Report for Bellabeat on Non-Bellabeat fitness apps and features usage

Background:

The Bellabeat is an emerging fitness app company which is trying to enlarge its business reach and enter the big leagues. To move to larger space, they wanted to know about the common trends in the leading fitness tracking brand like Fitbit and provide insights on what trends are seen in these fitness apps and how can these apply to Bellabeat app and how can we use this to improve Bellabeat's marketing.

Data Source:

https://www.kaggle.com/datasets/arashnic/fitbit

Data Chosen:

The fitness data for 33 participants from 12th of April to 12th of May was given. From the set of data provided by Fitbit, the data on daily activity, heart rate, sleep recorded, and weight log were used.

Data Cleaning:

- Data cleaning was done using spreadsheet.

Spreadsheet:

- Checking for Nulls: Used conditional formatting from format menu function and highlighted based on the condition if cell is empty to check for NULL values.
- Checking for duplicate data: The duplicate data was cleaned using the Data-> remove duplicates feature. Three duplicate rows were found in sleep day data.
- Formatting datatypes: The date format provided in the original data was not compatible with excel so the date time format was altered using formatting tool in spreadsheet.

Filtering Data:

SQL:

The datasets were filtered, and the columns were aggregated according to the needs of the analysis.

Activities data:

The activities table was filtered such that we got total number of minutes and distance for different kind of activities: very active, fairly active, light active and sedentary using the SUM() aggregate function. The average of daily steps, calories, etc were found using AVG() aggregate function. The number of days activities recorded was calculated by using the COUNT() function which was ordered by the Id of the participants. A new column was added to categorize people based on the number of days they spent on the activities.

Sleep data:

In the sleep data, the number of days were found by COUNT() function ordered by participant Id, The average daily actual sleep time and the time spent in bed was recorded. The difference in the times was also added in the new column. The number of minutes spent in bed was categorized for each person and also the number of days people recorded sleep.

Heartbeat Data:

The average heartbeat over the month, the minimum and maximum heartbeats were recorded using MIN() and MAX() aggregate functions.

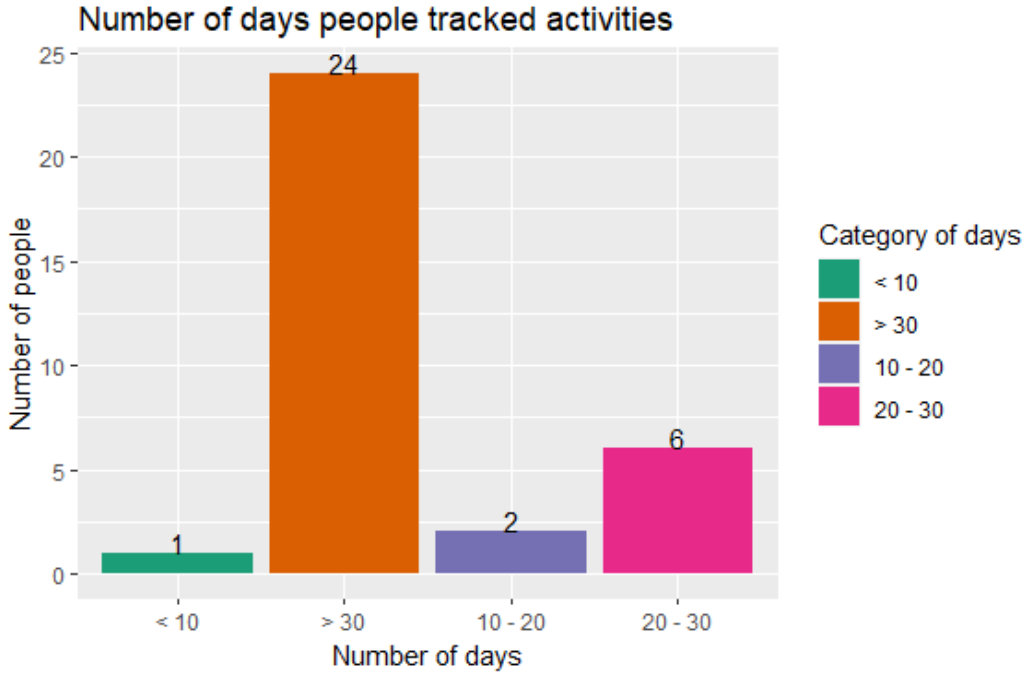
Weight Data:

Number of days weight was recorded by using the COUNT() function ordered by participant Id, the maximum and minimum weights were also recorded.

Analysis and Visualization using R:

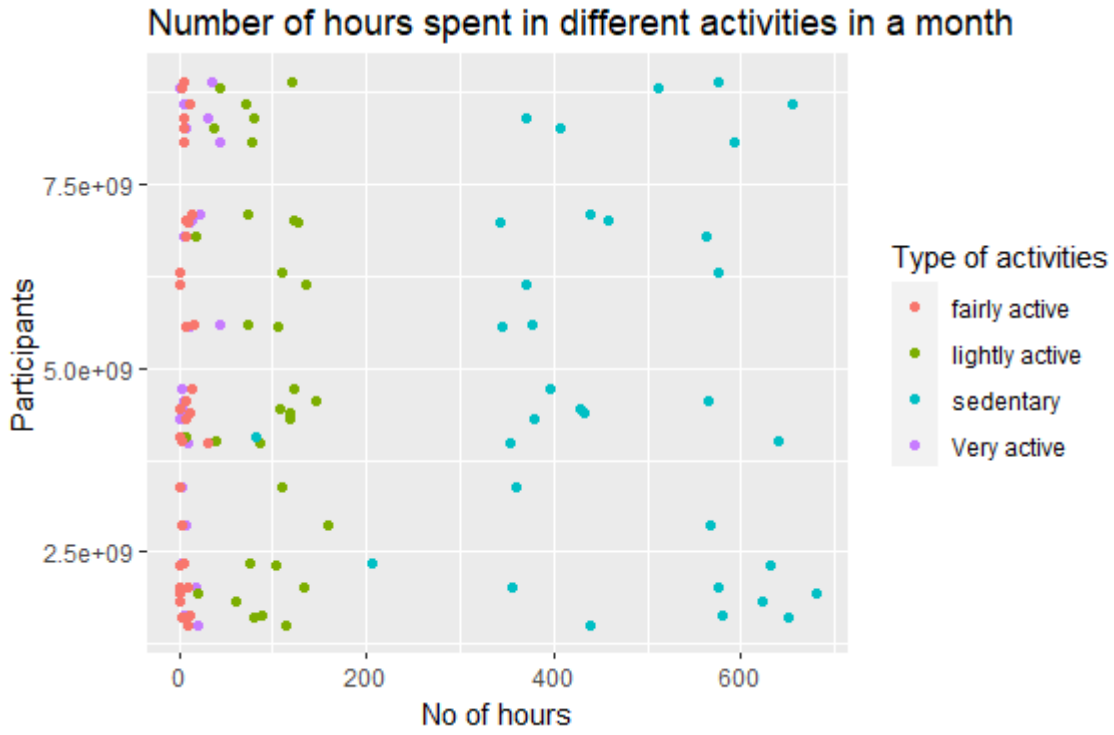
- It was observed that 33 people took part in the fitness tracking activity.

- The number of days activities were logged:



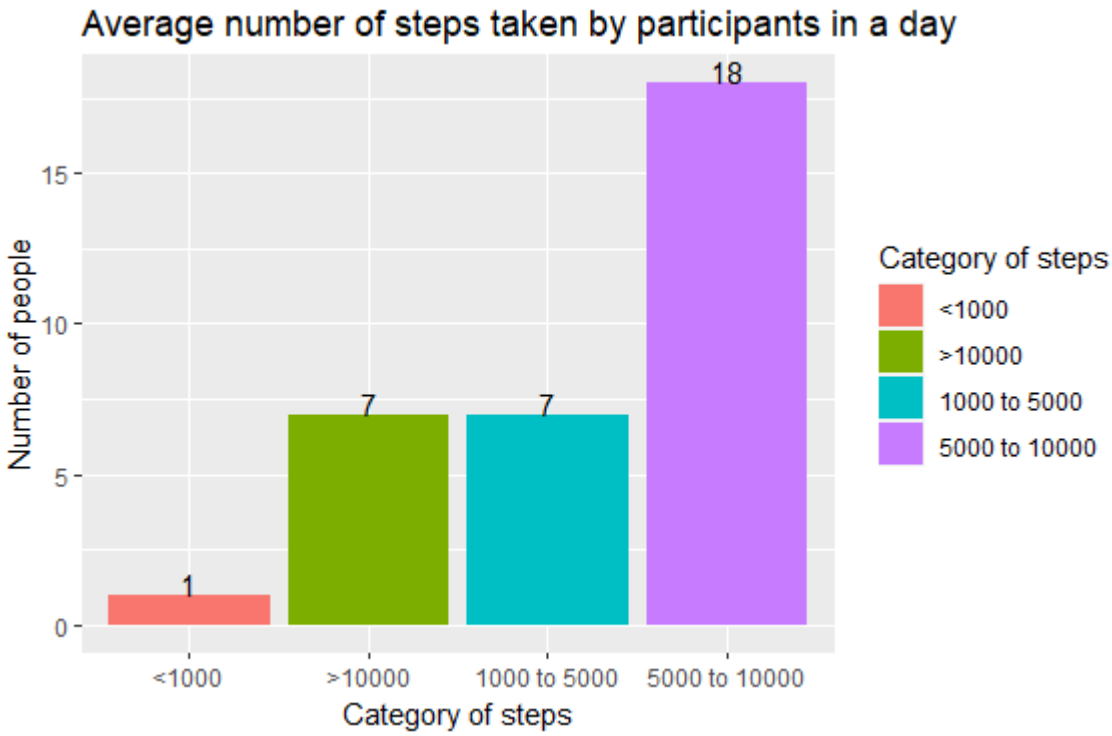
It can be seen that 24 people have engaged in more than 30 days of activity.

- The number of minutes involved in different activities.



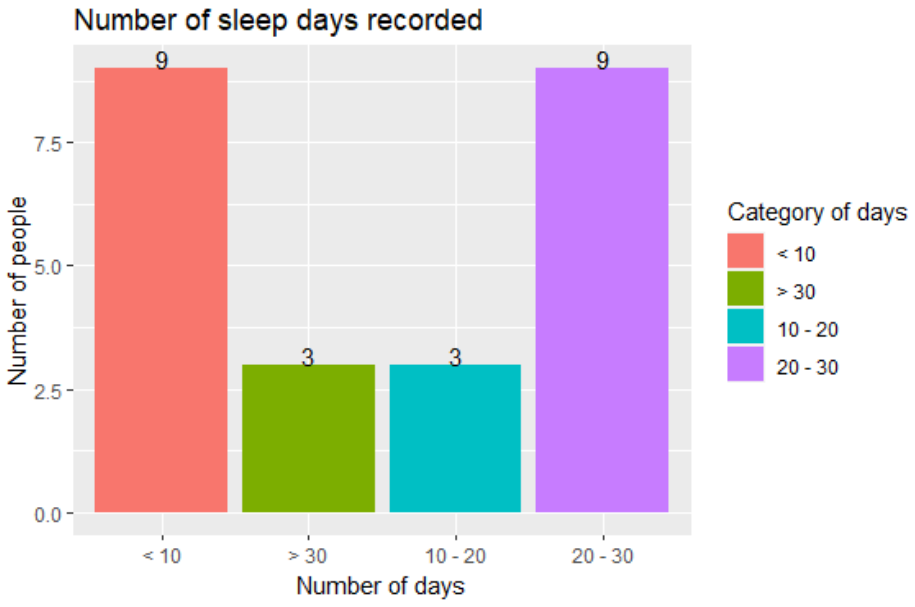
It can be observed that a lot of minutes have gone into sedentary minutes, second highest is light active, very less minutes spent on fairly and lightly active.

- The following graph shows number of steps in a day:



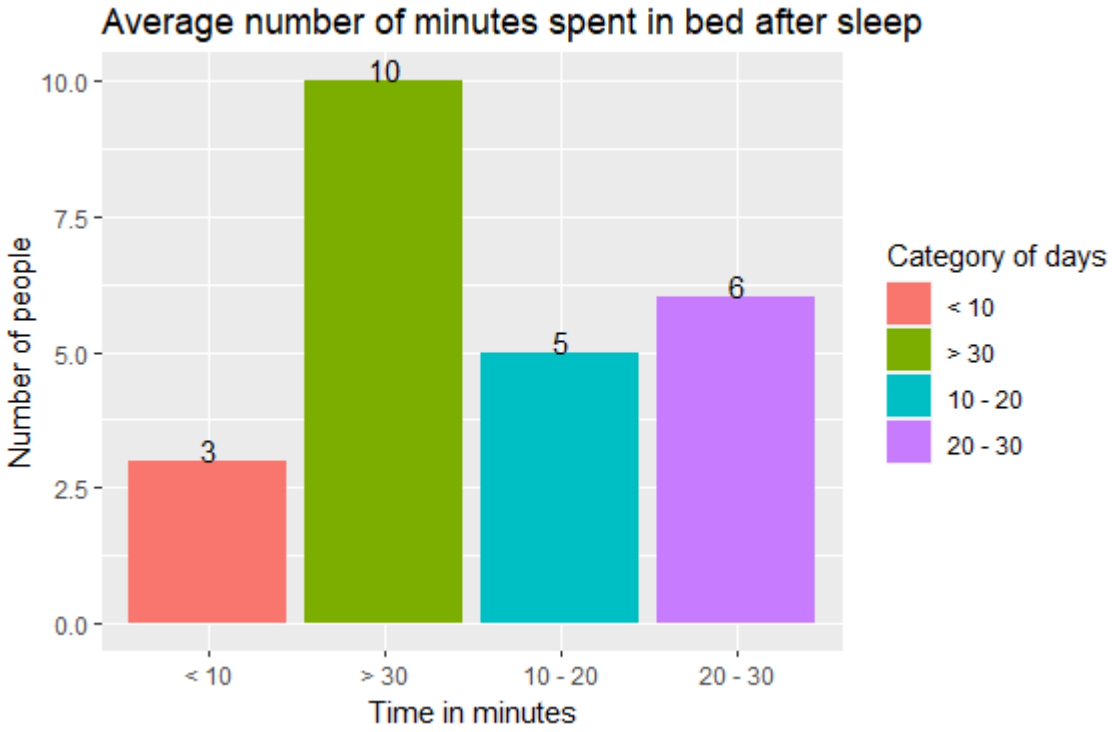
18 people have completed 5000 to 10,000 steps on average in a day over a month.

Number of days sleep was recorded is given in the following graph.



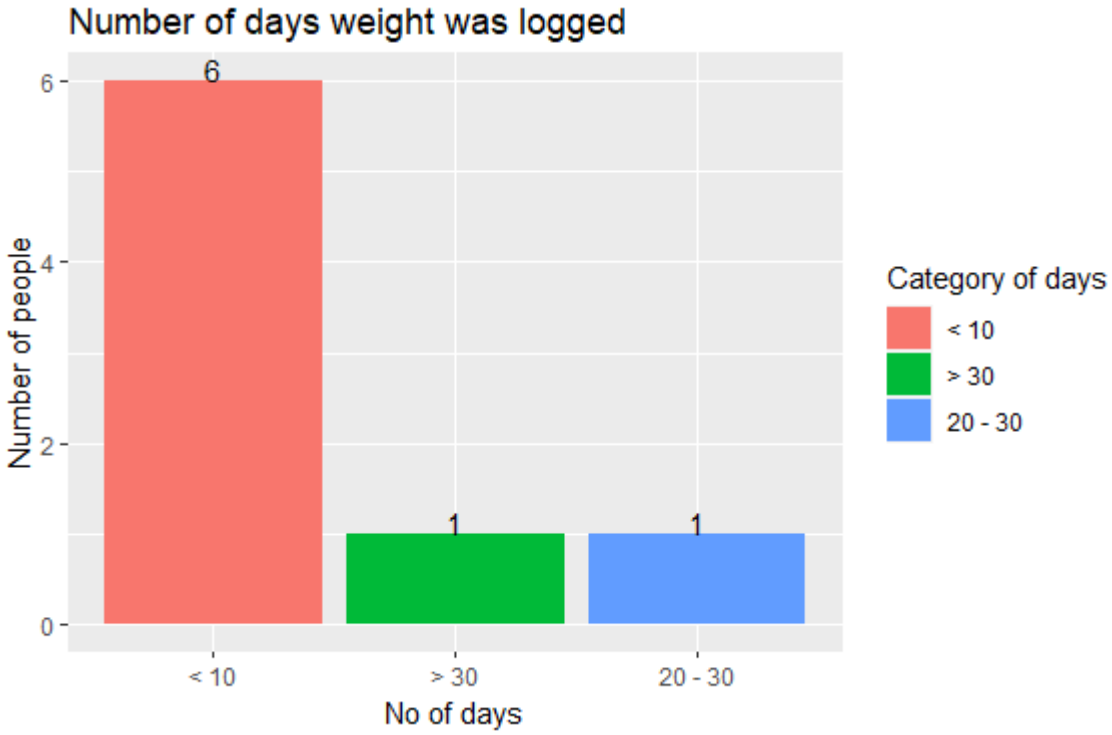
24 people recorded their sleep. 9 people have recorded for less than 10 days and other 9 for 20-30 days.

- The following graph will show the average time spent in bed by people after actual sleep.



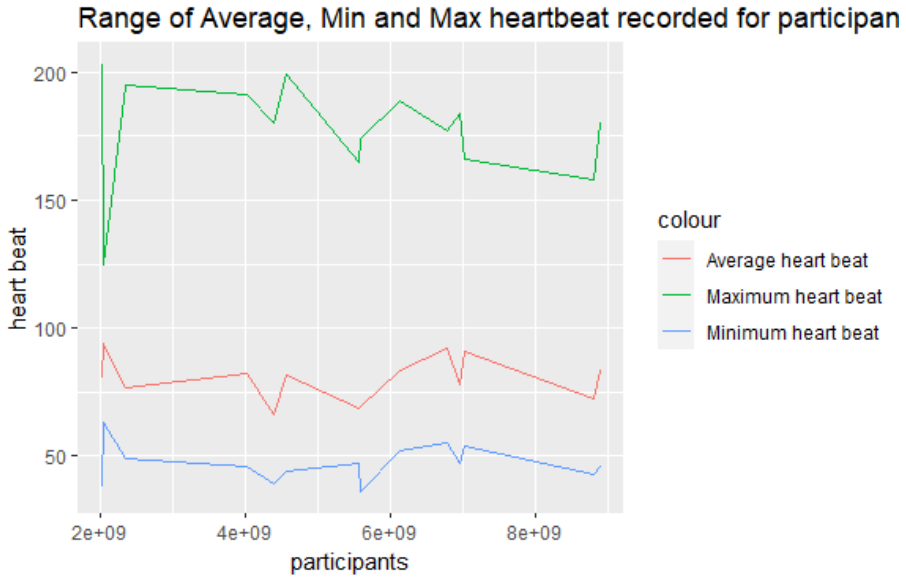
10 people have spent more than 30 minutes in bed, 6 people from 20-30 minutes, etc.

- Bar plot for number of days weight logs were recorded.

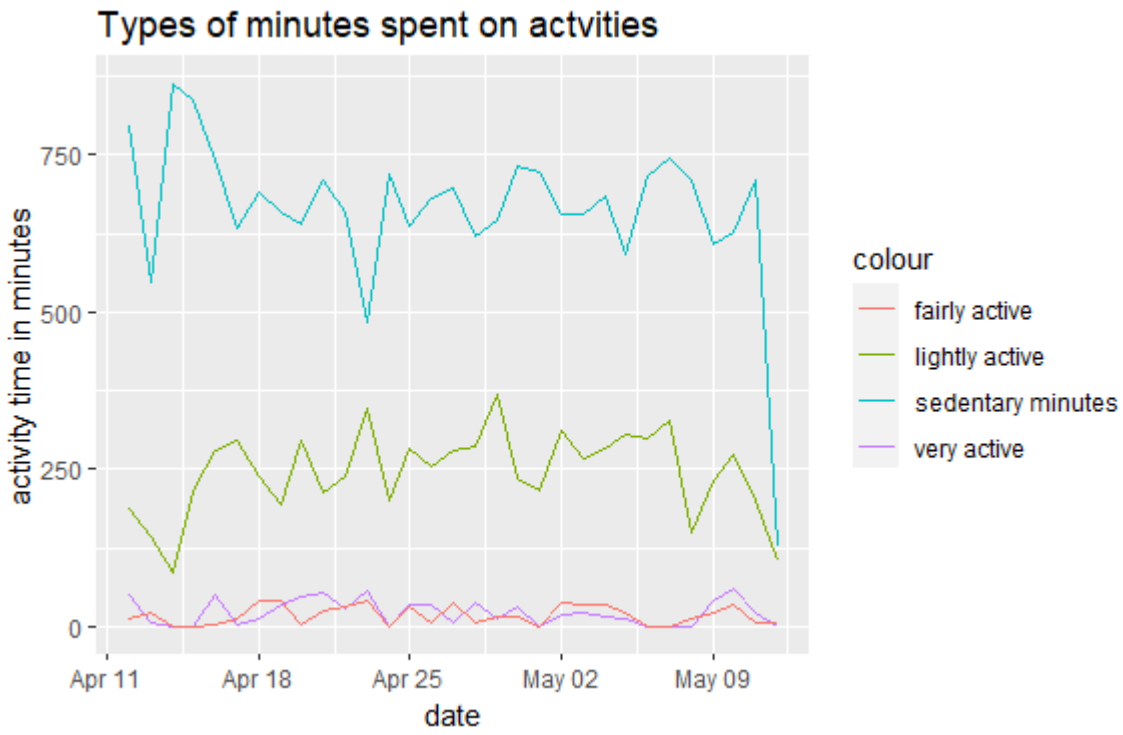


As you can see only 8 people have used weight logs and only one logged their weight for 30 days, 6 people logged for less than 10 days and one between 20-30 days.

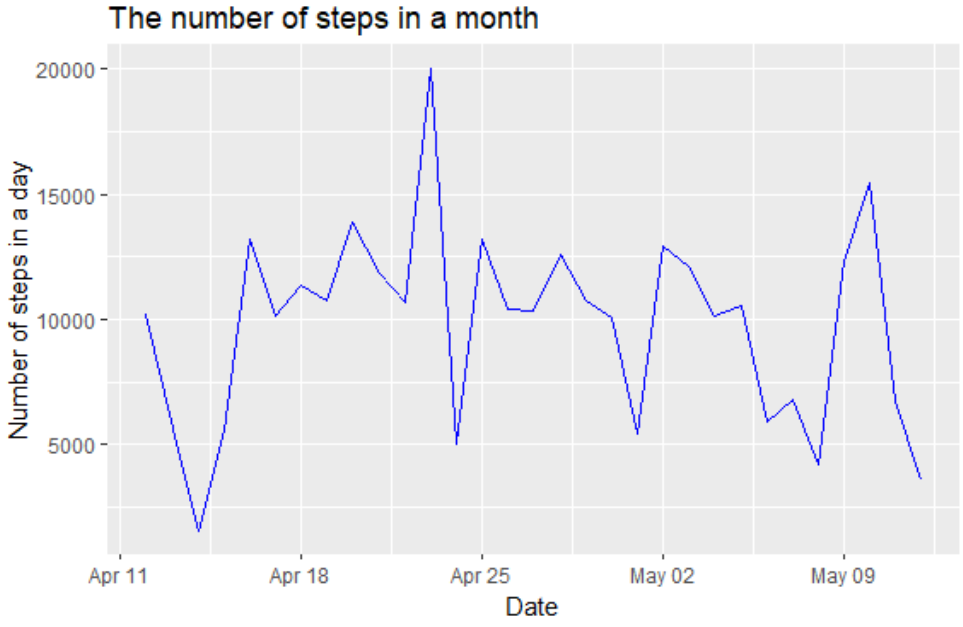
- The heartbeat range for patients recorded by the fitness app:

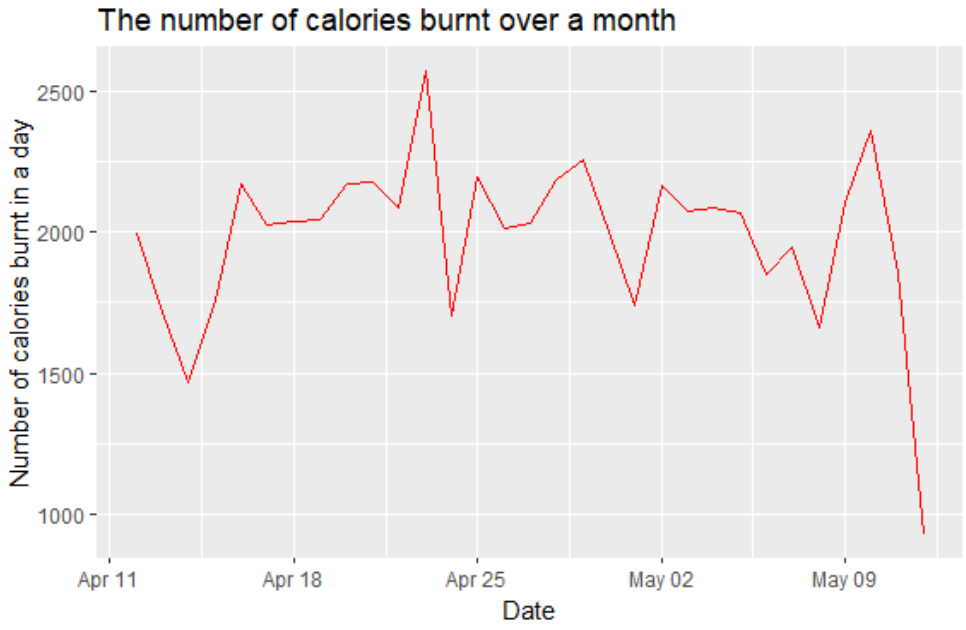


- We explored some data for a single participant, the following is the number of minutes involved in different kind of activities over the month.



- The following is the number of steps completed and calories burnt by individuals over the month:





Insights:

- The Fitbit app records the distances, steps, types of activities, number of minutes spent on these activities and the calories burnt.
- The Fitbit app also has features to track sleep, heartbeat and weight, etc.
- The number of minutes distributed over different activities could be observed. This viz will help us see which of the participants was being very active, lightly active or sedentary. This should help us see how we can engage the participants when they are slacking away from physical activities.
- The average steps in a day also gives us idea about who is being active and walking around. When no activity is observed for a person, then we can send prompt messages to increase their activities.
- The sleep log helps us keep track of how many minutes was spent in actual sleep and how many in bed. This insight shows us a lot of people spend more than 30 minutes time in bed while not sleeping maybe due to using mobile in bed, or they not motivated enough to wake up. This lag time will help us send messages to the people to move out of bed after the sleep is completed.
- The heartbeat feature was used comparatively by less people. The graph of average, minimum and maximum heartbeat shows in what range the app was able to record heartbeat and this can help us make the measurements more accurate and sensitive for improved usage.
- The weight log feature was used by 8 people and it was not logged quite often only 2 people logged for more than 20 days. This could be due to interface for this feature not being very friendly or the feature is popular among the users. This could be improved by sending people messages about this feature and to start their weight tracking journey.
- We also did some individual participant data over the month, this will help us keep track of when people were active, how many steps did they hit in a day. If the individual is inactive, we can send out a message of their highest activity achievement (time, distance covered, steps take, etc) to be active for that day.

- We can send out monthly summary of calories, active minutes, steps covered to boost performance of the users.

  These were some insights that were drawn from the analysis of the Fitbit data that could be applied to Bellabeat products.