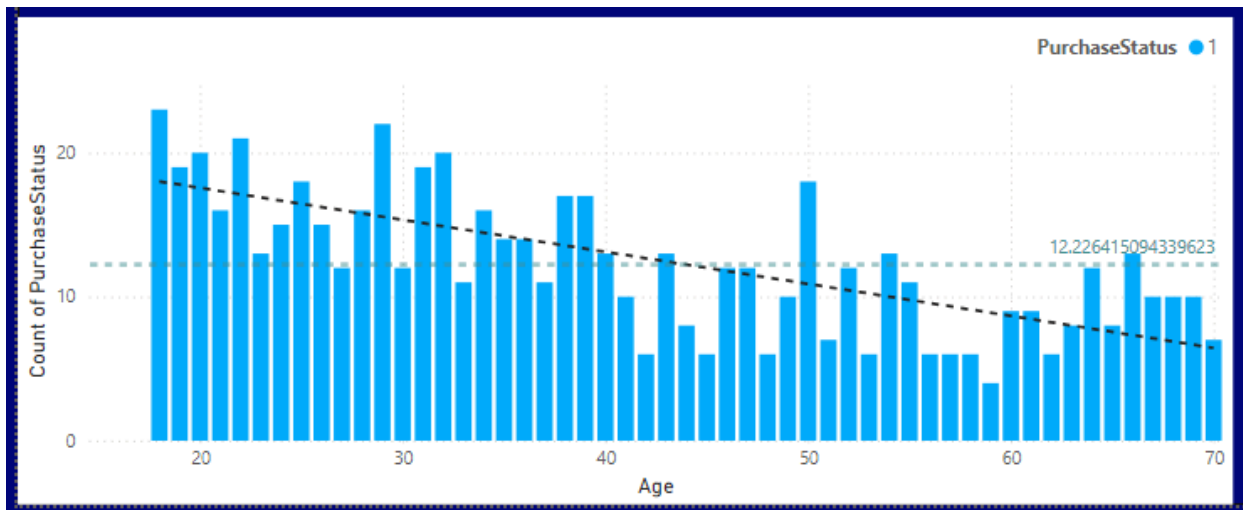
3) By Product Category

Clothing has the highest percentage of purchases, accounting for nearly 23%.

- Beauty and Sports each represent 20%.
- Home Goods and Electronics each account for 18%.

4) By Loyalty Program
- **Members:** 320 purchases
- **Non-Members:** 328 purchases

Loyalty programs do not appear to have a significant effect on purchasing behavior. This suggests that the loyalty program may not be particularly effective in increasing the likelihood of making a purchase.

5) By Annual Income
- **Purchases:** 382 (more than 50%) are made by customers with an annual income above the average, which is approximately $85,000.
- **Purchases:** 177 are made by customers with an annual income ranging from $117,000 to $150,000, representing less than half (46%).

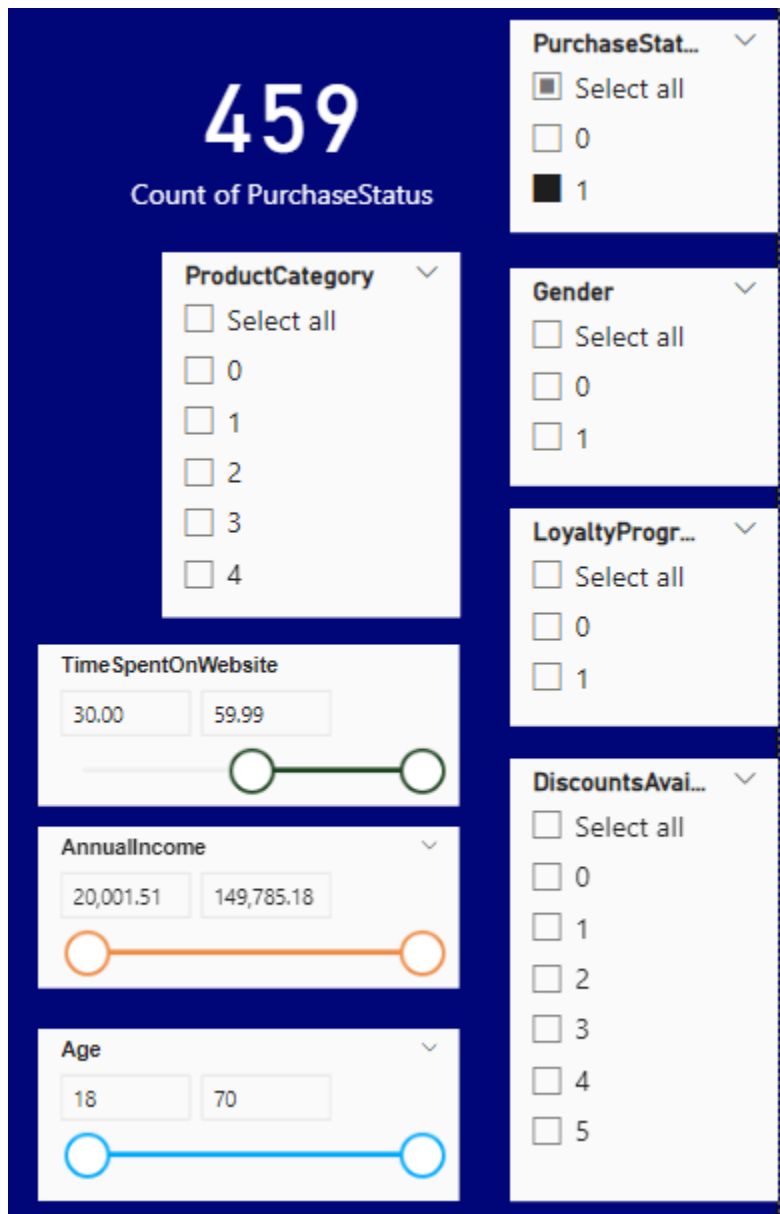**Customers with higher annual incomes are more likely to make a purchase.**

6) By Time spent on Website
   - **Purchases:** 446 (68.8%) are made by customers who spend more than 30 minutes on the website (half of the total range).
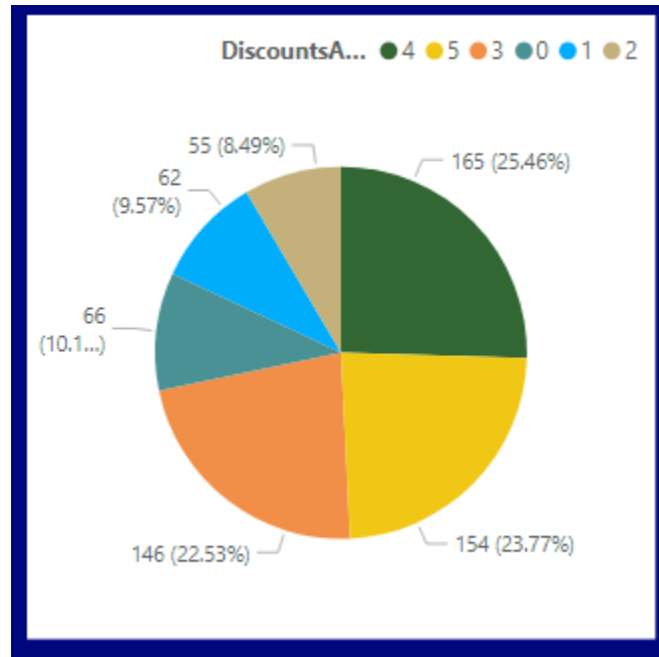
The more time customers spend on the website, the more likely they are to make a purchase.

7) By number of discounts
   - **25%** of customers have 4 discounts.
   - **23%** have 5 discounts.
   - **22%** have 3 discounts.
   - **10%** have 0 or 1 discount.
   - **8%** have 2 discounts.

Customers with a higher number of discounts are more likely to make a purchase.

Target Customer Information and Behavior

Age: 18-40; the younger, the better.
Annual Income: Greater than $85,000.
Time Spent on Website: More than 30 minutes.
Interests:

1. Clothing
2. Sports and Beauty
3. Electronics and Home Goods

Number of Discounts: 3 or more.

Conclusion

As the data analyst for this project, I focused on understanding customer purchase behavior to help inform your marketing and sales strategies. Through comprehensive analysis of the dataset, I uncovered several key insights that can significantly impact decision-making.

First, I explored demographic factors, revealing that our most promising customer segment is individuals aged 18 to 40. This age group not only makes the highest number of purchases but is also more engaged with our product offerings, particularly in clothing. Interestingly, while the gender distribution is fairly even, gender itself does not appear to influence purchasing decisions significantly.

I also examined the role of annual income, finding that customers with incomes above $85,000 are more likely to make purchases. This insight suggests that targeting higher-income individuals could yield better sales outcomes.

Time spent on our website emerged as another critical factor. I discovered that customers who spend more than 30 minutes browsing are significantly more likely to complete a purchase. This highlights the importance of creating an engaging online experience to keep customers interested.

Additionally, I analyzed the impact of our loyalty program and discounts. Surprisingly, the loyalty program did not show a strong correlation with purchase behavior, indicating that we may need to reevaluate its structure. However, I found a positive relationship between the number of discounts availed and purchasing likelihood, suggesting that promotional strategies can effectively drive sales.

Overall, my analysis identified the characteristics of our target customers and provided actionable insights for refining marketing efforts. Moving forward, I recommend leveraging these findings to enhance customer engagement and develop a predictive model that can help us anticipate purchasing behavior. By implementing these strategies, we can optimize our approach and ultimately increase sales.

Project Made
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