

Project 1: Good Cardio Fitness Case Study

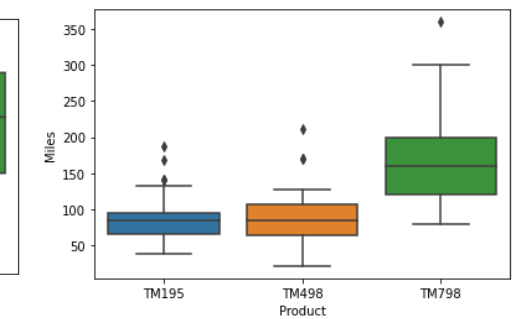
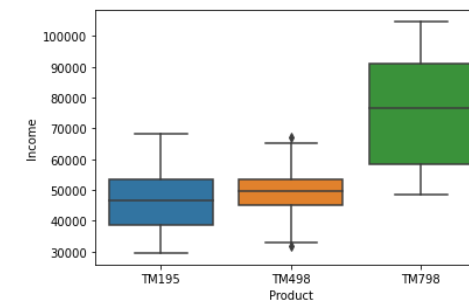
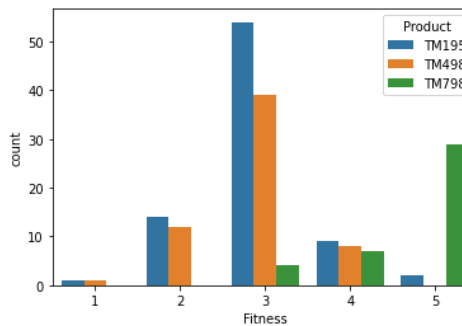
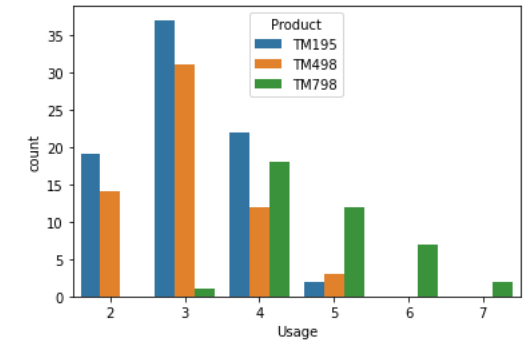
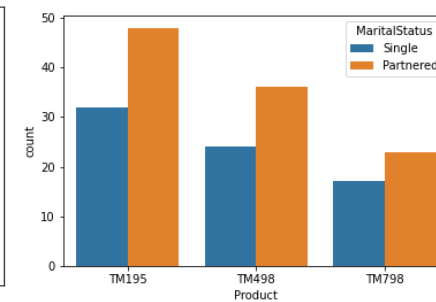
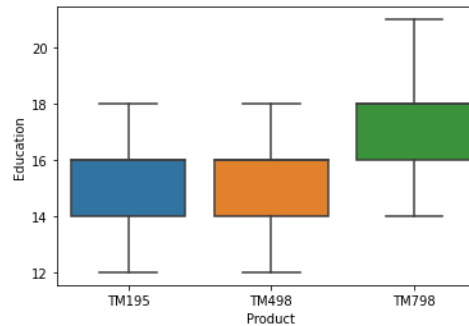
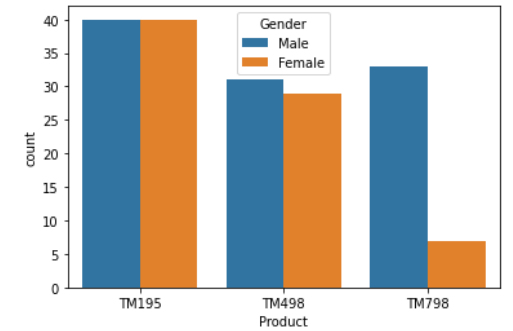
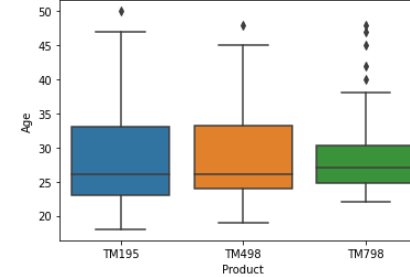
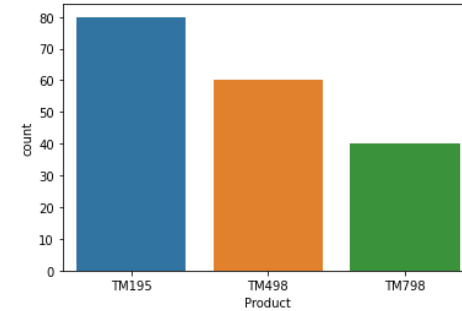
Data Science and Business Analytics
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Objectives

- Come up with a customer profile (characteristics of a customer) of the different products
- Perform uni-variate and multi-variate analyses
- Generate a set of insights and recommendations that will help the company in targeting new customers

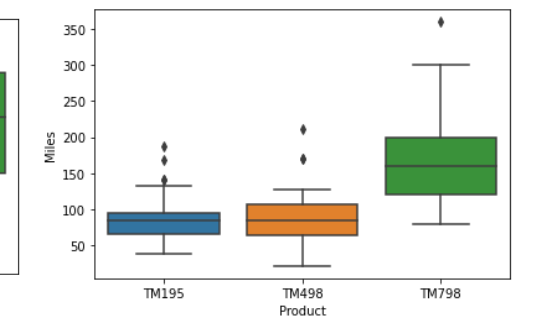
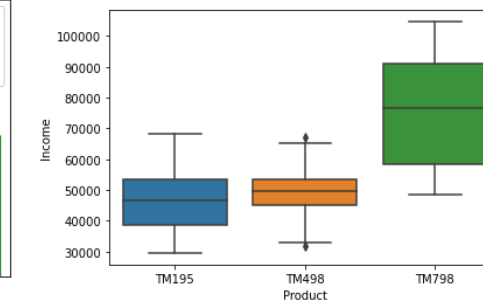
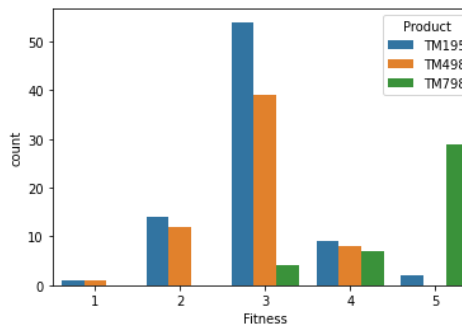
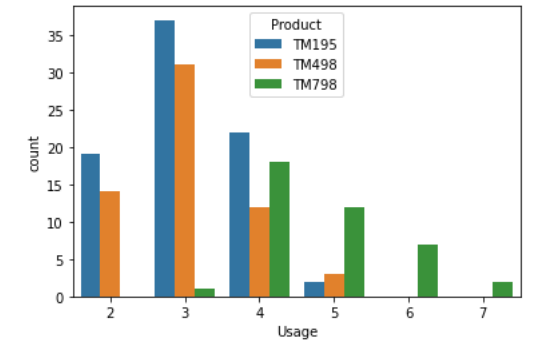
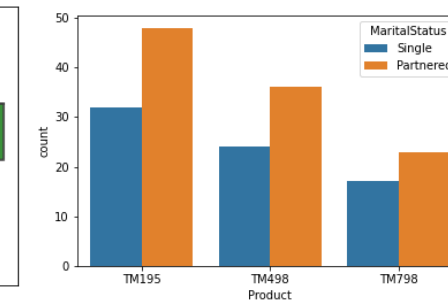
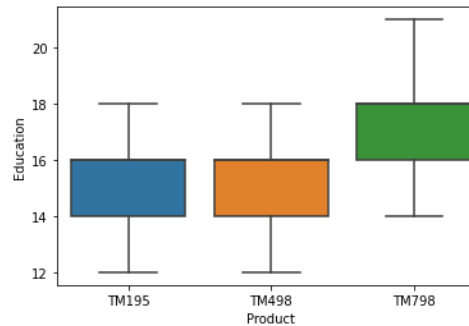
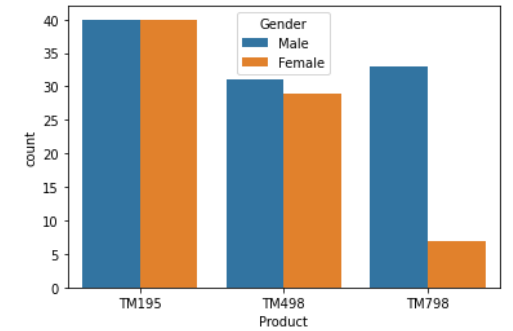
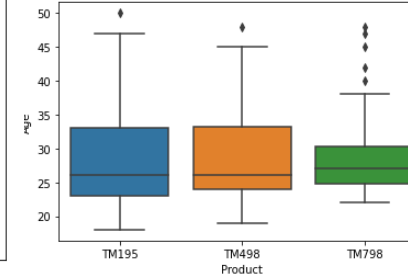
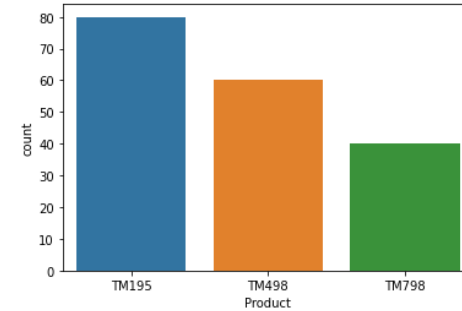
Customer Profile for Product TM195

- Maximum number of customers bought this product; suggesting that this is a popular product
- Average age of customers who bought this product is 28.5, with 50% of the customers being below 26 years of age
- This product is not preferred by one gender- both males and females have purchased this product equally
- This product has mostly been purchased by customers who have had 14-16 years of education
- This product has mostly been purchased by customers whose marital status is 'Partnered'
- The product has mostly been purchased by customers who like to walk/run 2-5 times a week; but mostly ~3 times a week
- Fitness level of customers who bought this product is mostly 3
- The average income of customers who buy this product is \$ 46K; which is lower than the other two products; suggesting that this product might be very suitable for those who have a relatively low income
- This product has mostly been purchased by customers who are expected to walk/run an average of 82 miles a week



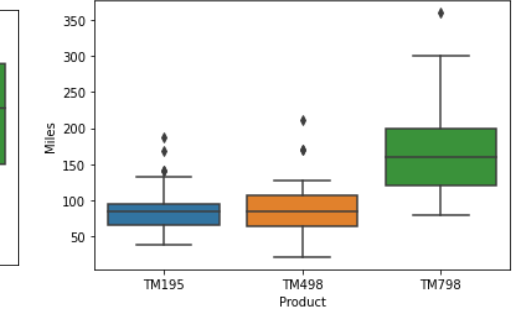
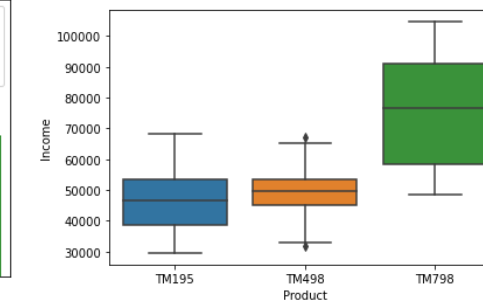
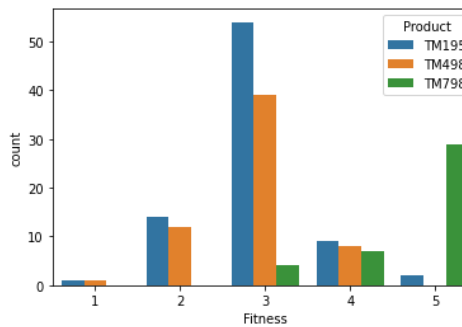
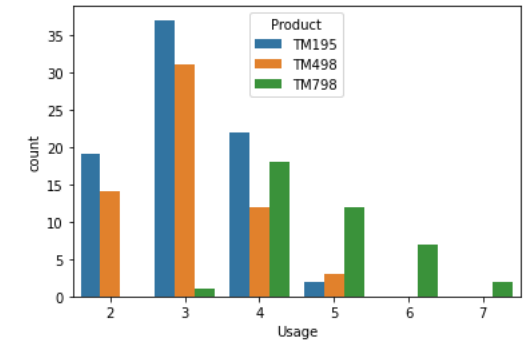
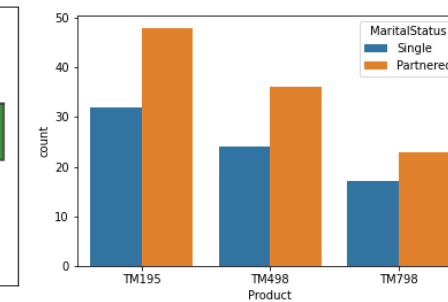
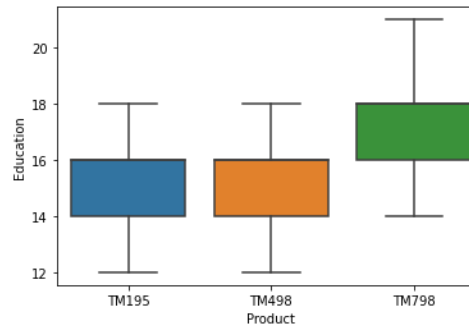
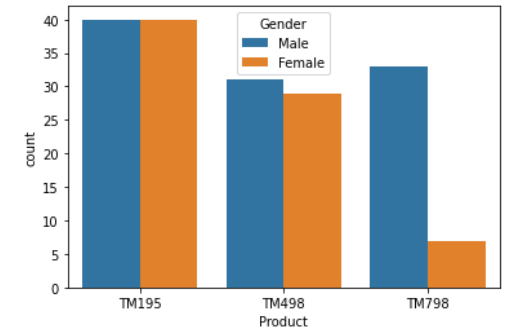
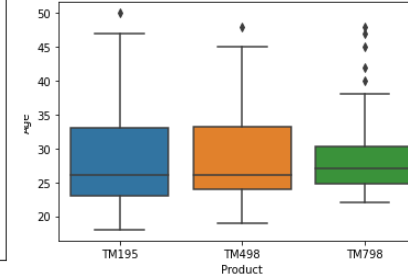
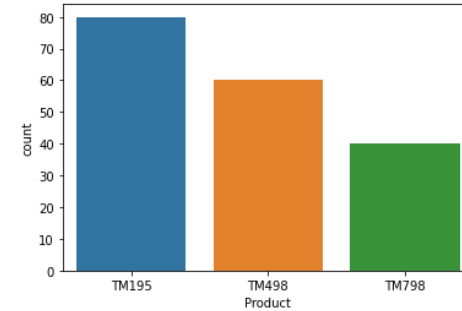
Customer Profile for Product TM498

- 2nd most bought product
- Average age of customers who bought this product is 28.9, with 50% of the customers being below 26 years of age
- This product is slightly more preferred by males over females
- This product has mostly been purchased by customers who have had 14-16 years of education
- This product has mostly been purchased by customers whose marital status is 'Partnered'
- The product has mostly been purchased by customers who like to walk/run 2-5 times a week; but mostly ~3 times a week.
- Fitness level of customers who bought this product is mostly 3
- The average income of customers who buy this product is \$ 49K; but the range of income is smaller compared to the other two products; suggesting that this product might be very suitable for those whose income lies between \$ 45K - \$ 50K
- This product has mostly been purchased by customers who are expected to walk/run an average of 88 miles a week



Customer Profile for Product TM798

- Least bought product
- Average age of customers who bought this product is 29.1, with 50% of the customers being below 27 years of age
- This product is highly preferred by males compared to females
- This product has mostly been purchased by customers who have had 16-18 years of education
- This product is preferred by customers whose marital status is 'Partnered'
- The product has mostly been purchased by customers who like to walk/run 4-7 times a week; but mostly ~5 times a week; suggesting that it is better suited for those who run/walk more
- Fitness level of customers who bought this product is mostly 5; suggesting this product is preferred by those who are fit and exercise regularly
- The average income of customers who buy this product is \$ 75K; but the range of income is smaller compared to the other two products; suggesting that this product is suitable for those customers that are in the higher income bracket
- This product has mostly been purchased by customers who are expected to walk/run an average of 166 miles a week



Multi-Variate Analyses

Covariance

```
In [18]: 1 data.cov()
```

Out[18]:

	Age	Education	Usage	Fitness	Income	Miles
Age	48.212166	3.149410	0.113470	0.406828	5.884446e+04	13.186530
Education	3.149410	2.614867	0.693172	0.636623	1.670472e+04	25.770795
Usage	0.113470	0.693172	1.176785	0.695469	9.303043e+03	42.709808
Fitness	0.406828	0.636623	0.695469	0.919429	8.467925e+03	39.073246
Income	58844.463439	16704.717815	9303.042582	8467.925388	2.724706e+08	465265.361887
Miles	13.186530	25.770795	42.709808	39.073246	4.652654e+05	2689.833489

Covariance does not give insights into the causation of different features

We will look at correlation instead

Correlation is high between:

- Expected Miles and Usage
- Expected Miles and Fitness

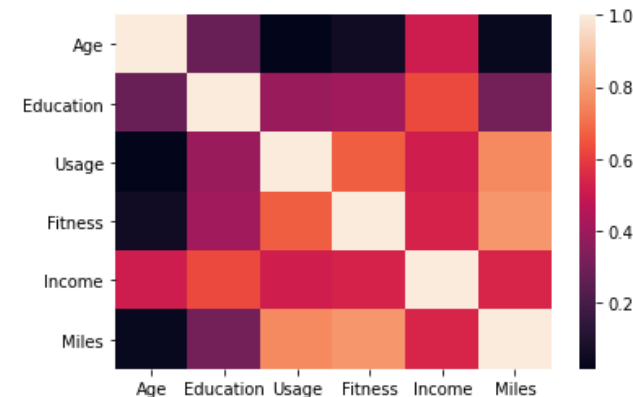
Correlation

```
In [13]: 1 data.corr()  
2 # High correlation between Miles expected to run and Usage  
3 # High correlation between Miles expected to run and Fitness
```

Out[13]:

	Age	Education	Usage	Fitness	Income	Miles
Age	1.000000	0.280496	0.015064	0.061105	0.513414	0.036618
Education	0.280496	1.000000	0.395155	0.410581	0.625827	0.307284
Usage	0.015064	0.395155	1.000000	0.668606	0.519537	0.759130
Fitness	0.061105	0.410581	0.668606	1.000000	0.535005	0.785702
Income	0.513414	0.625827	0.519537	0.535005	1.000000	0.543473
Miles	0.036618	0.307284	0.759130	0.785702	0.543473	1.000000

```
In [14]: 1 sns.heatmap(data.corr());
```



Insights and Recommendations

- Out of the three products, the most bought product is TM195
- This product could be used to target customers who:
 - walk/run ~3 times a week
 - have a fitness level of 3
 - Are in the low-income bracket
 - In the 'Partnered' marital status group

Insights and Recommendations

- The company can use product TM498 to target a customer base that is similar to the customer base for TM195. A few distinctions from TM195:
- Since the product is preferred by males, it could be used to target a male customer base
- Since the average income is higher for this product, this could be used to target a customer base with income between \$ 45K - \$ 50K

Insights and Recommendations

- TM798 seems to be a product with a niche customer base. Could be used to target customers who:
- Are younger
- Are male since this product is highly preferred by males compared to females
- Are highly educated
- Walk/run ~5 times a week
- Are very fit
- Are in the high-income bracket

Appendix

All Plots

