

## **CASE STUDY**

### **INTRODUCTION**

Good Health contributes significantly to human's happiness. Urška Sršen, Chief Creative Officer of Bellabeat saw an opportunity to empower and help women make healthier choices around the world. My case study is about analyzing the patterns in fitbit users' data to make better recommendations to Bellabeat's marketing strategy team to satisfy customer needs. My process will be to show the usefulness of fitness products, apply them to Bellabeat customers, and contributes to women happiness.

#### **1- A clear summary of the business task**

Business task: Analyzing patterns among smart device usage to gain insights how Fitbit customers use their products to reach their fitness goals. After understanding those insights, I will be applying them to Bellabeat app product to guide Bellabeat marketing team make better recommendations to women and accompany them in their day-to-day life.

The key stakeholders are:

- Urška Sršen: Bellabeat's cofounder and Chief Creative Officer
- Sando Mur: Mathematician and Bellabeat's cofounder
- Bellabeat marketing analytics team: A team of data analysts responsible for collecting, analyzing, and reporting data that helps guide Bellabeat's marketing strategy

#### **1. A description of all data sources used**

The data is about fitbit fitness tracker data. It is stored on Kaggle in a long format. The data is a result of a survey made by Amazon in 2016. Thirty users consented to share their data for physical activity, heart rate, and sleep monitoring. The data does not necessarily give any personal information such as the user's age or gender which makes the data a little confusing. We cannot conclude that it is a sample bias since we do not know how the thirty people have been chosen to represent the whole population that uses fitbit tracker. The data is outdated, a lot of improvement have been made since 2016. Some records are missing, the users could not have been monitored the whole trial hence the data from this survey is not complete which leaves its integrity doubtful.

#### **2. Documentation of any cleaning or manipulation of data**

The manipulation and cleaning will be done in R. I chose to work with the data named Daily\_Activity, SleepDay, heartrate\_second and weight\_log\_info and I renamed them into activity, sleep, heartrate, and weight. The dataset has numerous errors such as duplicate values, zero values instead of null values. Weight has a column with mostly NA values. I noticed that sleep and weight had their date and time in the same column. I proceeded to separate it by creating a new column for time. Sleep had three rows with duplicated

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values, so those rows have been removed. Activity has two columns total steps and total distance with some zero's values, I filtered activity such that it does not consider the zero values. I removed the column of weight in pounds since I had the same column converted into Kg. TO reach some insights, I merged the activity table and the weight table.

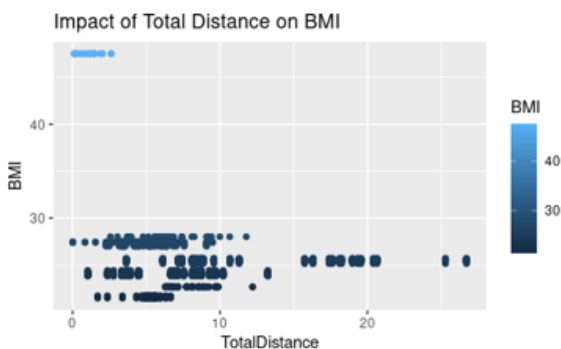
## 4- A summary of your analysis

After merging the activity and weight table, I am looking into a relationship between steps/distance and Body Mass Index (BMI). I sorted this new table by BMI in a descending order. On the other hand, I noticed that some customers burned a lot of calories, is walking long distances affect the number of calories burned? Looking at the number of minutes customers sleep during the day and their heart rate per second, are those numbers normal?

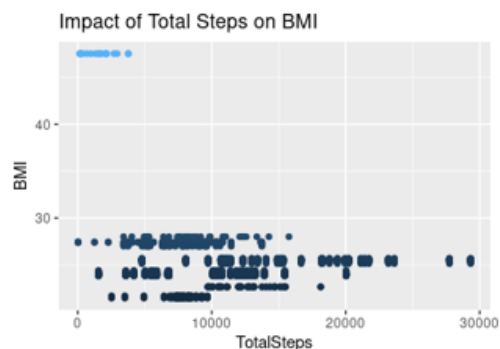
## 5- Supporting visualizations and key findings

**Customers uses the smart device to track their distance and steps made to stay in the healthy range of the BMI which is below 30**

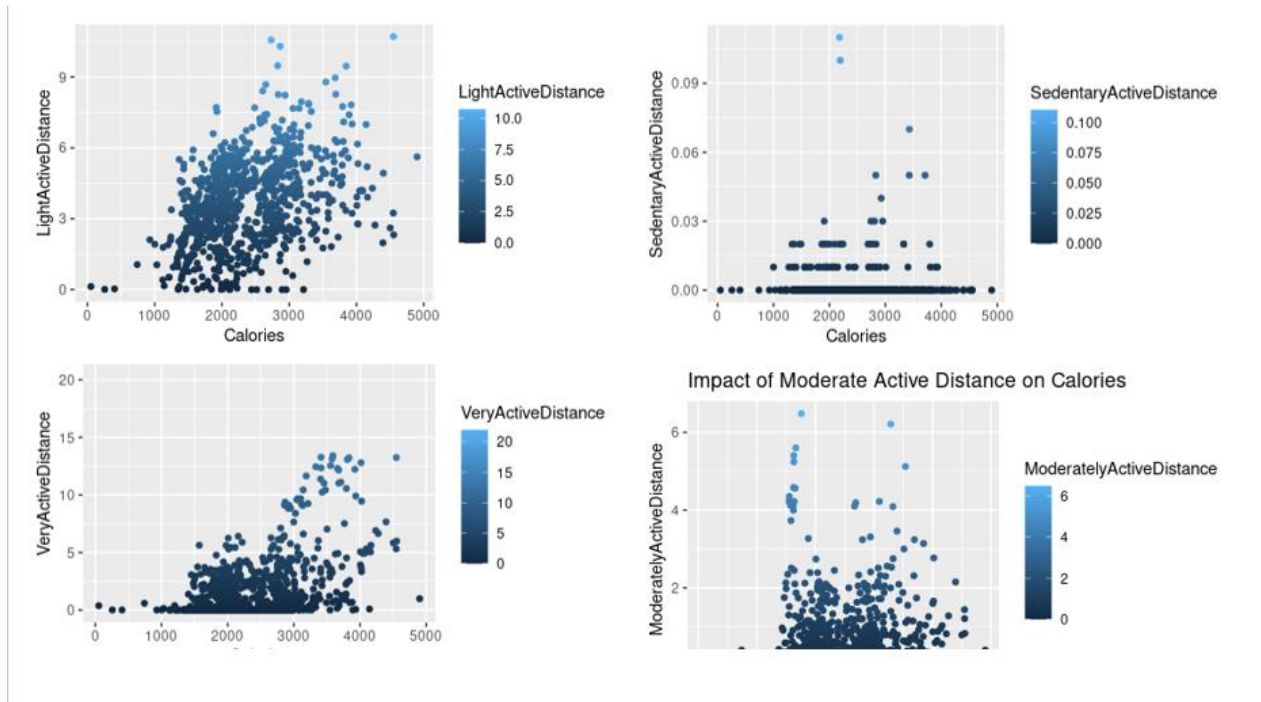
### BMI is low when Distance is high



### BMI is Low when Total Steps is high



Calories are also affected by how much active distance the customer do. Customers uses smart device to track their distance to burn more calories. We can understand by those graphs that being very active has a significant impact on burning more calories.



#### **6- Your top high-level content recommendations based on your analysis**

- Bellabeat app could feature a fitness instructor in the app to give some classes for people that feel more comfortable exercising at home so that this specific audience could benefit from. It will also help women stay health even while staying at home.

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- Knowing that gaining or losing significant weight or changing exercise routine could affect women menstrual cycle. Indeed, marketing Bellabeat app helps remedy the situation by tracking and regulate women day to day. This adds great value to Bellabeat app.
- Some women tend to be shy about their weight. Therefore, marketing a friendly environment at Bellabeat could help empower women and make them feel at home.