

Aerofit Business Case Study

Problem Statement

The AeroFit research team aims to figure out who likes each type of treadmill they sell. They want to give better advice to new customers about which treadmill is best for them. The company wants to check if there are any differences between the treadmills and the people who like them. This Analysis will focus on identifying variations in customer characteristics across different treadmill offerings.

Insights on Analyzing the Basic Metrics

- **Total Customer Base:** There are a total of 180 customers.
- **Age Diversity:** Customers' ages range widely from 18 to 50 years, with an average age of about 28 years.
- **Educational Backgrounds:** Customers have various educational backgrounds, with durations ranging from 12 to 21 years. On average, they've spent more than 15 years in education.
- **Product Usage:** Customers plan to use the product between 2 to 7 times per week, with an average usage goal of about 3 times per week.
- **Fitness Levels:** On a 5-point scale, customers, on average, rate their fitness at 3, indicating a moderate fitness level among the user base.
- **Income Range:** Annual income of customers varies from USD 30,000 to USD 100,000, with an average income of approximately USD 54,000.
- **Running Goals:** Customers have diverse weekly running goals, ranging from 21 to 360 miles, with an average target of 103 miles per week.

Finding Duplicates and Missing values

- There are no duplicate values in the dataset.
- There are no missing values in the dataset

Non-Graphical Analysis

- KP281, KP481, KP781 are the 3 different products
- The KP281 product has emerged as the top-performing product, contributing significantly to the overall sales with an impressive share of approximately 44%.
- There are 32 unique ages.
- 104 Males and 76 Females are in the customers list. The customer base is slightly inclined towards males, constituting around 58% of buyers, while females account for approximately 42%.
- 8 unique set of Educations (14, 15, 12, 13, 16, 18, 20, 21)
- Highest rated Fitness rating is 3

- Most customers usage treadmill atleast 3 days per week
- A majority of buyers, approximately 60%, were married, while the remaining 40% were single. This insight sheds light on the demographic composition of the customer base in terms of marital status.

Outliers Detection

Observations

- 85% of the customers fall in the age range of 18 to 35. with a median age of 26, suggesting young people showing more interest in the companies products
- 98% of the customers have education more than 13 years highlighting a strong inclination among well-educated individuals to purchase the products.
- Almost 60% of the customers fall in the income group of (40k to 60k) dollars suggesting higher inclination of this income group people towards the products.

Outliers

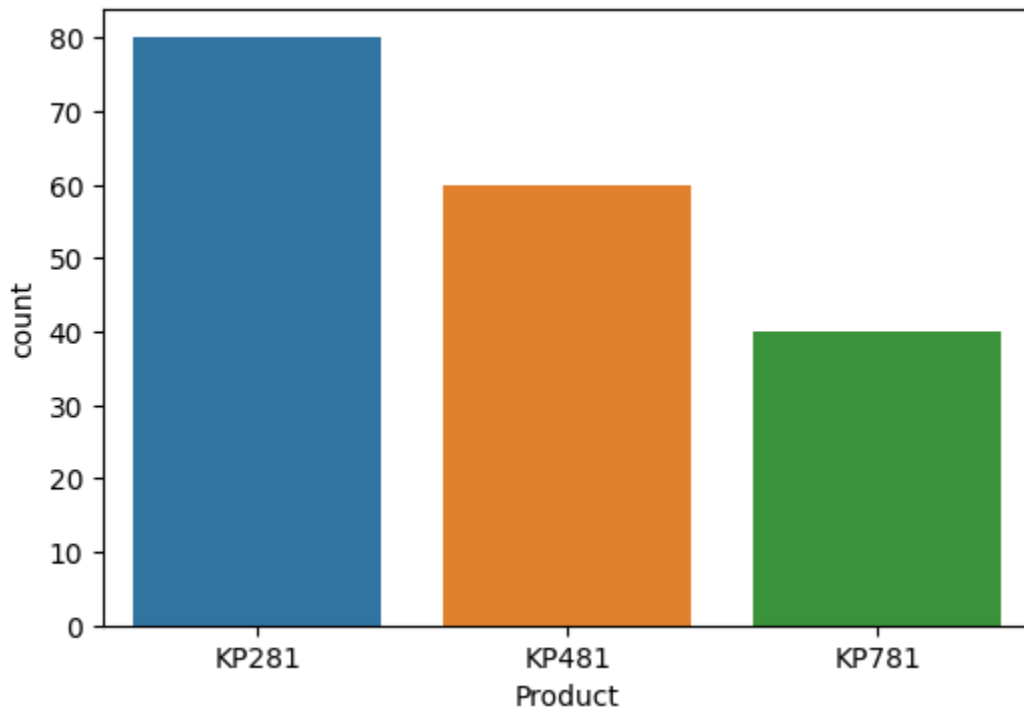
- As we can see from the box plot, there are 3 outlier's present in the age data.
- There are 2 outliers in the Education column.
- There is 1 outlier in the Fitness column.
- There are 2 outliers in the Usage column.
- The majority of the outliers are present in the Income data with 10.5% outliers and Miles with 7.2% outliers compared to other parameters.

Statistical Summary

- **Product**
 - 44.44% of customers bought KP281 product type
 - 33.33% of customers bought KP481 product type
 - 22.22% of customers bought KP781 product type
- **Gender**
 - 57.78% of customers are Male and 42.22% customers are Female
- **Marital Status**
 - 59.44% of customers are Married/Partnered
 - 40.56% of customers are Single
- **Usage**
 - Around 39% of customers use 3 days per week
 - Less than 2% of customers use 7 days per week
- **Fitness**
 - More than 53.8% of customers have rated themselves as average in fitness (rated 3). Among this 53% of customers 28.8% are male and 25% are female
 - 14% of customers have rated their fitness less than average
 - Over 17% of customers have peak fitness ratings.

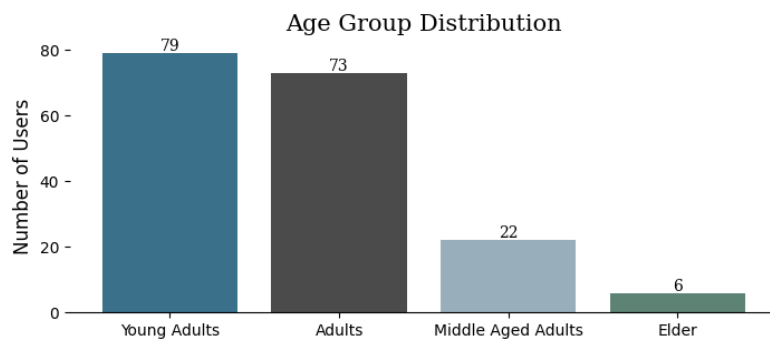
Univariate Analysis

Product



- KP281 is the most commonly purchase product type
- KP481 is the second most top product type purchased
- KP781 is the least purchased product type

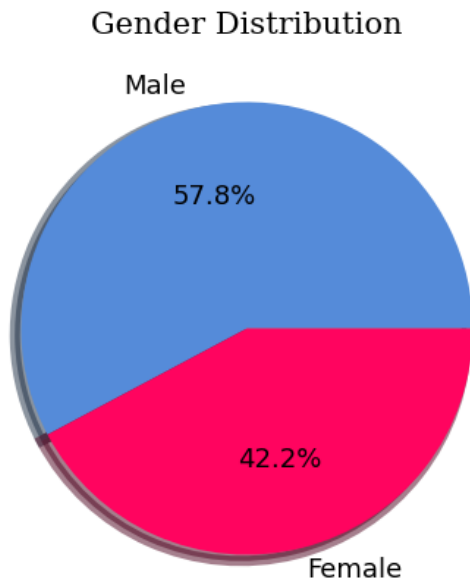
Age



Age	Probability	Group
Young Adults	44%	18 to 25
Adults	41%	26 to 35
Middle Aged	12%	36 to 45
Elder	3%	Above 45

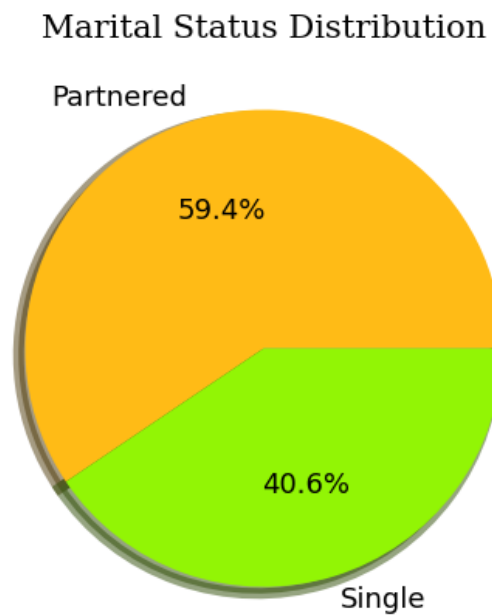
- 18 to 35 is the most common customer age group that has purchased the product.

Gender



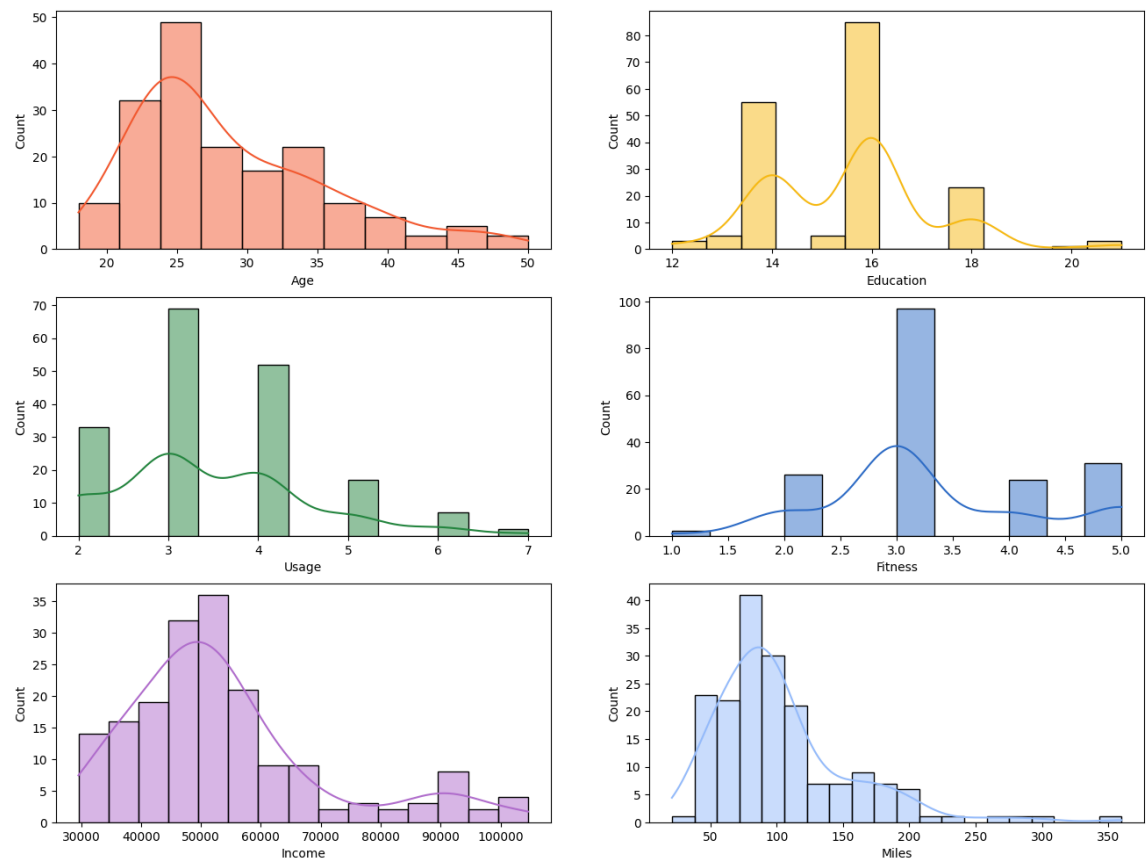
- 57.8% of products are purchased by Males, females are less interested in the product compared to Males.

Marital Status

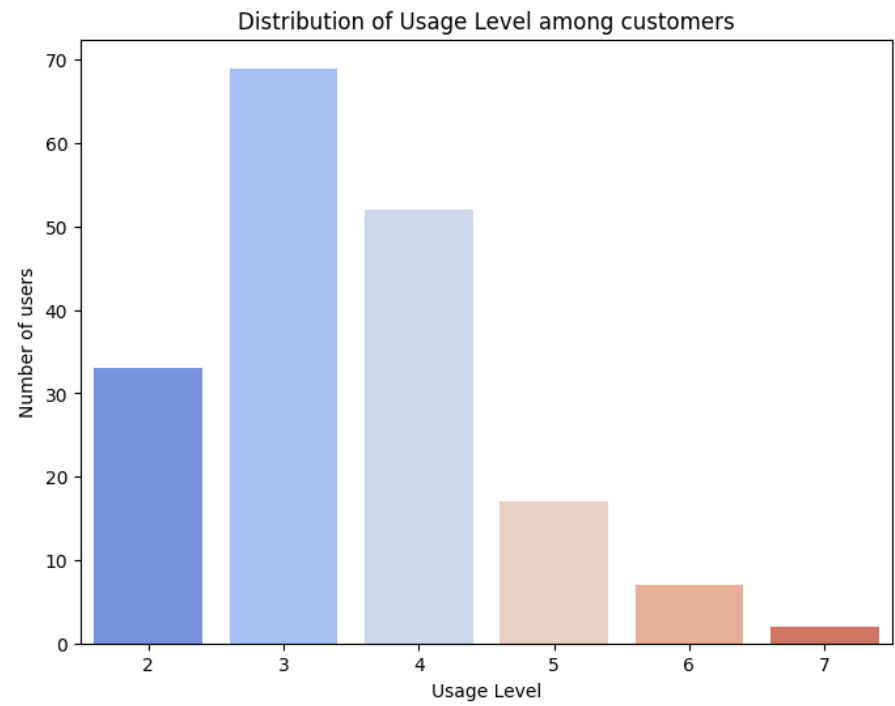


- 59.4% products purchased by Married customer category.

Distribution of data

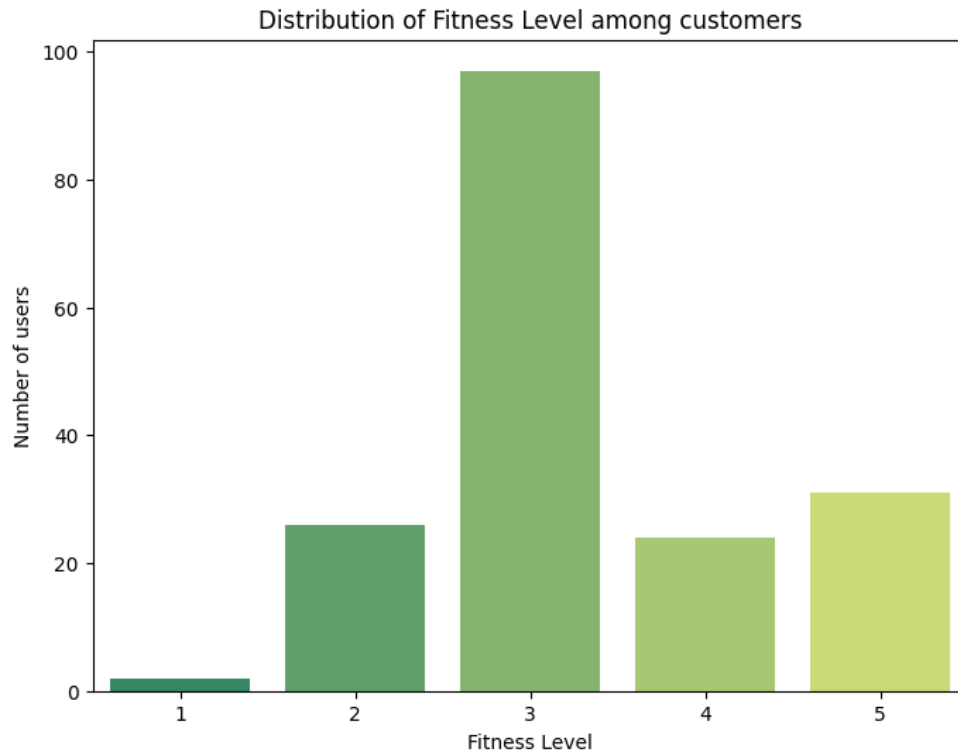


Usage



- 3 days per week is the most common usage among the customers.
- 4 days and 2 days per week is the second and third highest usage among the customers
- Very few customers use product 7 days per week.

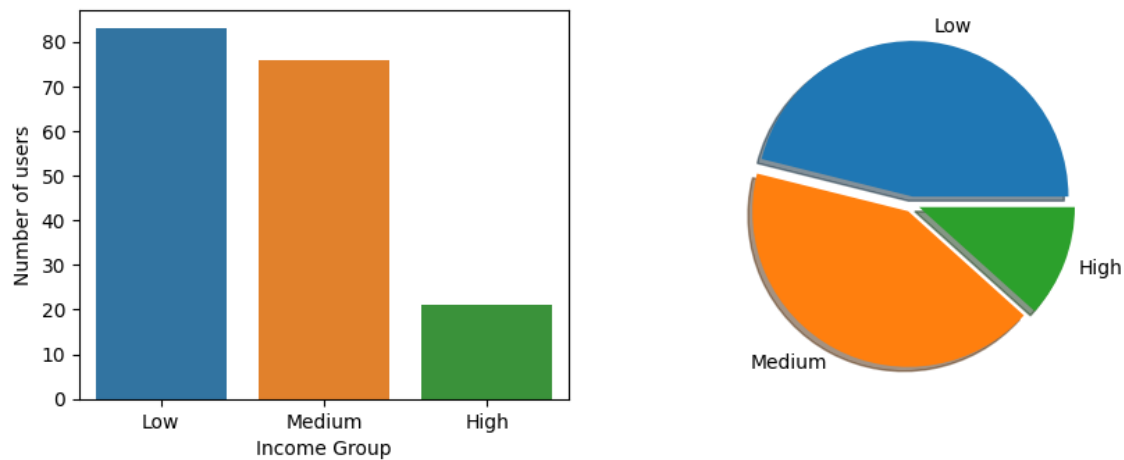
Fitness



- More than 90 customers have rated their physical fitness rating as Average i.e 3 rated.

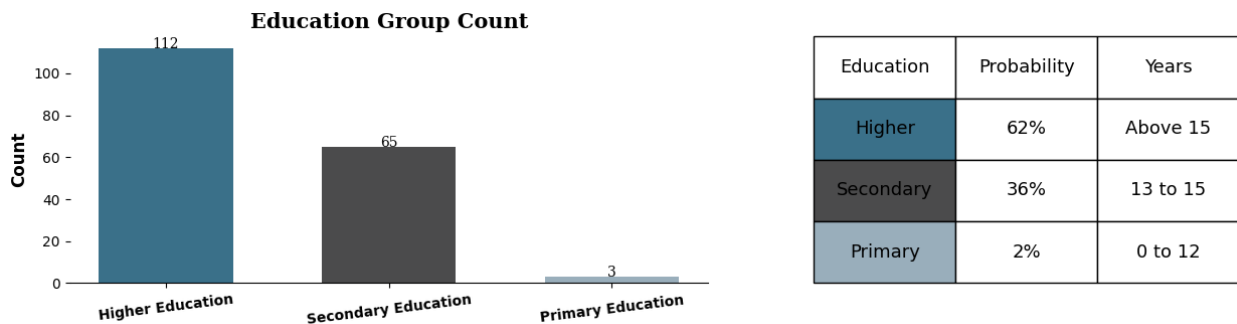
Income

Distribution of Income among customers



- Most of the customers who have purchased the product have an average income between 40K to 60K.
- About 88% of the Aerofit customers belong to the Low and Medium income group. The remaining 11.66% of the group belong to the high income category (above 75000 USD to \$105000 USD).

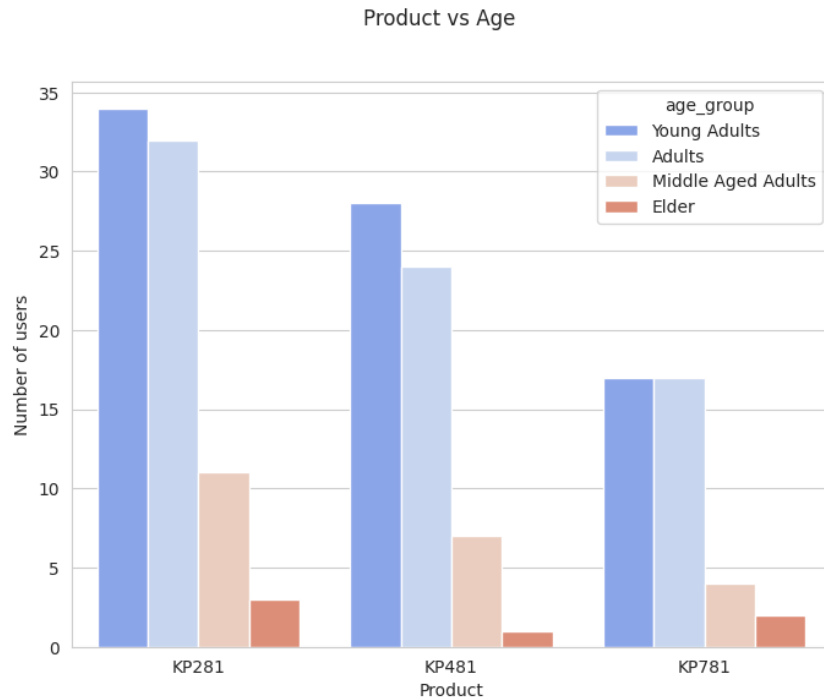
Education



- About 98.4% of the Aerofit customers have completed their Secondary and Higher educations. The remaining 1.6% of the group have completed their Primary education (i.e < 12 years).

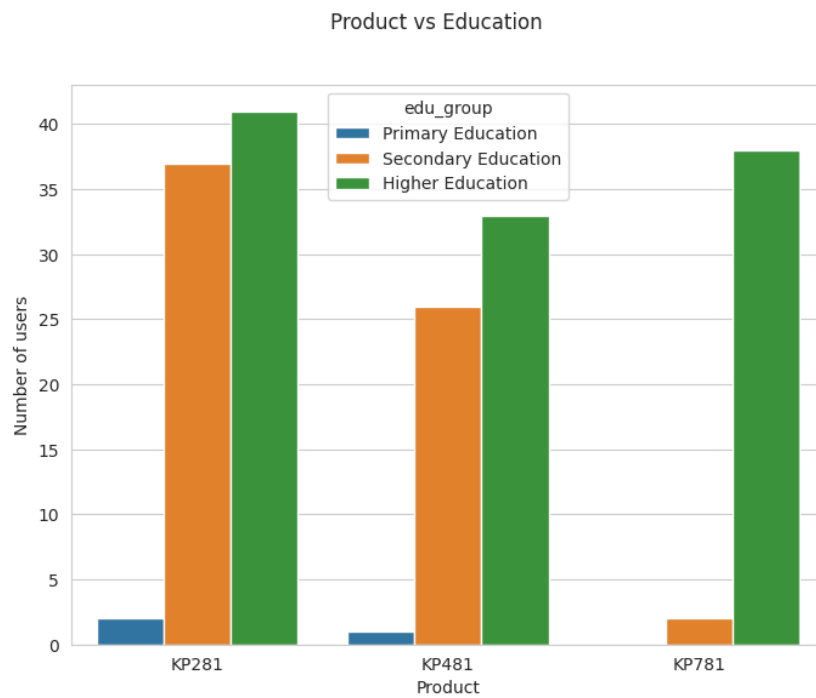
Bi-variate Analysis

Product vs Age



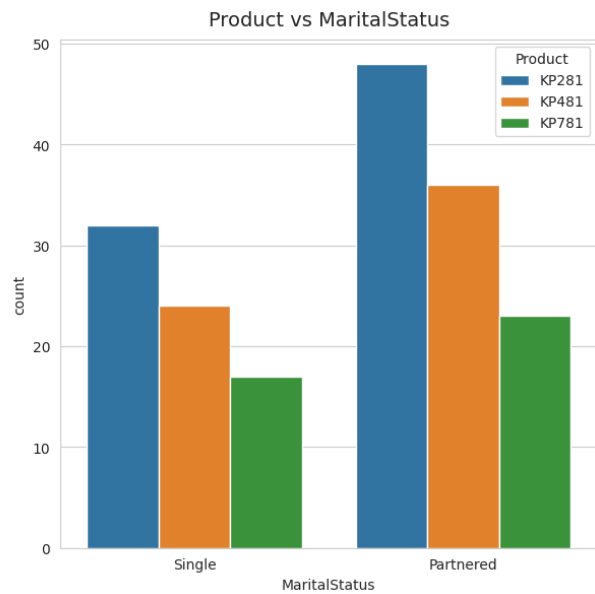
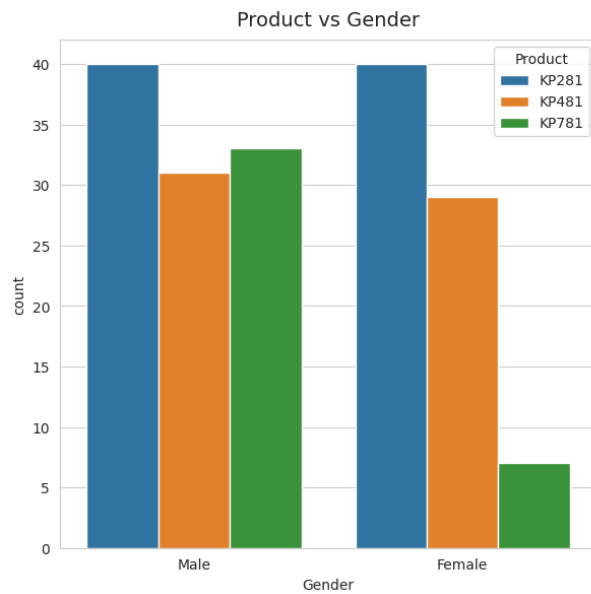
- Customers purchasing products KP281 & KP481 are having the same Age median value.
- Customers whose age lies between 25-30, are more likely to buy KP781 products.

Product vs Education



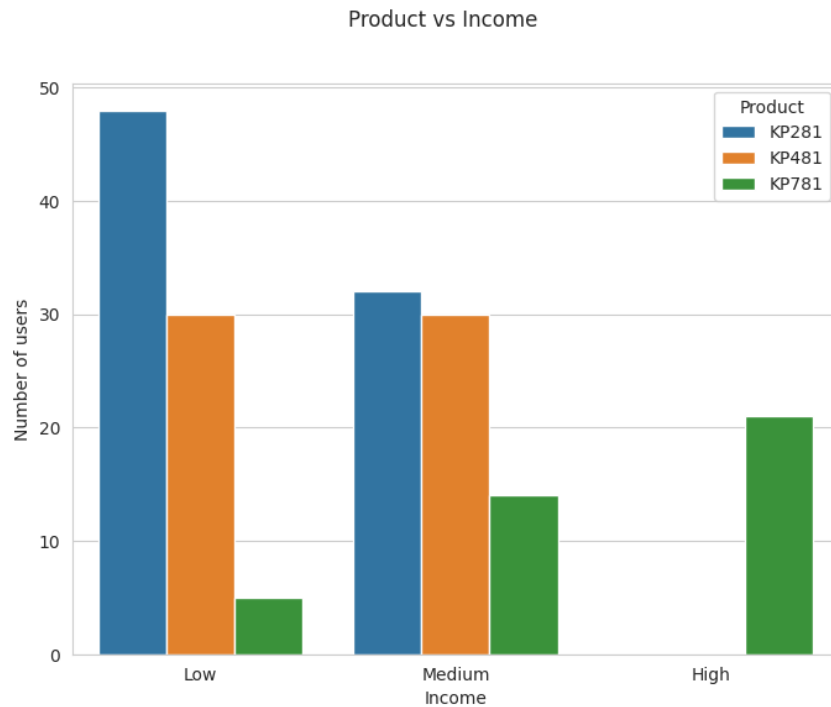
- Customers who have completed their higher Education , have more chances to purchase the KP781 product.

Product vs Gender and Product vs MaritalStatus



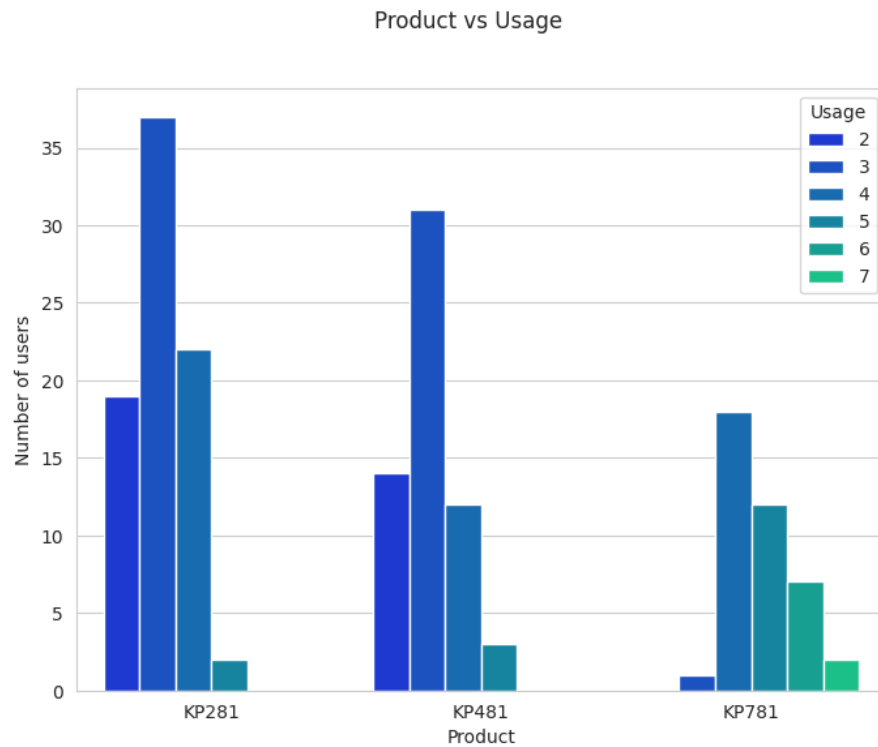
- Equal number of males and females have purchased KP281 product and Almost same for the product KP481
- Most of the Male customers have purchased the KP781 product.
- Customers who are Partnered, are more likely to purchase the product.

Product vs Income



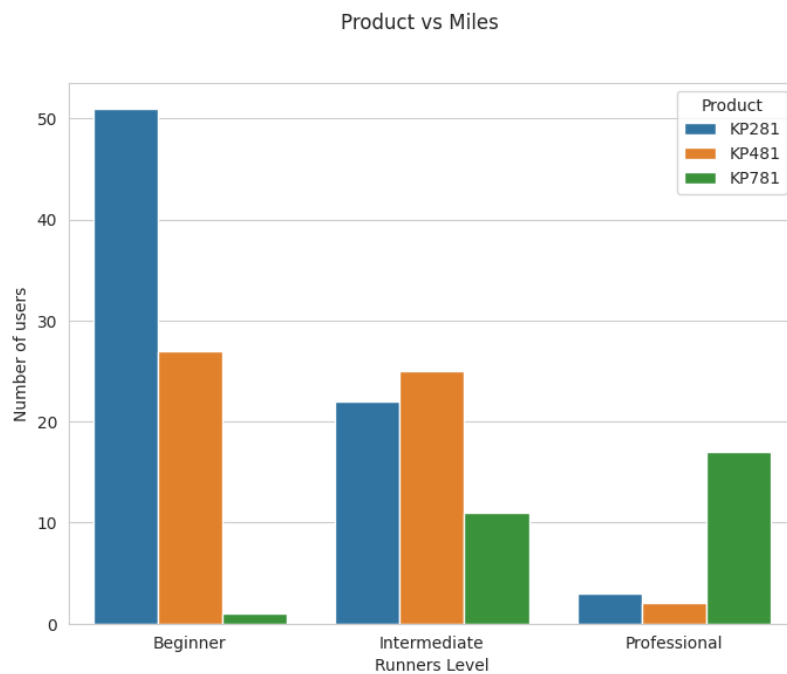
- Higher the Income of the customer (Income ≥ 60000), higher the chances of the customer to purchase the KP781 product.

Product vs Usage



- Customers who are planning to use the treadmill more than 4 times a week are more likely to purchase the KP781 product. While the other customers are likely to purchase KP281 or KP481.

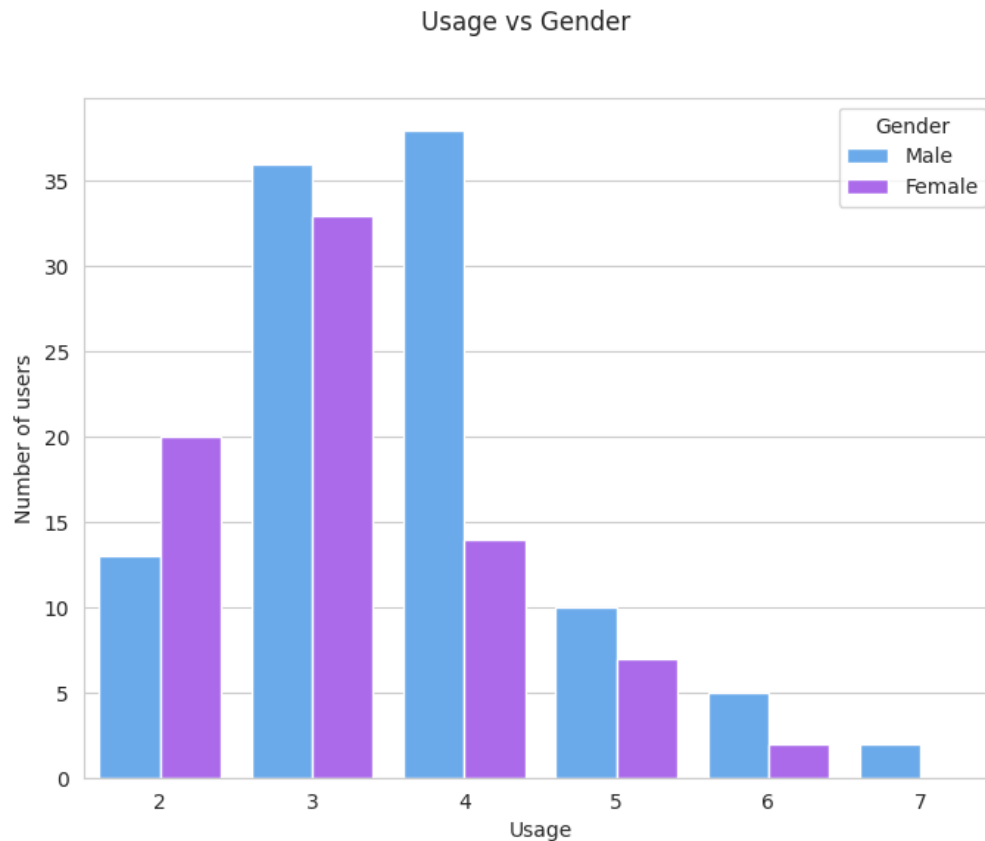
Product vs Miles



- Beginners are more likely to purchase the KP281.

- Professionals are more likely to purchase the KP781.
- If the customer expects to walk/run greater than 120 Miles per week, it is more likely that the customer will buy KP781 product.

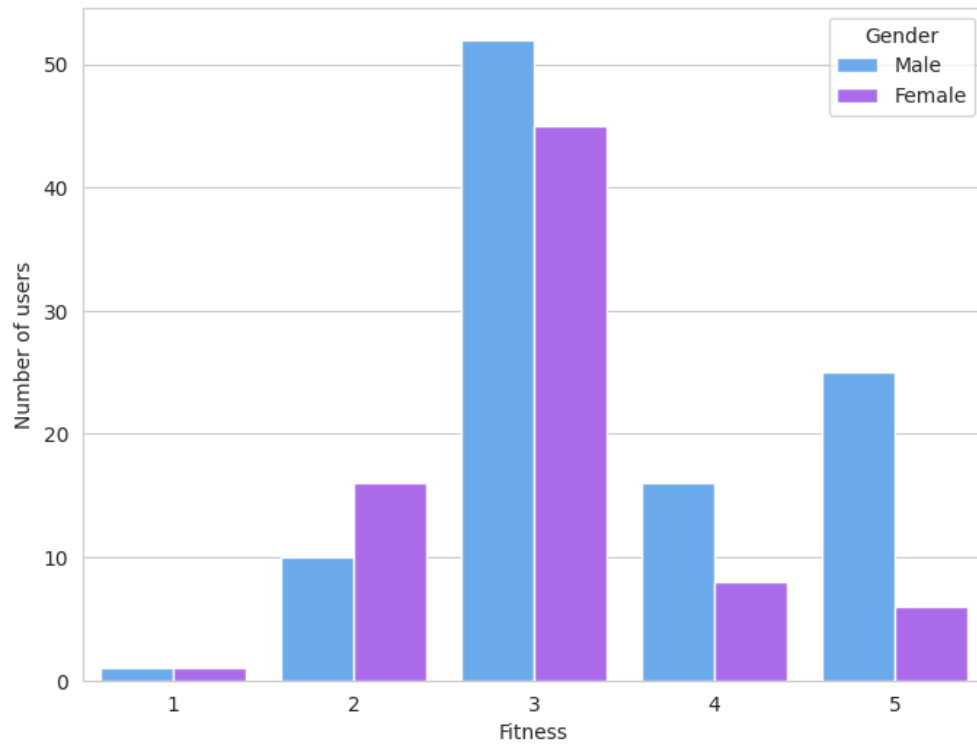
Usage vs Gender



- Among Male and Female genders, Male's usage is 4 days per week
- Female customers mostly use 3 days per week.
- Only few Male customers use 7 days per week whereas female customer's maximum usage is only 6 days per week.

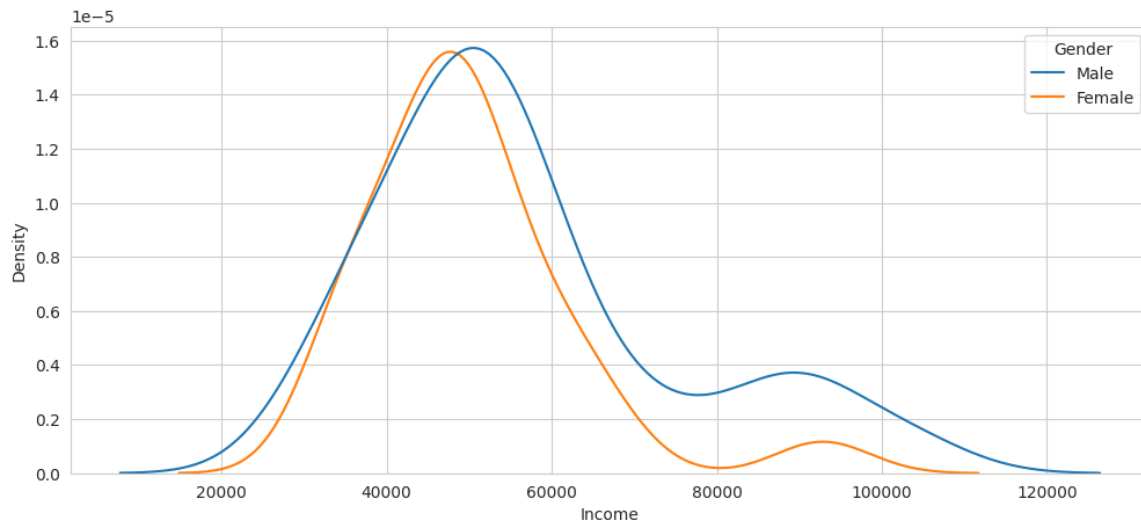
Fitness vs Gender

Fitness vs Gender



- About 59% of Males and 50% of Females are found to have the fitness level of 3.
- Among the fitness ratings both Male and Female most have rated as average.

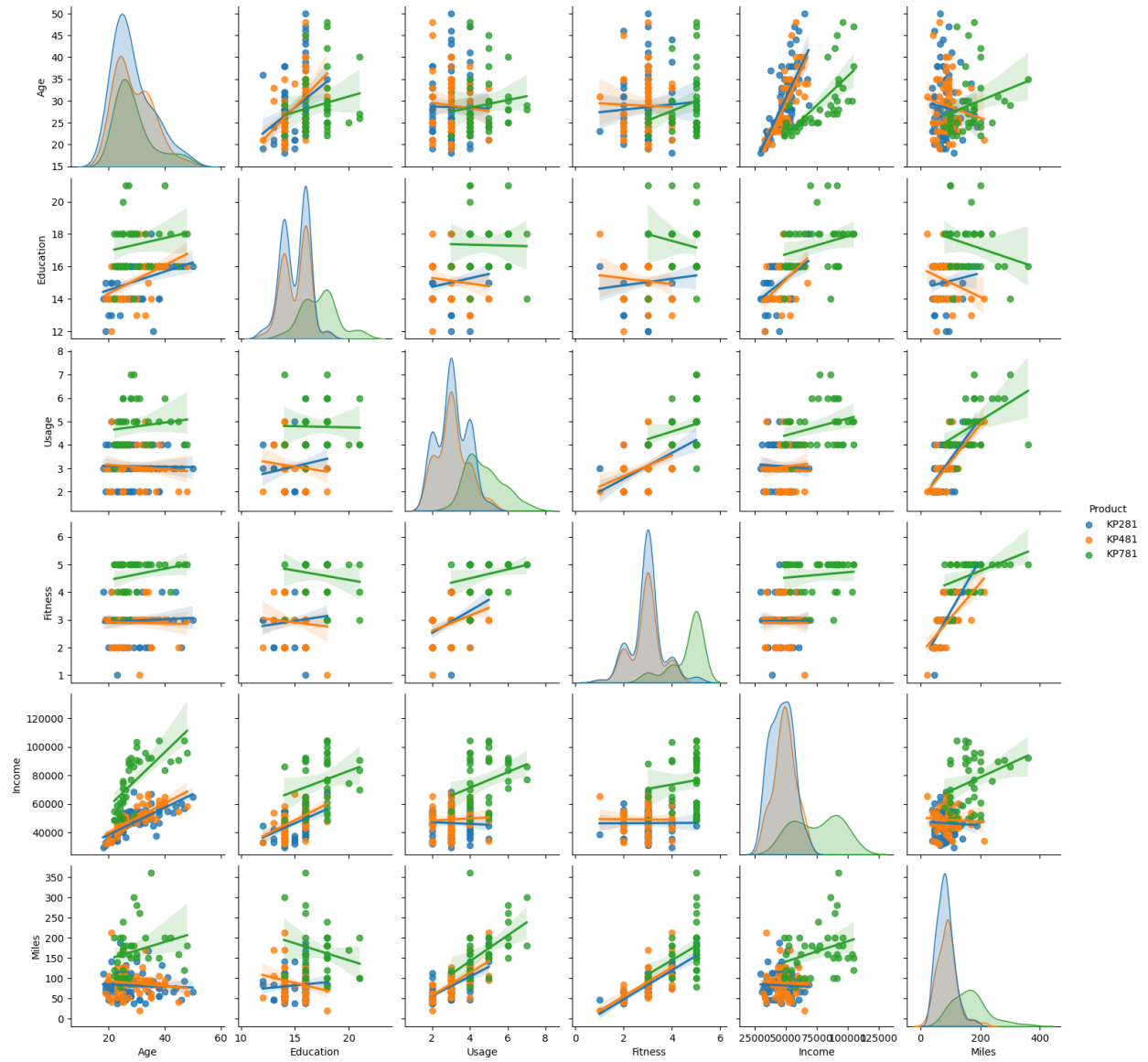
Income vs Gender



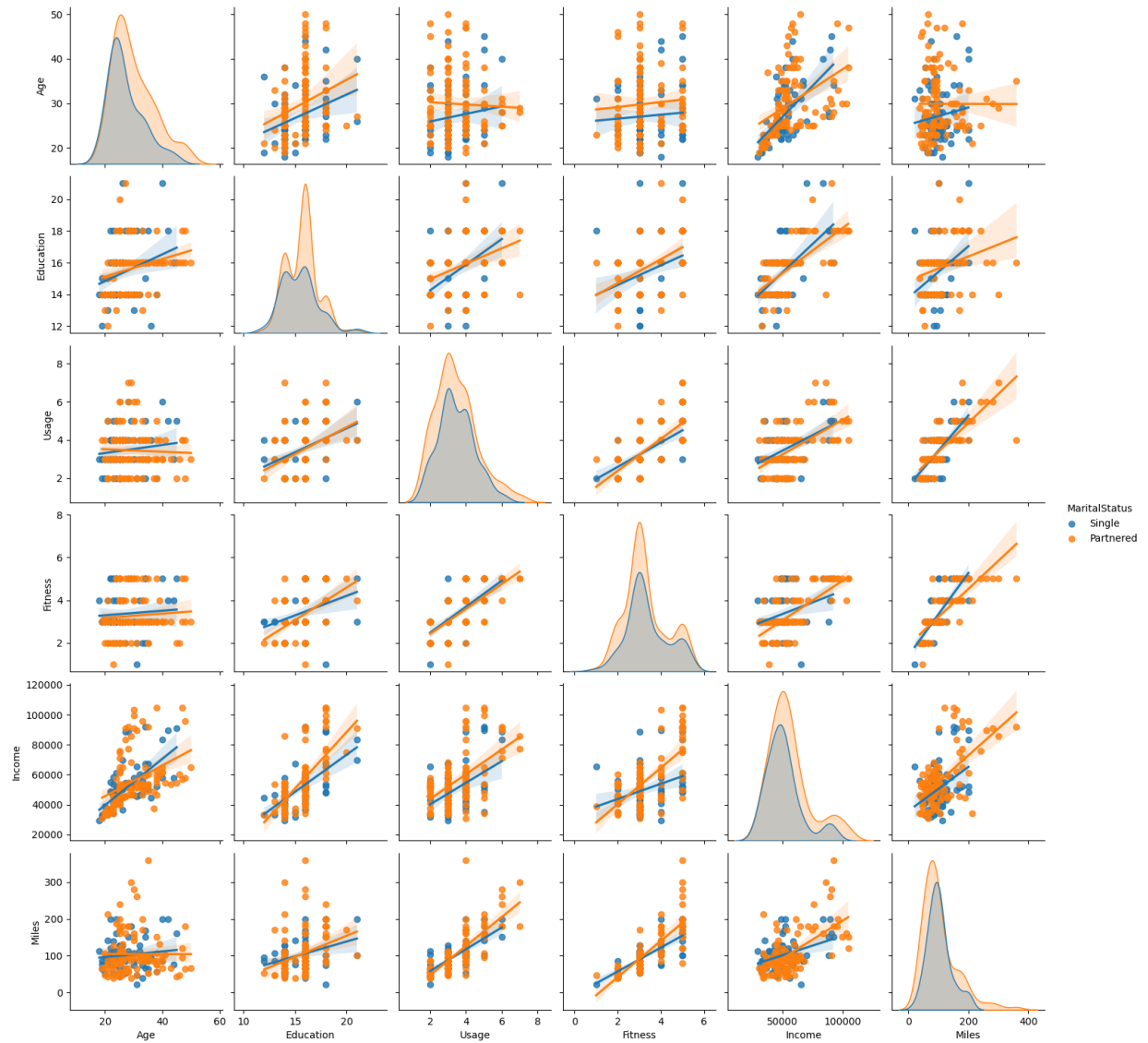
- The spike from 40K to around 80K is the most common income per annum of the customers.

Correlations

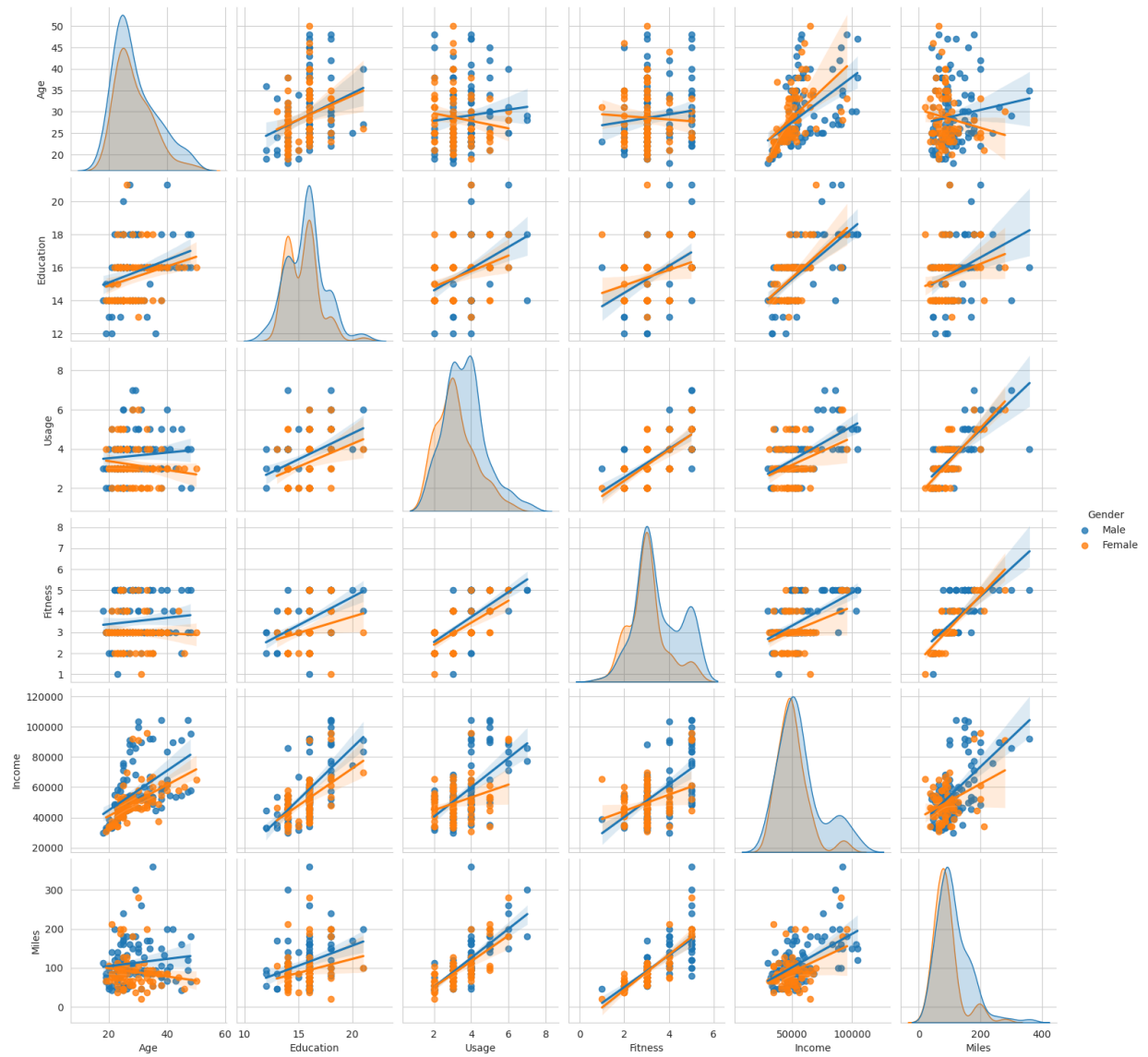
Pairplot-Product



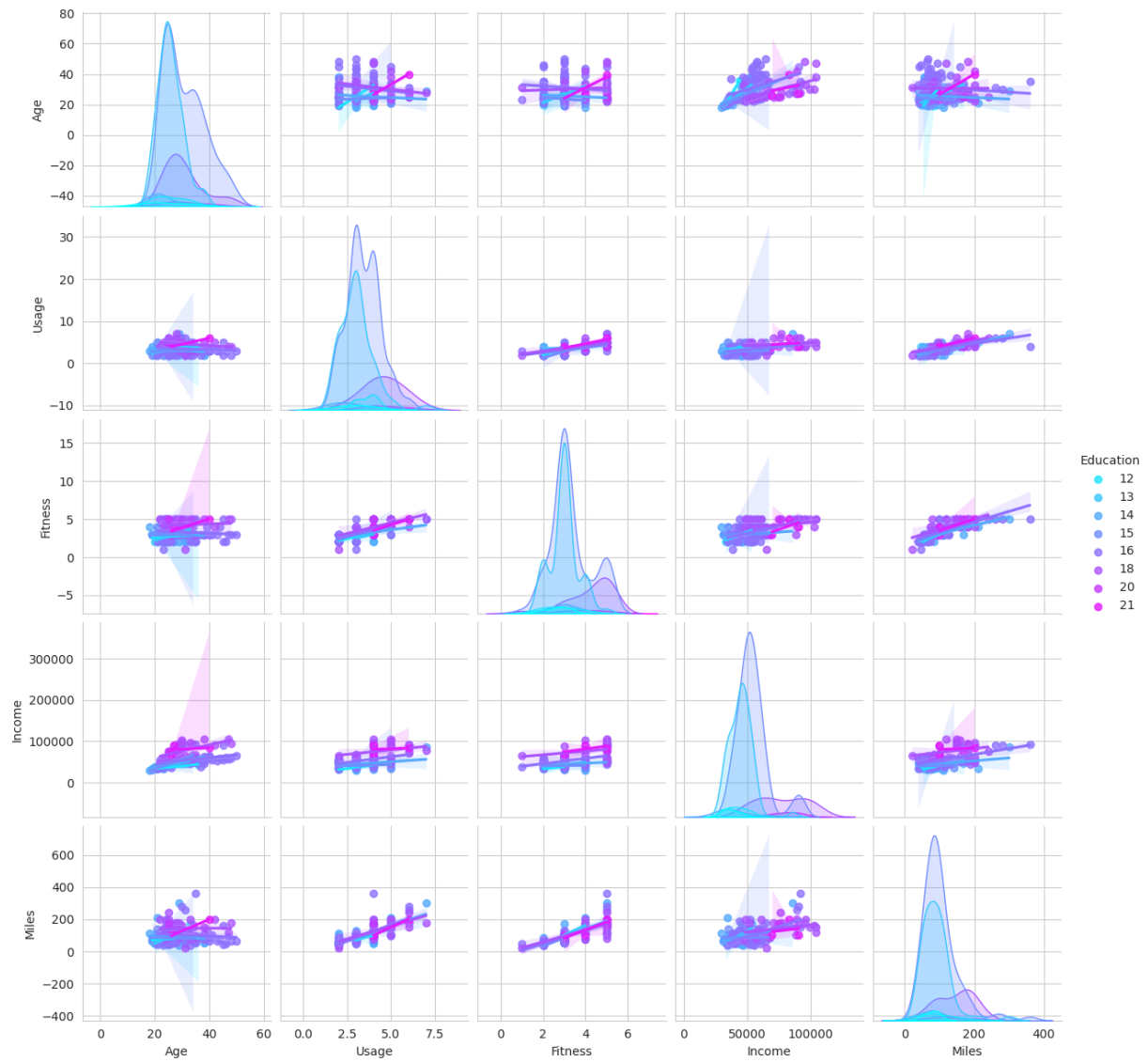
Pairplot- Marital Status



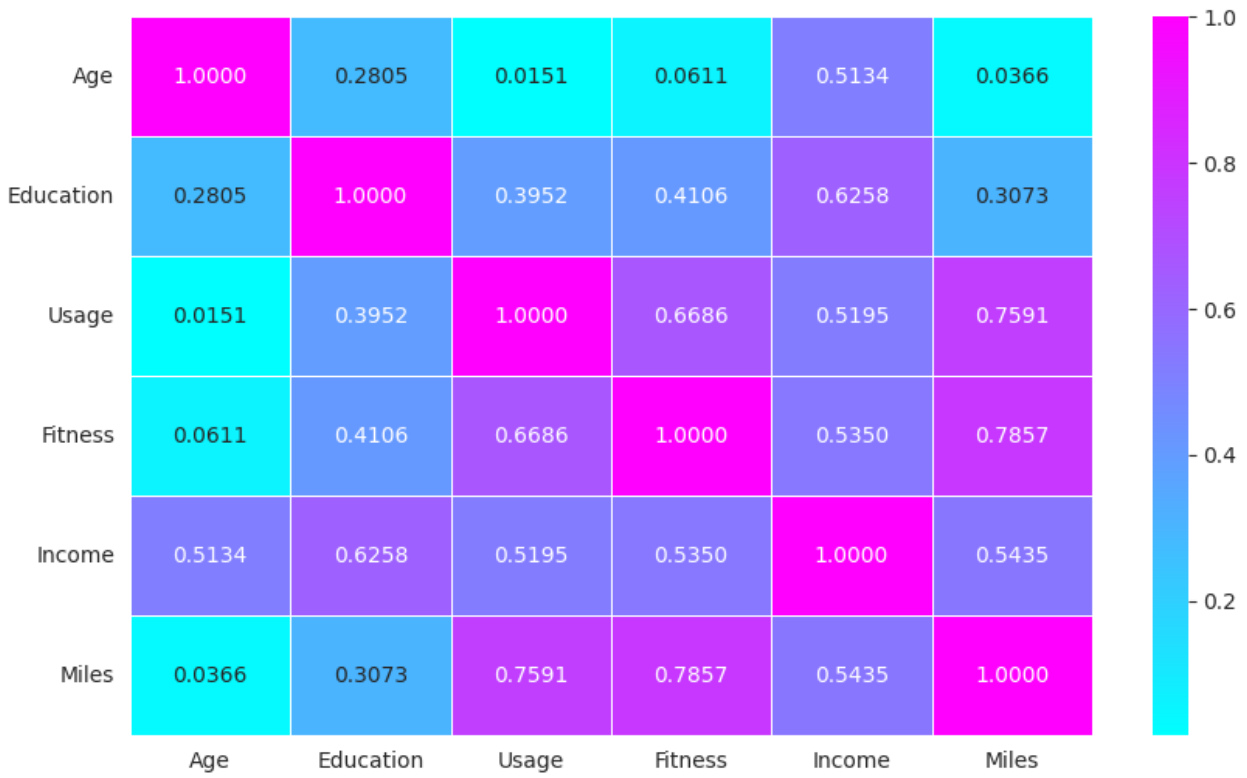
Pairplot-Gender



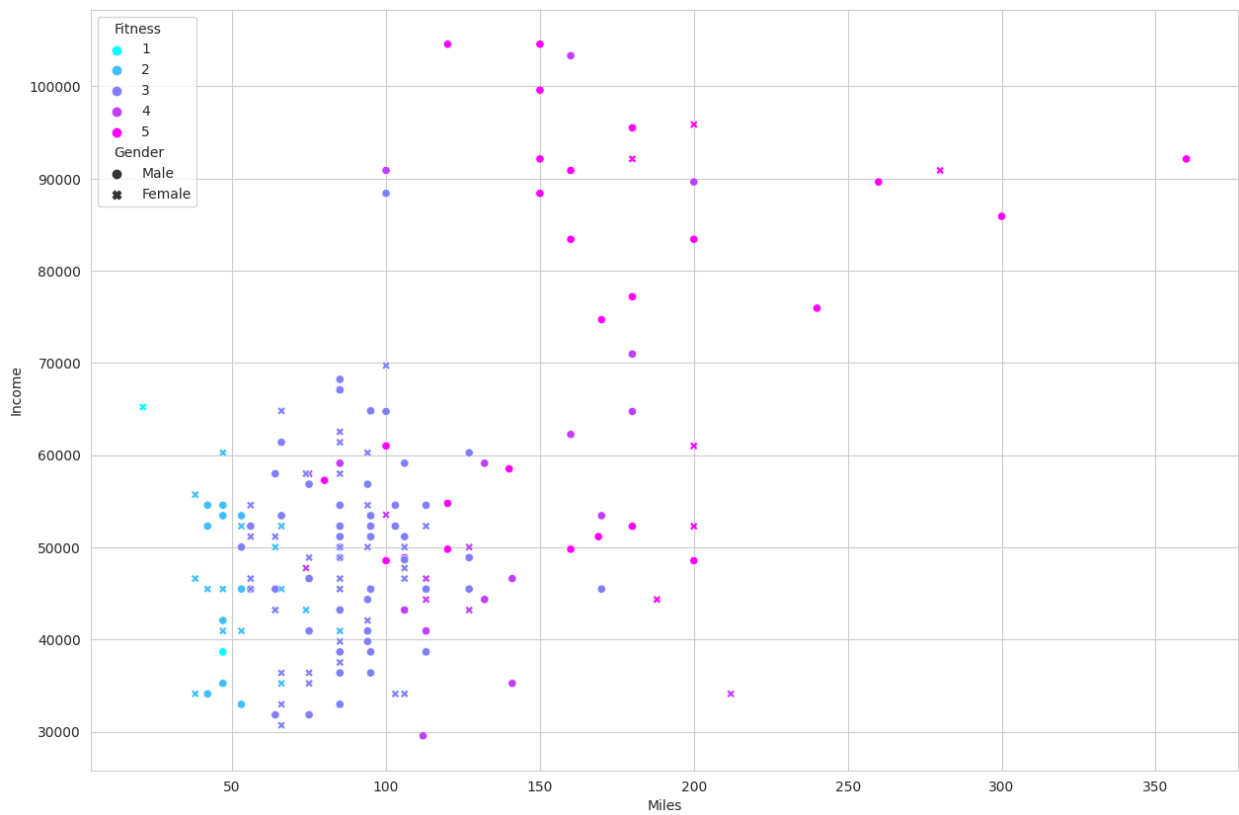
Pair Plot- Educations



Heat Map



Scatter Plot



Correlations

- Correlation between Age and Miles is 0.03
- Correlation between Education and Income is 0.62
- Correlation between Usage and Fitness is 0.66
- Correlation between Fitness and Age is 0.06
- Correlation between Income and Usage is 0.51
- Correlation between Miles and Age is 0.03

Observations

- It's clear that Age and Income go up together, showing a positive connection. The heatmap also indicates a strong link between them.
- Education and Income are closely connected, as expected. Education also shows a noticeable link with Fitness rating and Treadmill Usage.
- The more a treadmill is used, the more it relates to Fitness and Miles. Higher usage means higher fitness and mileage.
- The Scatter Plot gives a general idea about customers' income and their exercise habits. Most customers have a fitness level between 3 and 4. The plot suggests that people who run more miles tend to have a higher fitness level. There are only a few customers who both earn a lot and run more miles.

Descriptive Statistics (Conditional and Marginal Probability)

Probability of product purchase with respect to Gender

- The Probability of a treadmill being purchased by a female is 42.2%.
- The conditional probability of purchasing the treadmill model given that the customer is female is
 - For model KP281 - 22.2%
 - For model KP481 - 16.1%
 - For model KP781 - 3.8%
- The Probability of a treadmill being purchased by a male is 57.7%.
- The conditional probability of purchasing the treadmill model given that the customer is male is -
 - For model KP281 - 22.2%
 - For model KP481 - 17.2%
 - For model KP781 - 18.3%

Probability of product purchase with respect to Age

- The Probability of a treadmill being purchased by a Young Adult(18-25) is 43.8%.
- The conditional probability of purchasing the treadmill model given that the customer is Young Adult is
 - For model KP281 - 18.8%

- For model KP481 - 15.5%
 - For model KP781 - 9.4%
- The Probability of a treadmill being purchased by a Adult(26-35) is 40.5%.
 - The conditional probability of purchasing the treadmill model given that the customer is Adult is -
 - For model KP281 - 17.7%
 - For model KP481 - 13.3%
 - For model KP781 - 9.4%
 - The Probability of a treadmill being purchased by a Middle Aged(36-45) is 12.2%.
 - The conditional probability of purchasing the treadmill model given that the customer is Middle Aged Adult is -
 - For model KP281 - 6.1%
 - For model KP481 - 3.8%
 - For model KP781 - 2.2%
 - The Probability of a treadmill being purchased by a Elder(Above 45) is only 3.3%.
 - The conditional probability of purchasing the treadmill model given that the customer is Elder is -
 - For model KP281 - 1.6%
 - For model KP481 - 0.5%
 - For model KP781 - 1.1%

Probability of product purchase with respect to Education

- The Probability of a treadmill being purchased by a customer with Higher Education(Above 15 Years) is 62.2%.
- The conditional probability of purchasing the treadmill model given that the customer has Higher Education is-
 - For KP281 - 22.7%
 - For KP481 - 18.3%
 - For KP781 - 21.1%
- The Probability of a treadmill being purchased by a customer with Secondary Education(13-15 yrs) is 36.1%.
- The conditional probability of purchasing the treadmill model given that the customer has Secondary Education is -
 - For KP281 - 20.5%
 - For KP481 - 14.4%
 - For KP781 - 1.1%
- The Probability of a treadmill being purchased by a customer with Primary Education(13-15 yrs) is 1.6%.
- The conditional probability of purchasing the treadmill model given that the customer has Secondary Education is -
 - For KP281 - 1.1%
 - For KP481 - 0.5%

Probability of product purchase with respect to Income

- The Probability of a treadmill being purchased by a customer with Low Income is 46.1%.
- The conditional probability of purchasing the treadmill model given that the customer has Low Income is -
 - For model KP281 - 26.6%
 - For model KP481 - 16.6%
 - For model KP781 - 2.7%
- The Probability of a treadmill being purchased by a customer with Medium Income is 42.2%.
- The conditional probability of purchasing the treadmill model given that the customer has Moderate Income is -
 - For model KP281 - 17.7%
 - For model KP481 - 16.6%
 - For model KP781 - 7.7%
- The Probability of a treadmill being purchased by a customer with High Income(60k - 80k) is 11.6%
- The conditional probability of purchasing the treadmill model given that the customer has High Income is -
 - For model KP281 - 0%
 - For model KP481 - 0%
 - For model KP781 - 11.6%

Probability of product purchase with respect to Marital Status

- The Probability of a treadmill being purchased by a Married Customer is 59.4%.
- The conditional probability of purchasing the treadmill model given that the customer is Married is
 - For model KP281 - 26.6%
 - For model KP481 - 20%
 - For model KP781 - 12.7%
- The Probability of a treadmill being purchased by a Single Customer is 40.5%.
- The conditional probability of purchasing the treadmill model given that the customer is Unmarried is -
 - For model KP281 - 17.7%
 - For model KP481 - 13.3%
 - For model KP781 - 9.4%

Probability of product purchase with respect to Usage

- The Probability of a treadmill being purchased by a customer with Usage 3 per week is 38.3%.
- The conditional probability of purchasing the treadmill model given that the customer has Usage 3 per week is -
 - For model KP281 - 20.5%
 - For model KP481 - 17.2%
 - For model KP781 - 0.5%
- The Probability of a treadmill being purchased by a customer with Usage 4 per week is 28.8%.
- The conditional probability of purchasing the treadmill model given that the customer has Usage 4 per week is -
 - For model KP281 - 12.2%
 - For model KP481 - 6.6%
 - For model KP781 - 10%

- The Probability of a treadmill being purchased by a customer with Usage 2 per week is 18.3%
- The conditional probability of purchasing the treadmill model given that the customer has Usage 2 per week is -
 - For model KP281 - 10.5%
 - For model KP481 - 7.7%
 - For model KP781 - 0%

Probability of product purchase with respect to Fitness

- The Probability of a treadmill being purchased by a customer with Average(3) Fitness is 53.8%.
- The conditional probability of purchasing the treadmill model given that the customer has Average Fitness is -
 - For model KP281 - 30%
 - For model KP481 - 21.6%
 - For model KP781 - 2.2%
- The Probability of a treadmill being purchased by a customer with low(2) Fitness is only 14.4%.
- The Probability of a treadmill being purchased by a customer with High(4) Fitness is only 13.3%.
- The Probability of a treadmill being purchased by a customer with Very High(5) Fitness is only 17.2%.
- The Probability of a treadmill being purchased by a customer with very low(1) Fitness is only 1.1%.

Probability of product purchase with respect to Miles

- The Probability of a treadmill being purchased by a customer in Beginner level is 43.8%.
- The conditional probability of purchasing the treadmill model given that the customer is in Beginner level is -
 - For model KP281 - 28.3%
 - For model KP481 - 15%
 - For model KP781 - 0.5%
- The Probability of a treadmill being purchased by a customer in Beginner level is 32.2%.
- The conditional probability of purchasing the treadmill model given that the customer is in Intermediate level is -
 - For model KP281 - 12.2%
 - For model KP481 - 13.8%
 - For model KP781 - 6.1%
- The Probability of a treadmill being purchased by a customer in Professional level is 12.2%.
- The conditional probability of purchasing the treadmill model given that the customer is in Professional level is -
 - For model KP281 - 1.6%
 - For model KP481 - 1.1%
 - For model KP781 - 9.4%

Customer Profiling

The chances of buying different treadmills are as follows:

- KP281 (44%)
- KP481 (33%)
- KP781 (22%)

- For the KP281:
 - Customers are usually aged 18 to 35, with a few aged 35 to 50.
 - They have at least 13 years of education.
 - Annual income is less than USD 60,000.
 - Weekly usage is 2 to 4 times.
 - Fitness level ranges from 2 to 4.
 - Weekly running mileage is 50 to 100 miles.

- For the KP481:
 - Customers are mainly aged 18 to 35, with some aged 35 to 50.
 - They have at least 13 years of education.
 - Annual income is between USD 40,000 to USD 80,000.
 - Weekly usage is 2 to 4 times.
 - Fitness level ranges from 2 to 4.
 - Weekly running mileage is 50 to 200 miles.

- For the KP781:
 - Customers are male.
 - Age ranges from 18 to 35.
 - They have at least 15 years of education.
 - Annual income is USD 80,000 and above.
 - Weekly usage is 4 to 7 times.
 - Fitness level ranges from 3 to 5.
 - Weekly running mileage is 100 miles and above.

Recommendations

1. For KP781:
 - a. The KP781 model is selling a lot more to men (82%) than women (18%). To increase sales to women, we suggest. Females who prefer exercising equipment are very low here. To increase sales to women, we should run a marketing campaign on special deals and trials made just for them.
 - b. As KP781 provides more features and functionalities, This model should be marketed by influencers and other international athletes portraying that KP781 is specially made for professionals and athletes.
 - c. The Age group of above 40 years should be targeted to recommend Product KP781.
 2. For KP281 and KP481:
 - a. It's a good idea to set reasonable prices for both the KP281 and KP481 models.
 - b. By introducing flexible payment plans and options, customers can pay in installments over a few months, making it easier for customers with lower budgets.
 - c. It's plausible that health awareness driven by education could play a pivotal role.
 3. User-Friendly App Integration: Make an easy-to-use app that connects with the product through mobile. This app can track how much users run each week, give them feedback on their progress, and suggest workouts based on their fitness level and goals. This will make using the treadmill more enjoyable and keep users engaged.
 4. Providing customer support through call or email and recommend users to upgrade from lower versions to next level versions after consistent usages.
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