The Bellabeat case study is a capstone project that I recently completed. Bellabeat's product line is made up of the Bellabeat app, which allows user insight into user's health by providing data on their activity, sleep, stress, menstrual cycle, and mindfulness habits.

The business task was to collect and analyse usage data for a Bellabeat smart device to better inform Bellabeat's marketing and business strategy decisions.

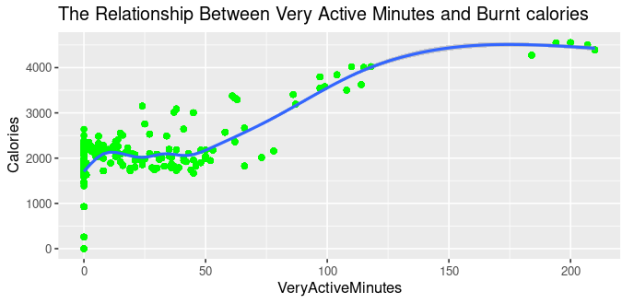
Currently the fitness industry is very male dominated. They prioritize and encourage unhealthy habits such as crash dieting, juice diets which are not only based on pseudo-science but can have detrimental effects on women's psyche, self-confidence and health. They don't consider differences in women's physiologies and their hormonal cycle. Bellabeat app takes all the above factors into consideration, which is why I was interested in picking up this project.

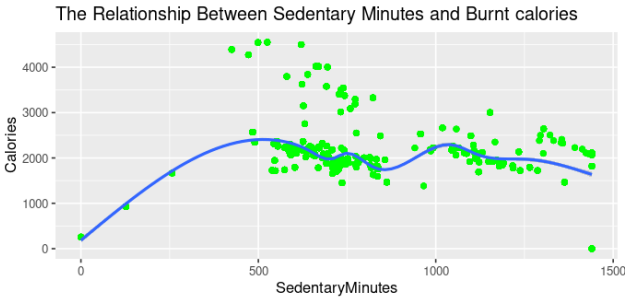
I used R programming for this project, I performed analyses using R Studio.

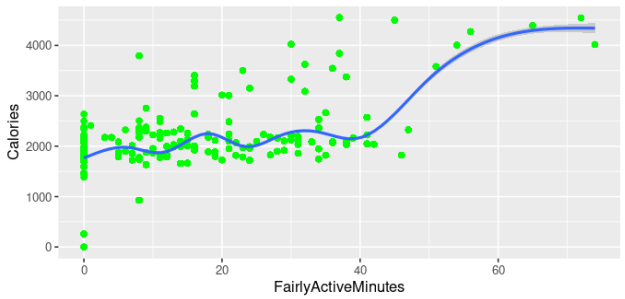
The four packages used in this project are tidyverse, dplyr, readr, and tidyr. I tables I used were weight log, Sleep log, and Calories. I proceeded to clean the tables, detecting and correcting (or removing) corrupt or inaccurate records from a record set, table and modifying it or removing it from the table. After data cleansing, I found the basic statistics for each table i.e., max, min, mean, median, 1st quadrant and 2nd quadrant values. I then merged the three tables into one final table to consider the relevant columns. I then again used functions to find the statistics for the final table through which I found some interesting insights.

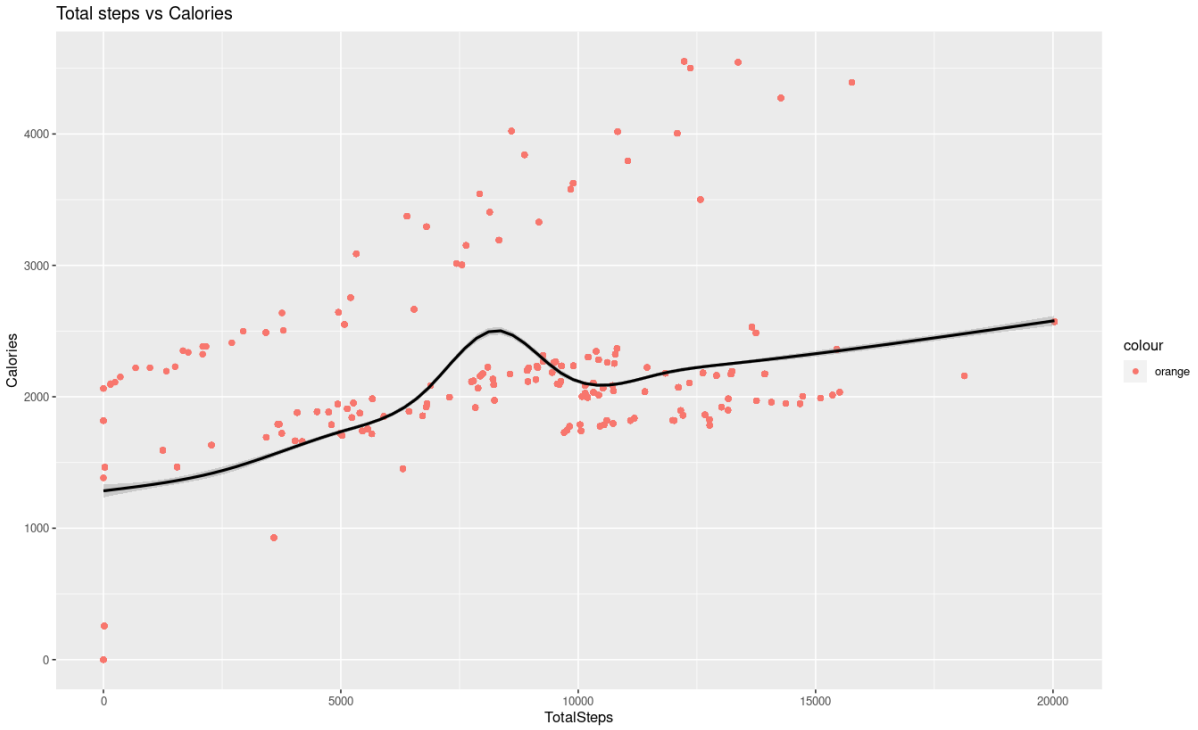
- The maximum total steps take was 20,000 steps which is almost 12kms!
- On average, the no of steps taken are 9431.
- On average, each person sleeps for around 7.2 hours a day
- The users walk around 6.3 kms daily
- The users spend about 707 minutes a day in a sedentary position. That is quite a high number!

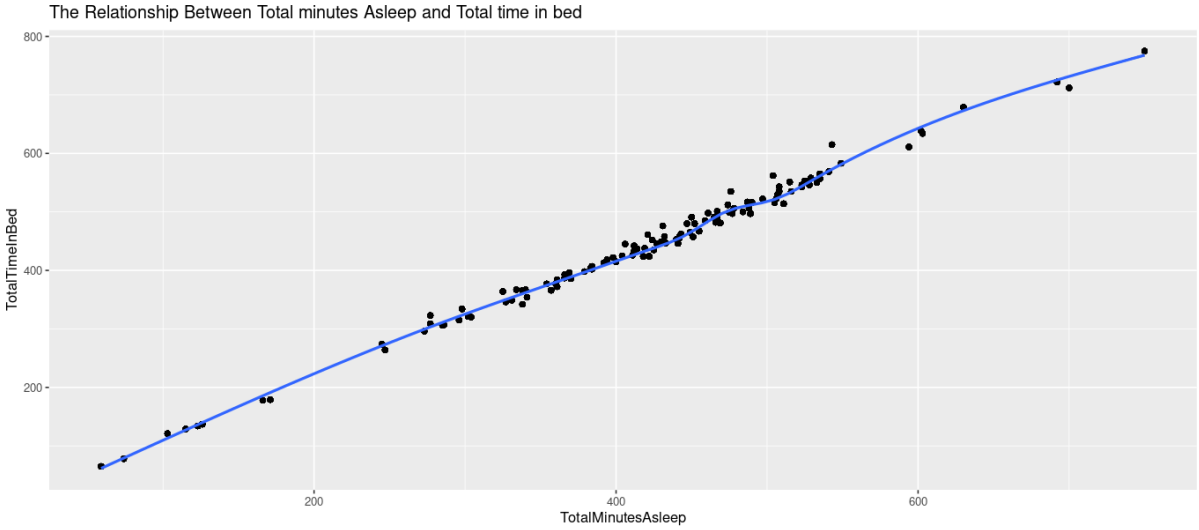
I used the 'ggplot2' library to create graphs to dig out deeper insights. Where I found there seems to be an imperfect "negative correlation" between the "total number of steps" made daily and the reported "weight. And a "positive correlation" between the "total number of steps" made daily and the calories burnt. After assessing I also saw a clear positive correlation between 'Very Active Minutes' and 'Burnt calories'.

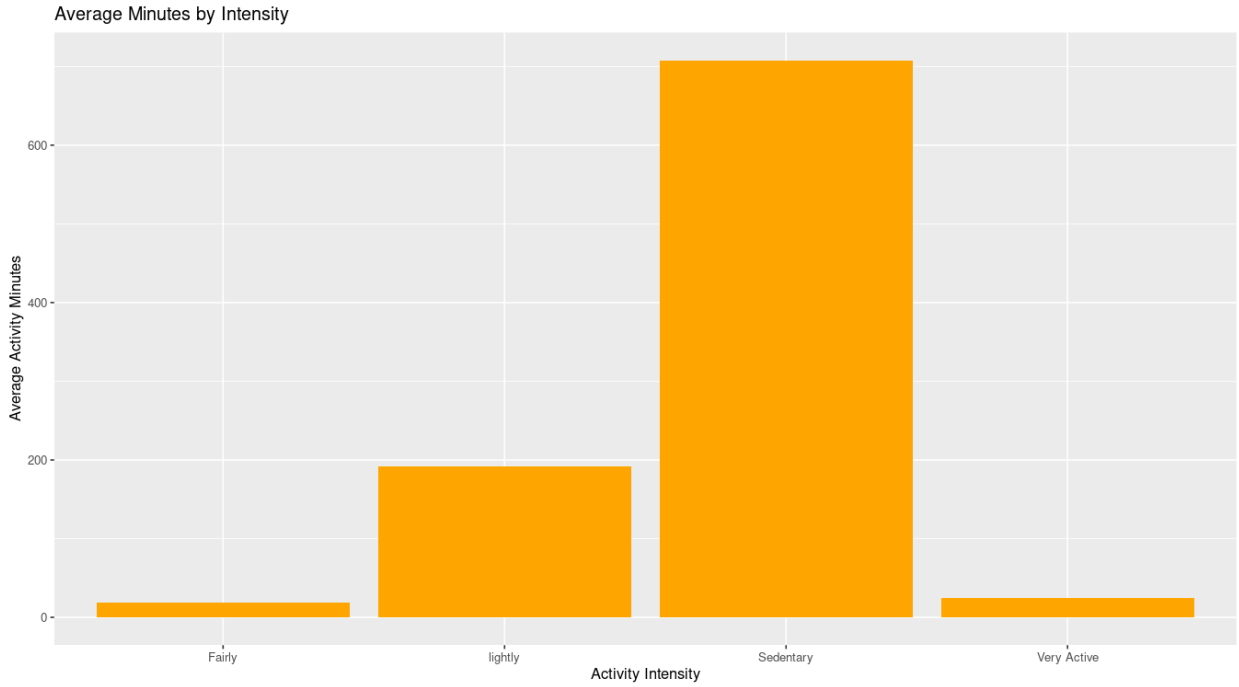







Total steps vs Calories
Calories
TotalSteps
0
1000
2000
3000
4000
0
5000
10000
15000
20000
colour
orange


The Relationship Between Total minutes Asleep and Total time in bed
TotalTimeInBed
TotalMinutesAsleep
200
400
600
800
200
400
600



On the basis of the preceding analyses, I recommended some of the following actions for Bellabeat's marketing strategy, which are

- Given the negative correlation between the users' weight and the total distance, Bellabeat's marketing campaign could be directed towards the users who wish to lose weight by encouraging them to walk more during the day. They could encourage the users to cover more distances daily by offering them prizes, bonuses or rewards for every additional kilometre covered. Or sending some motivational quotes and messages to keep them motivated.
- Provided that there is a positive correlation between 'Very Active Minutes' and 'Burnt Calories', it may be sensible to encourage users to maximize their very active minutes by offering them incentives in the form of bonuses or rewards. Furthermore, by enabling the users to share their active minutes publicly Bellabeat may further incentivise the users to remain active throughout the day and climb the ladder of very active users
- It has been observed that on average the users sleep 437.5 minutes per night. Bellabeat may recommend the users to set a target to 8 hours a day (480 minutes), and in case of meeting these targets share points that can be used to unlocked premium features.
- On average the users spend about 690 minutes a day (more than 11 hours!) in a sedentary position. Bellabeat can periodically suggest some short exercises and workouts to the users to keep them active and away from their desk. Or even send them messages to keep their posture straight and tell them to drink water.
- BellaBeat also can start a monthly competition for premium users to compete against themselves.

This Project was fun as I had to dig through a lot of data from different tables, The insights that I found were quite interesting as well.