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Cardio Good Fitness

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Contents

These days, with COVID-19, people tend to have exercise at home more than any time. Health and fitness equipment revenue more than doubled, to $2.3 billion, from March to October(2020), according to NPD retail data. Sales of treadmills soared 135 percent while those of stationary bikes nearly tripled, depleting inventories.

This data is about customers of the treadmill of a retail store called Cardio Good Fitness. As EDA recognized this store has three treadmills and we want to identify differences between customers of each product.

Major Questions:

- How many models does the store have and which one is the most sold?
- How is the Age, Education, Gender, Income, and Marital Status of the customers?
- How many days and miles customers expect to run on these treadmills?
- How is the Self-Related Fitness of customers?
- Is there any relation between Income and Self-Related Fitness?
- Among different gender, is there any relation between Self-rated fitness and Usage?
- Among different gender, is there any relation between Self-rated fitness and Marital status?
- Is there any relationship between Age, Income, and buying different models?
- Are married customers buying treadmills more than Single customers? how about different gender?
- Does gender has any effect on model customer buy?
- Is there any relation between Income and model?
- Is there any relation between education and model?
- How is the relation between Age, Income, and Usage, and model bought?

Data Overview

Variables	Description
1. Product	The model number of the treadmill
2. Age	In number of years, of the customer
3. Gender	Sex of the customer
4. Education	In number of years, of the customer
5. Marital Status	Marital Status of the customer
6. Usage	Average times the customer wants to use the treadmill every week
7. Fitness	Self rated fitness score of the customer (5 - very fit, 1 - very unfit)
8. Income	Income of the customer
9. Miles	How many miles expected to run

Observations	Variables
180	9

- There is no missing value in the data
- There is no information about time and price
- We have three models for treadmill in this data

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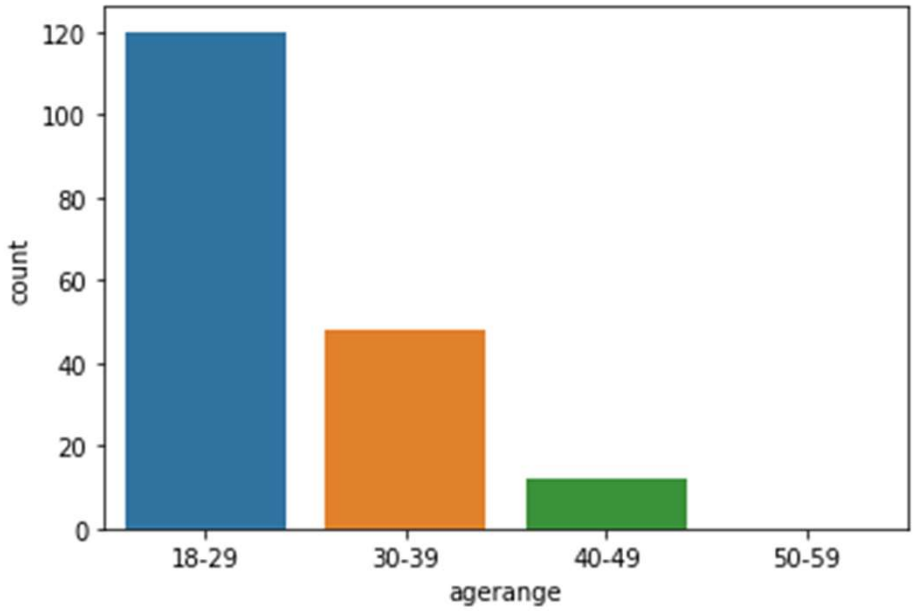
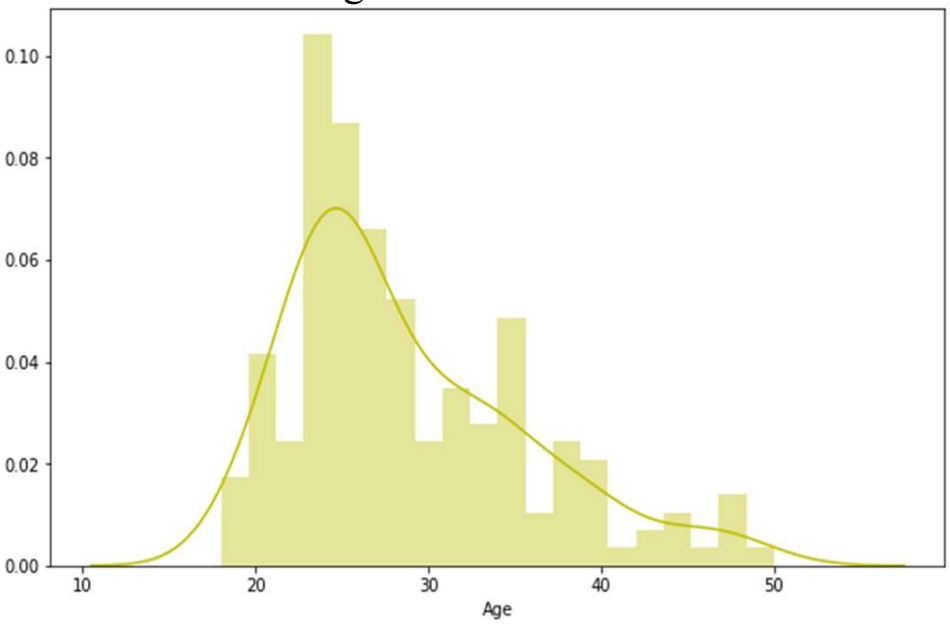
By using below table we can see some of data's details
I will use the details of this table in the some of next slides

	Age	Education	Usage	Fitness	Income	Miles
count	180	180	180	180	180	180
mean	28.78889	15.572222	3.455556	3.311111	53719.578	103.1944
std	6.943498	1.617055	1.084797	0.958869	16506.684	51.86361
min	18	12	2	1	29562	21
25%	24	14	3	3	44058.75	66
50%	26	16	3	3	50596.5	94
75%	33	16	4	4	58668	114.75
max	50	21	7	5	104581	360

Univariate
Exploratory Data Analysis - Age

- between these groups, the first one (18-29) is the biggest one and by going toward older group ages, it is going to be smaller.
- Minimum age is around 18 and maximum age is almost 50.
- its mean is 28 and as it is obvious that it is skewed to the right.





Univariate Exploratory Data Analysis

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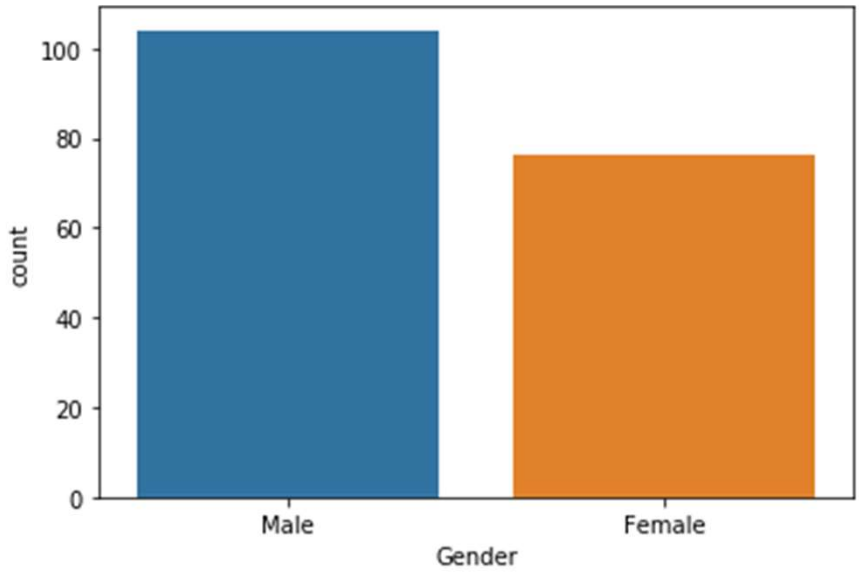
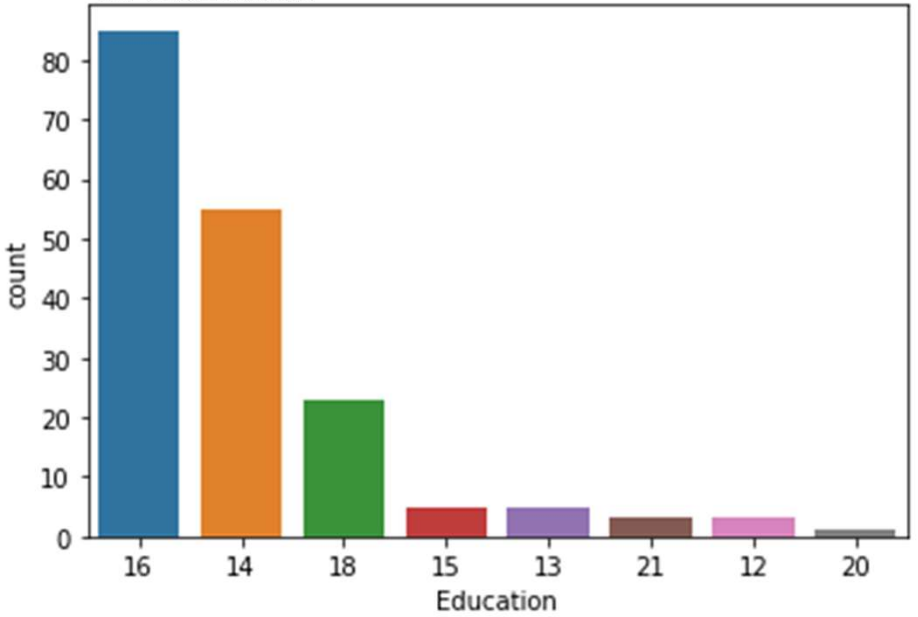
Gender

- Males population of the costumers is higher than females



Education

- More than 80 person of costumers have 16 years of education and around 55 person have 14 years of education



Univariate Exploratory Data Analysis

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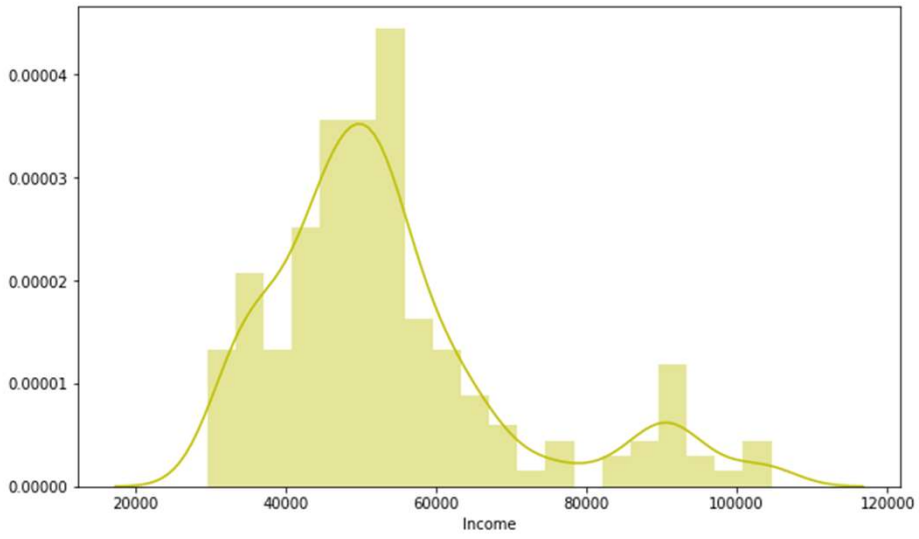
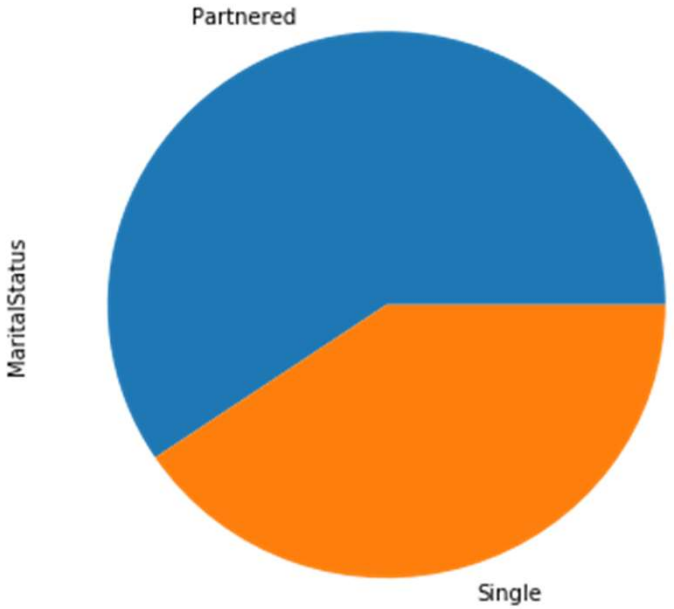
Income

- The mean of income is 53719.58 and it skewed to the right. Its minimum is 29562.0 and maximum is 104581.0



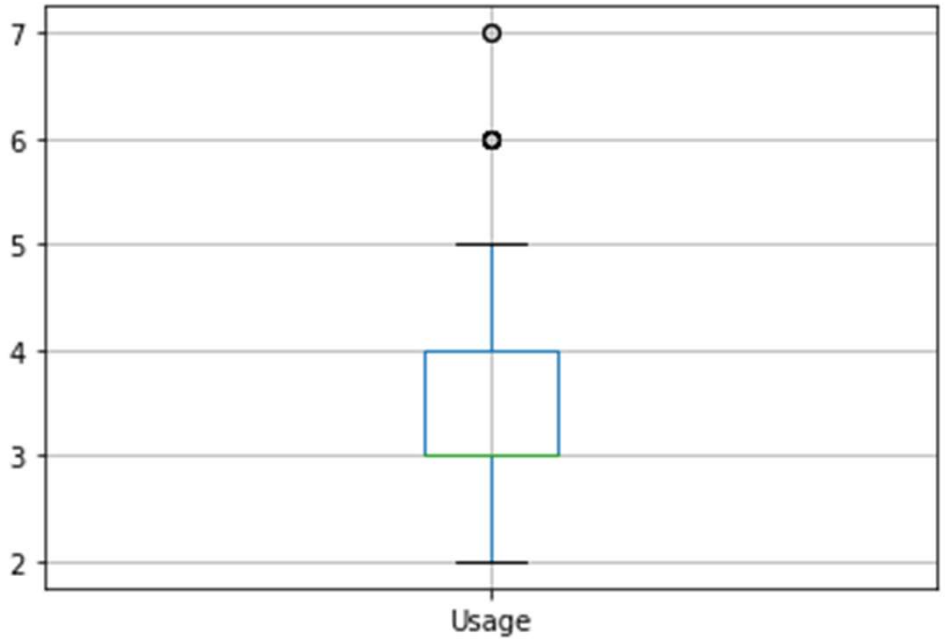
Marital Status

- There are both Partnered and Single customers but most of them have partner



Univariate Exploratory Data Analysis – Usage

- Average times that the customers want to use the treadmill every week; its medium is 3 times a week and maximum and minimum is 7 and 2 times a week
- We can also see that there is some outliers in point 6 and 7.



Univariate Exploratory Data Analysis

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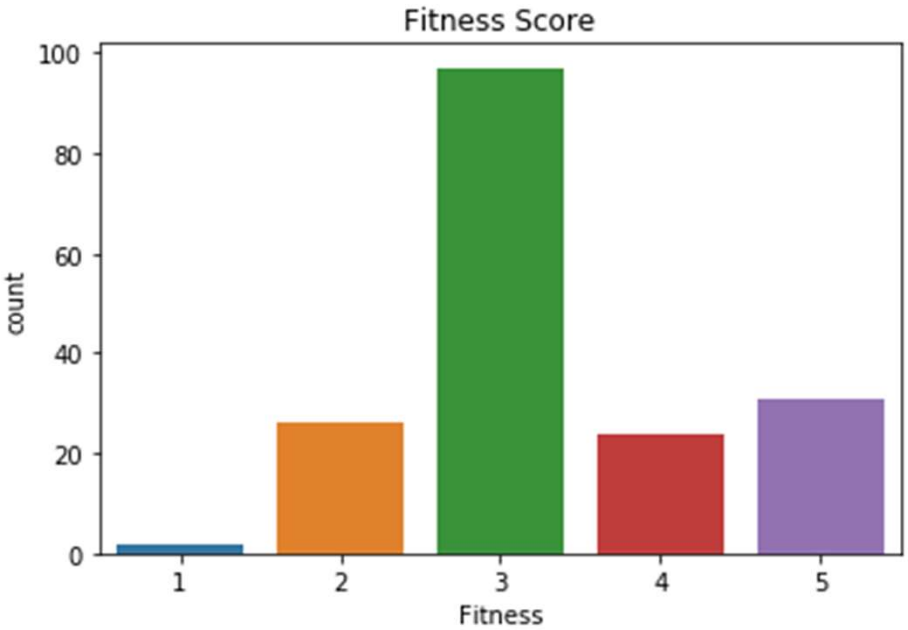
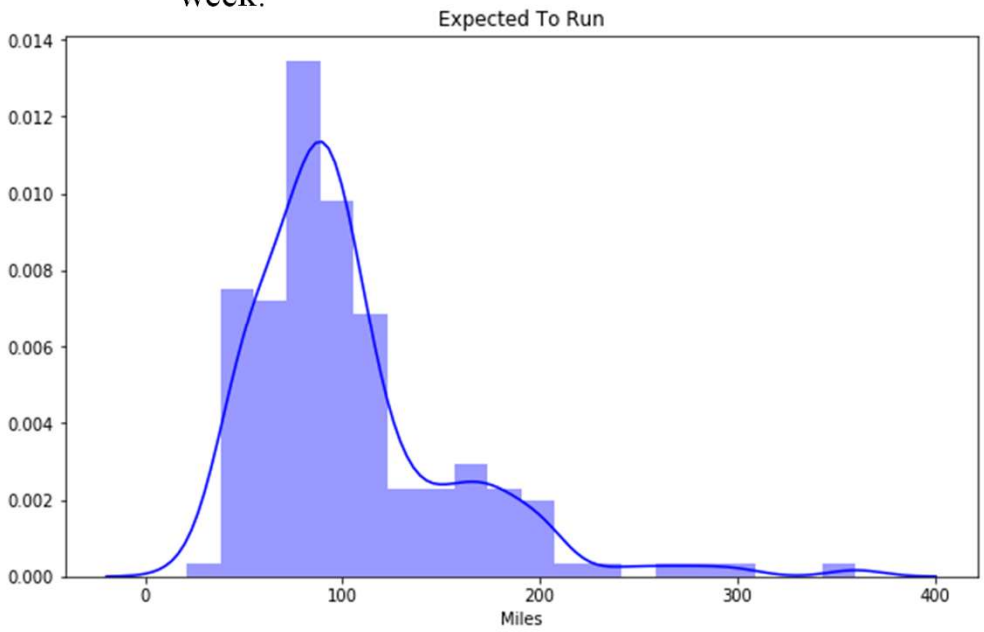
Fitness

- Self-rated fitness score of the customer. most of the customers gave themselves score of 3 (5 - very fit, 1 - very unfit)



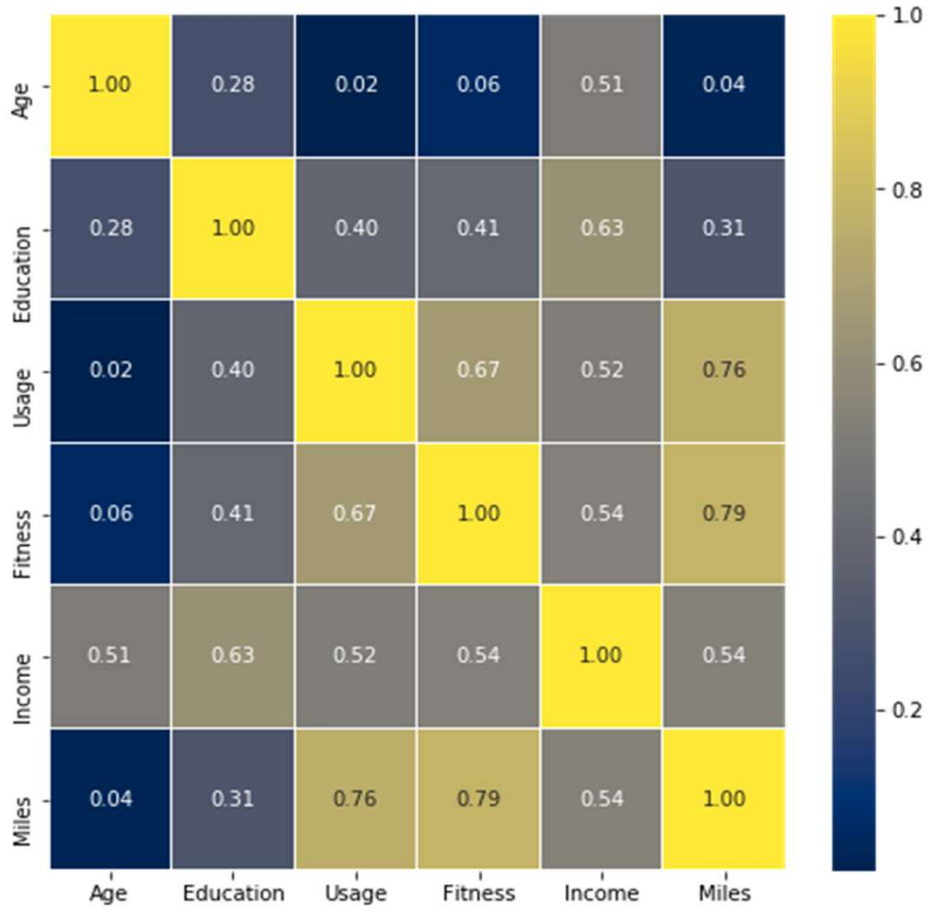
Miles

- As I showed before {by table in slide 5}, Customer expects to runs on an average of 103.19 miles per week, median 94 miles per week.



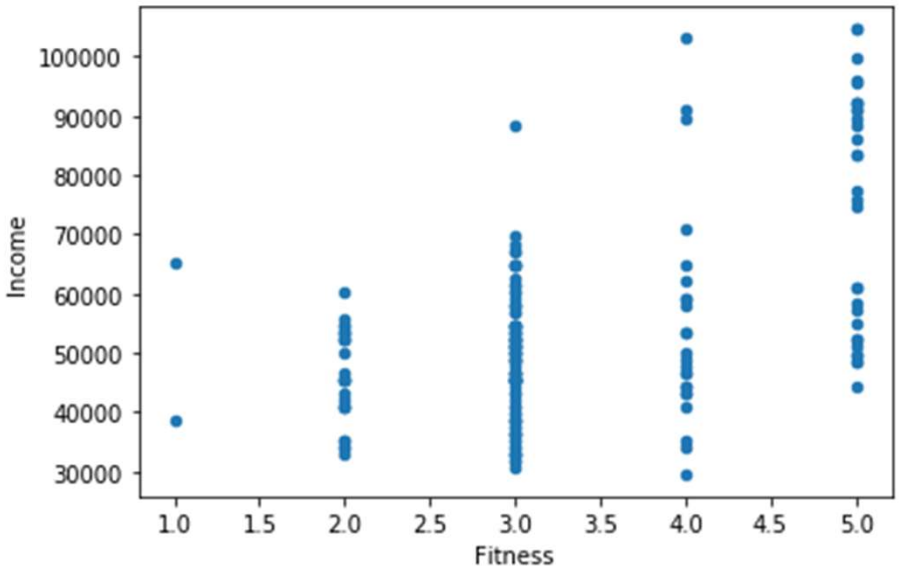
Multivariate Exploratory Data Analysis –

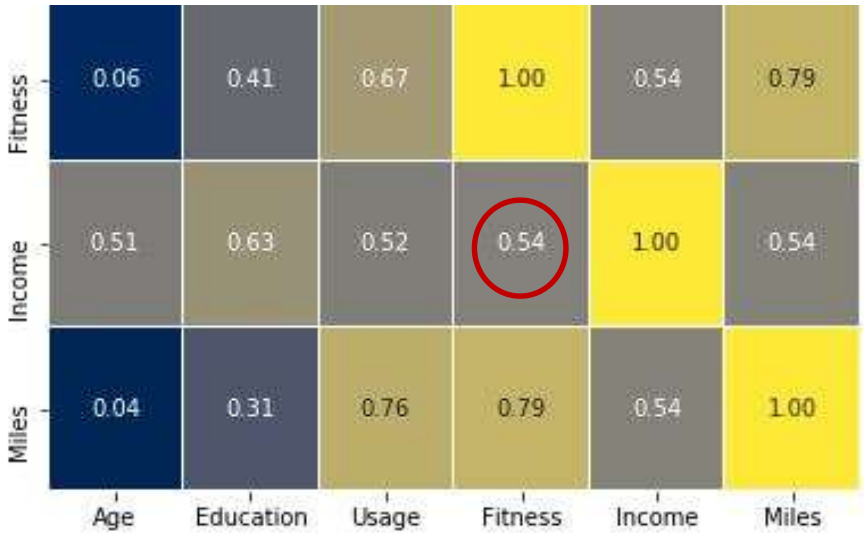
- By this heatmap chart we can see if there is any relation between variables.
- For example, it seems that there is no strong relationship between age and usage(0.02) or we have a strong relationship between fitness and miles(0.79).



Multivariate
Exploratory Data Analysis – Fitness & Income

- Showing positive relationship between Fitness and Income by scatter plot
- also df.corr() indicates that they have a high correlation= 0.54





Multivariate
Exploratory Data Analysis – Usage , Fitness & Gender

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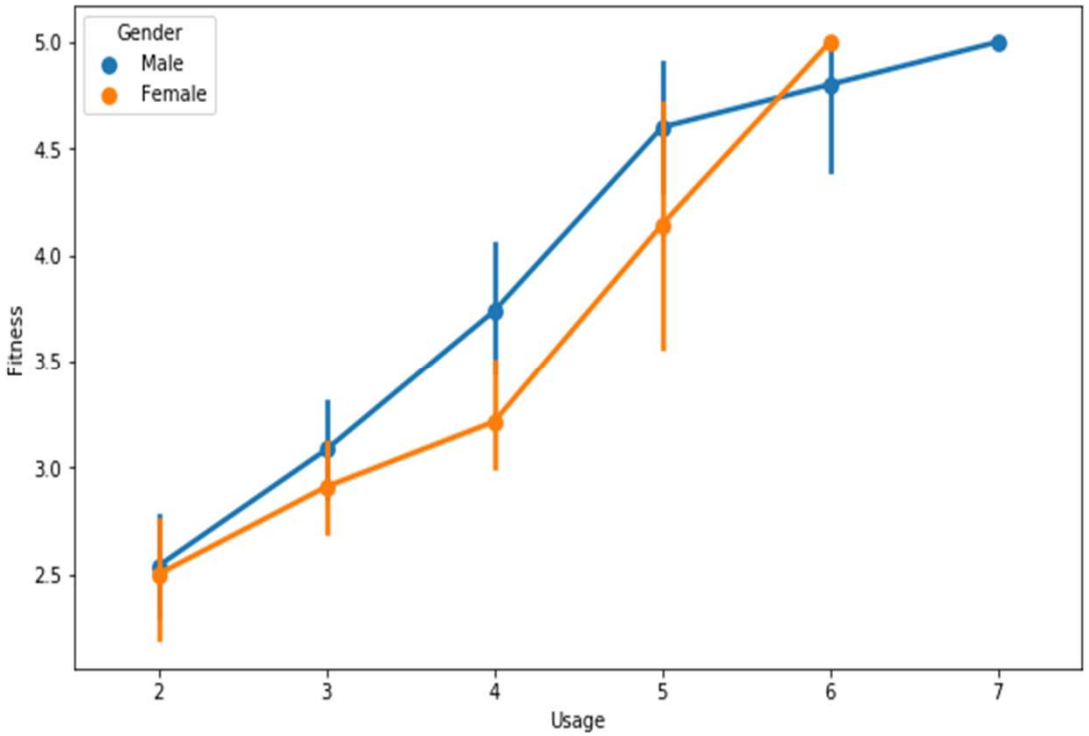
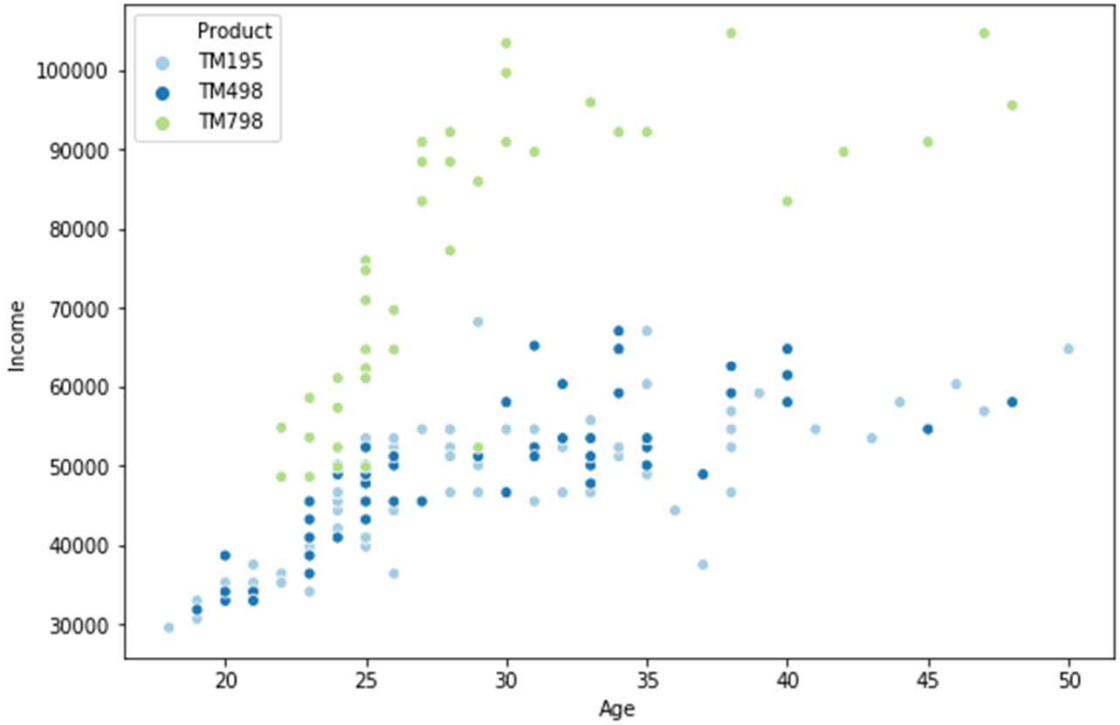
- In both genders, a fitness degree is better for costumers who have more than 4 days a week of usage of treadmills.
- Self-rated fitness score of the customer is a little low in females.



Multivariate
Exploratory Data Analysis – Age, Income & Product

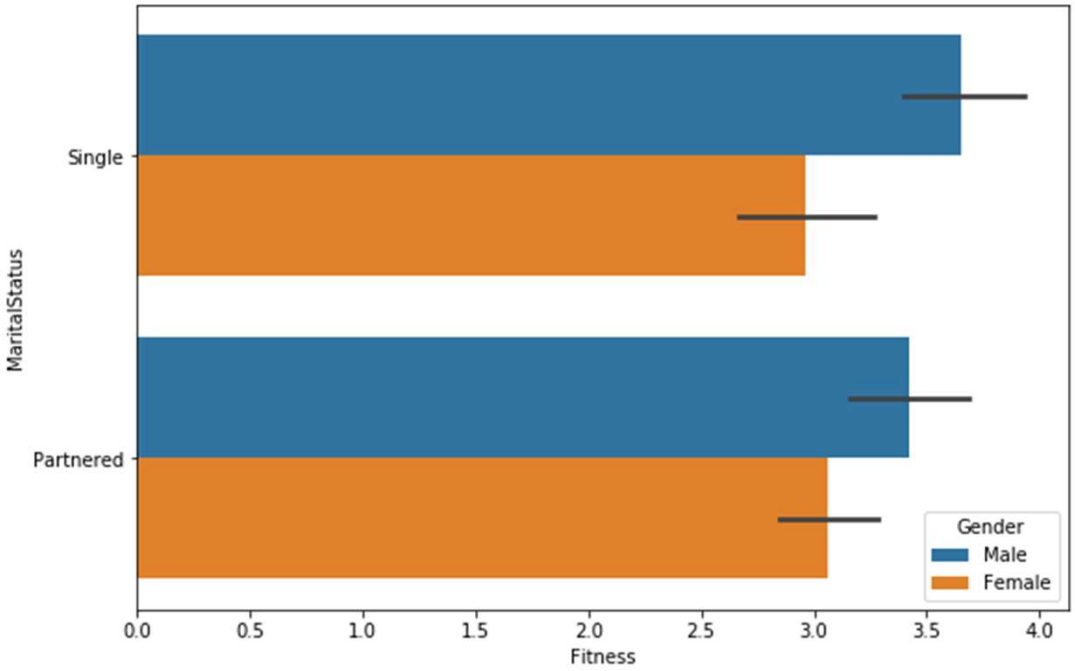
- Product **model TM798** has more demand between young people. Most of the customers of **TM798** earn more than the customers of the model **TM498** and **TM195**.

- It seems that model **TM798** is an expensive product as higher income people like to buy it.



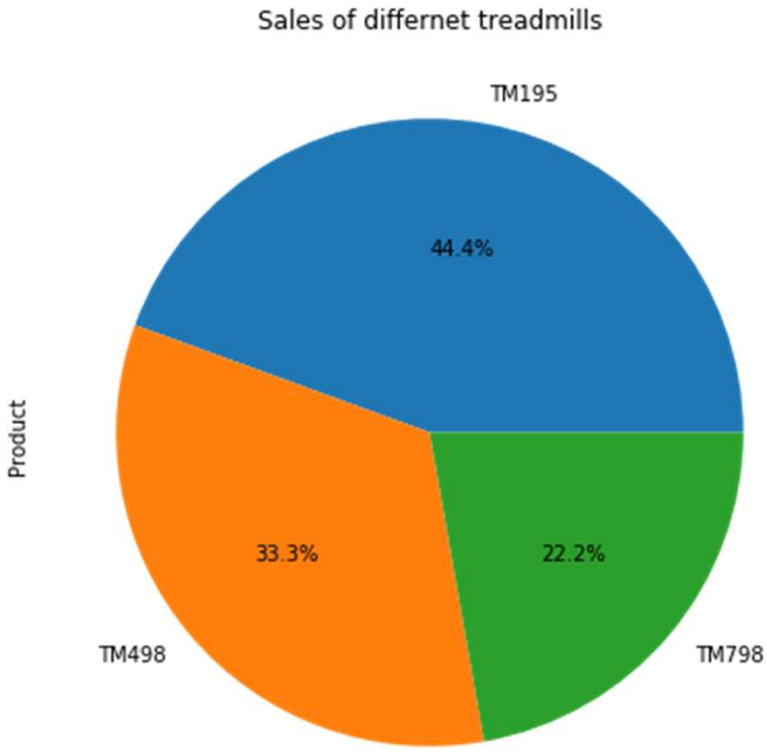
Multivariate
EDA –Marital status, gender & Fitness

- Marital status has no significant effect on females fitness.
- Single males are fitted in compere to partnered males.
- Totally, as I mentioned before self rated fitness score is a little low in females



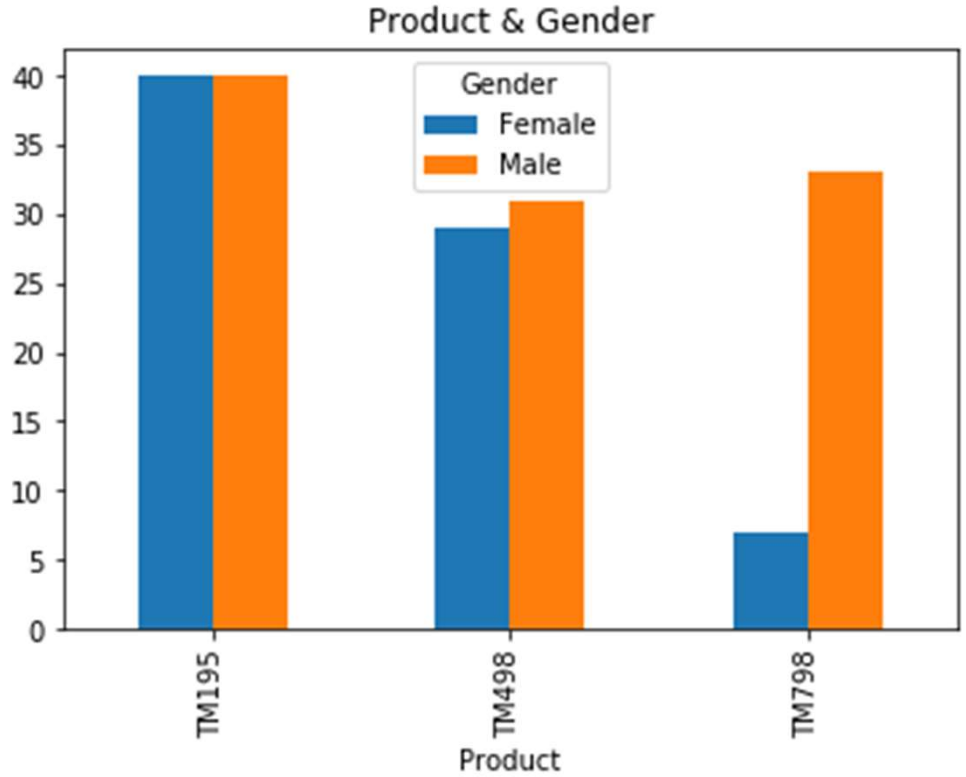
Multivariate
EDA – different products

- Purchasing of different products: [**TM195**] [**TM498**] [**TM798**]
- **TM195** has the biggest part of the sales and then model **TM498** with 33% is the second one.
- **TM798** with 22.2% is located in the third place**.**



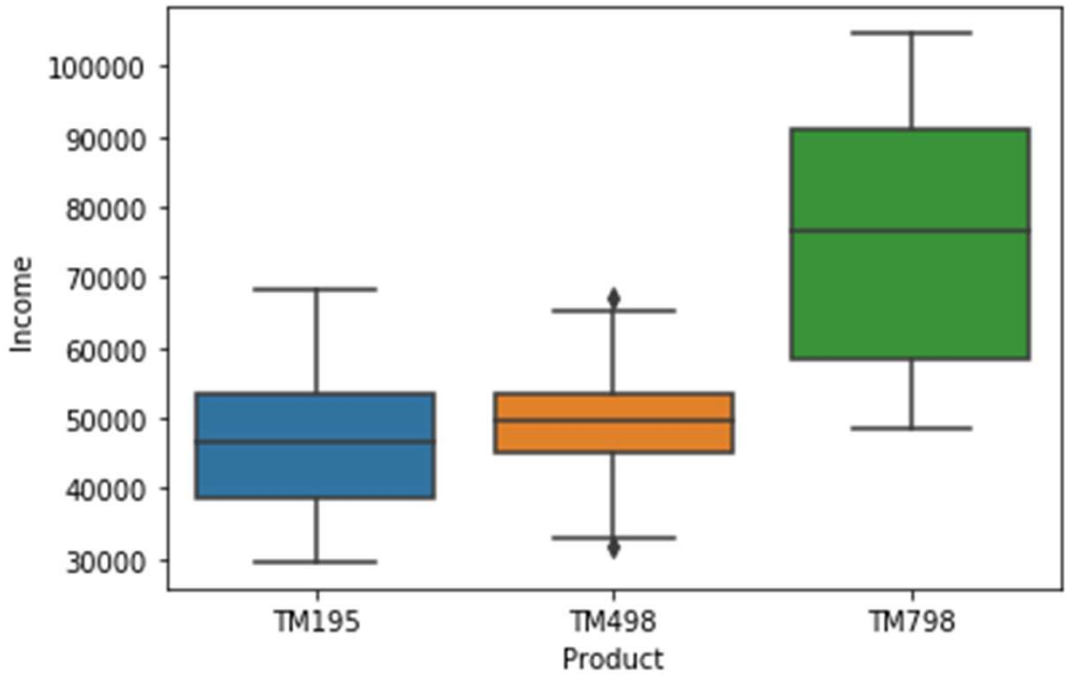
Multivariate
EDA – different products & Gender

- It seems model **TM798** is popular in Males than in Female but two other products are popular in both gender



Multivariate
EDA – different products & Income

- Model **TM798** is more popular among people who have a higher income.
- Median of **TM798** is around 76000 but, for two other products is around 47000 and 50000.



Multivariate
EDA – different products & Education

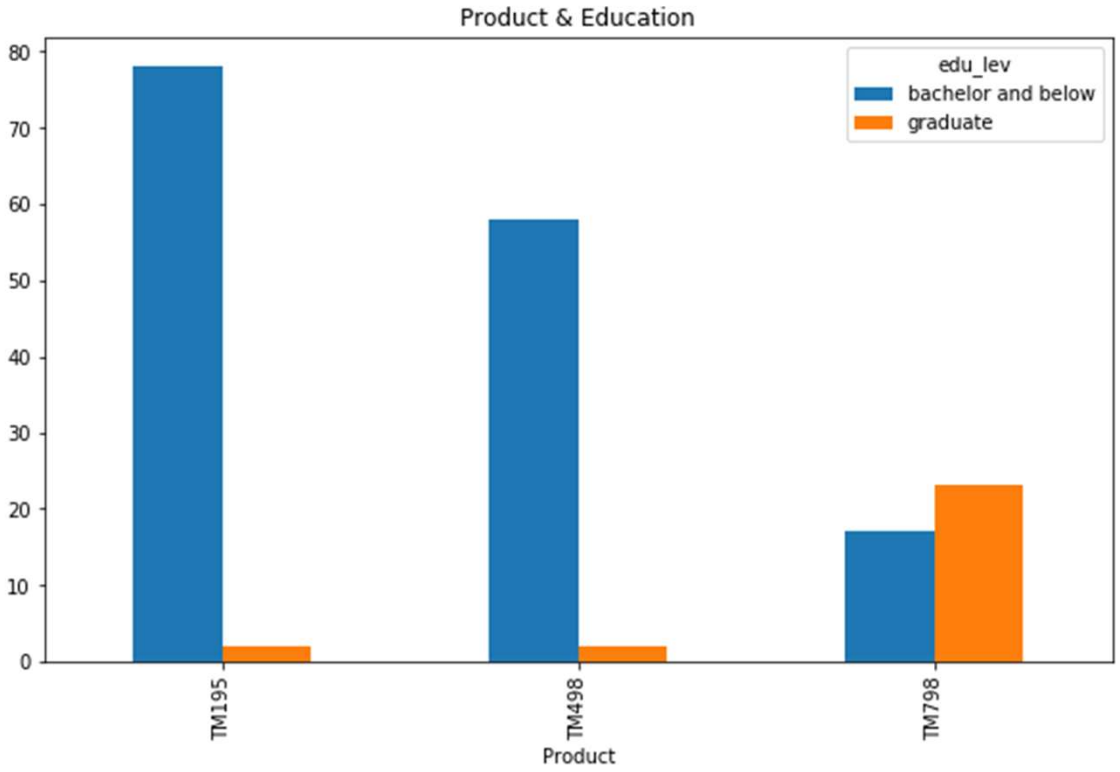
- I grouped education into two categories for better understanding:

Bachelor = less than 18 years education

Graduated = 18 years or more

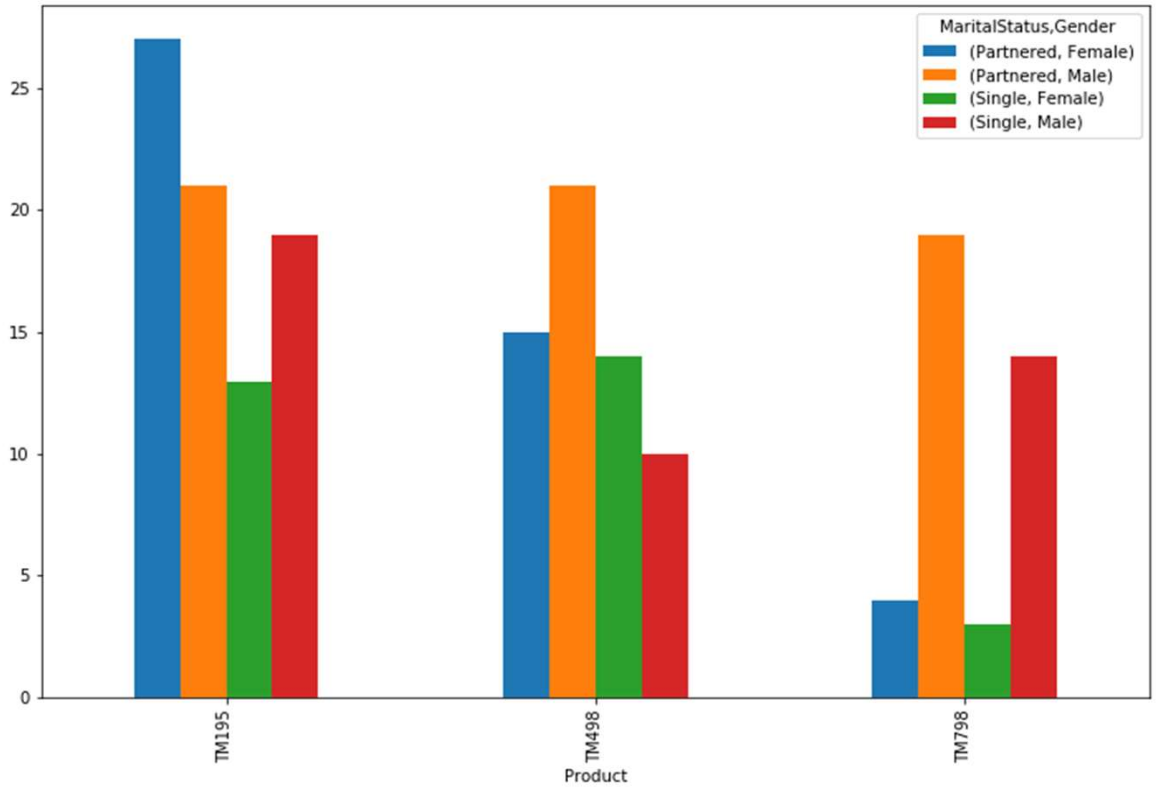
- people who purchased product model **TM789** are more graduated.

- we can say there is a relationship between purchasing of this model, higher income, and graduation level.



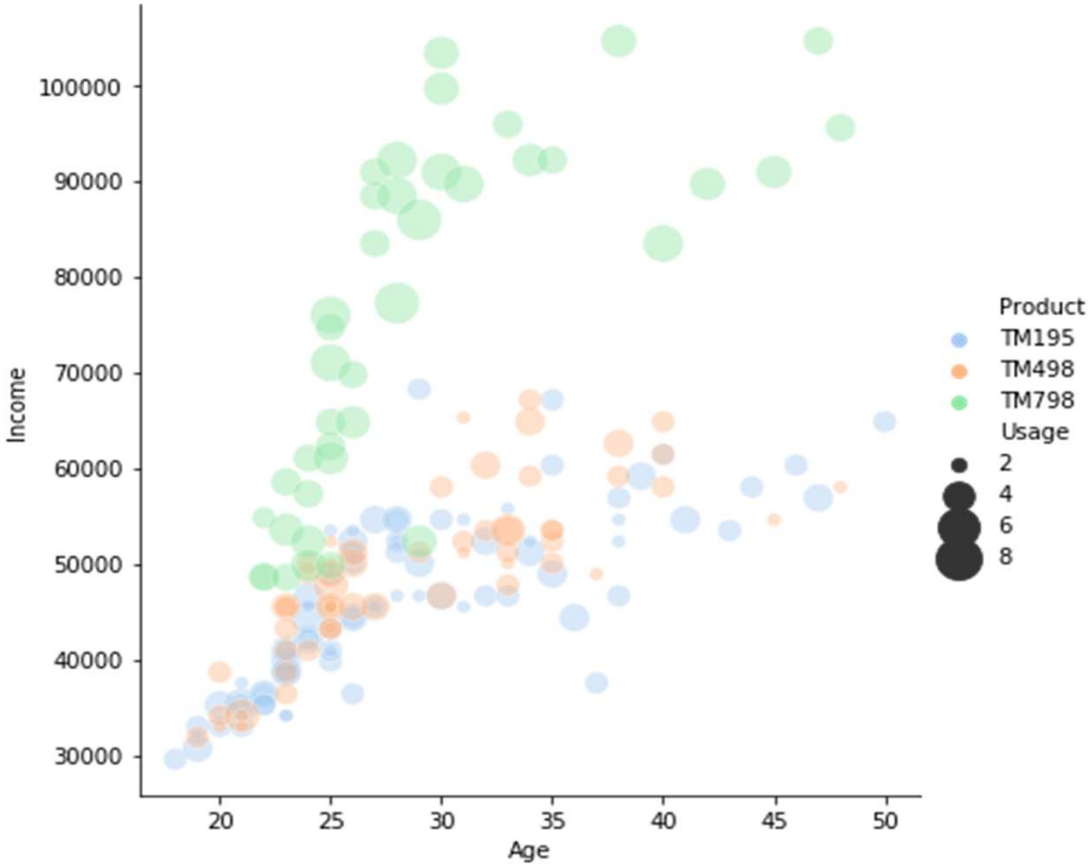
Multivariate
EDA – different products, Gender & Marital Status

- Model **TM195** is more buying by females who are living with their partners but, Model **TM798** is less purchasing by females.
- There is no particular tendency among men to choose between these products.
- Model **TM195** is more popular than other models.



Multivariate
EDA – different products, Age, Income & Usage

- Treadmills model **TM195** and model **TM498** are bought by people who have lower income (less than 70000) also their age falls in range of 18-35.
- As I showed before, Treadmill model **TM798** is mostly bought by people with higher than 70000 income and age between 25 and 35.
- Also most of the people who buy the Treadmill model **TM798** expect that they will run more than people who use Treadmills model **TM195** and model **TM498**.
- we can see that usage of model **TM798** is a little higher than the others



Business Insights and Recommendations

- Treadmills **TM195** & **TM498** have been purchased by costumers with income less than 60k, which I believe that's because of their costs. This retail store should market these models as a budget Treadmill for all. For example, they can offer these cheaper products more in locations with an average lower income. Also, it seems treadmill model **TM798** has a high profit, they can brand this model as a Professional Athletes Treadmill.

- For expanding sales in the women's section, they should increase the budget to market their business in order to find new customers and increase sales. Like promotions in Women's or Mothers days.

- Between younger customers, there are no significant patterns among the three treadmills selection. So the store could pay attention to older age groups to cover them more.

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