

Bellabeat

How can a wellness technology company play it smart?

A market analysis of current trends in wearable devices and suggestions for Bellabeat product positioning.

Introduction:

Bellabeat is a high-tech manufacturer of health-focused smart products for women. [Bellabeat's](#) app and multiple smart devices collect data on activity, sleep, stress, hydration levels, and reproductive health to empower women with an understanding of their own health and habits. The company was founded in 2013 and has expanded quickly since, now with the possibility to become a great player in the global smart device market.

Their products include:

Spring which is a smart water bottle that tracks the daily water intake of its user to ensure proper hydration levels are maintained throughout the day.

Leaf is Bellabeat's classic wellness tracker that can be worn as a bracelet, necklace, or clip and **Time** is a wellness smart watch, they both track the user's activity, sleep and stress.

Bellabeat membership is a subscription-based membership program that provides users 24/7 access to fully personalised guidance on nutrition, activity, sleep, health, beauty, and mindfulness based on their lifestyle and goals.

Ask:

The aim of the project is to analyse how non-Bellabeat consumers use their smart fitness devices. With this information, we are to provide high-level recommendations for how these insights can inform Bellabeat's marketing strategy around the following questions:

1. What are some trends in smart device usage?
2. How could these trends apply to Bellabeat customers?
3. How could these trends help influence Bellabeat marketing strategy?

Prepare:

The second step for analysing data is the preparation phase. This phase involves determining what data is appropriate for our analysis, ensuring the data is credible and ethical, as well as properly accessing and organising the data.

The co-founder and Chief Creative Officer, Urška Sršen is confident that an analysis of third-party consumer data (ie. FitBit fitness tracker usage data) will reveal more opportunities for growth.

FitBit Fitness Tracker Data (CC0: Public Domain, dataset made available through Mobius): This [Kaggle](#) data set contains personal fitness tracker from thirty fitbit users. This dataset is under CC0: Public Domain licence meaning the creator has waived his right to the work under the copyright law. Thirty eligible Fitbit users consented to the submission of personal tracker data, including minute-level output for physical activity, heart rate, and sleep monitoring. It includes information about daily activity, steps, and weight fluctuations that can be used to explore users' habits. These datasets were generated by respondents to a distributed survey via Amazon Mechanical Turk between 03.12.2016-05.12.2016. The dataset has in total 18 files in .csv format organised in long format.

ROCCC Analysis

- Reliability : **LOW** – dataset was collected from 30 individuals whose age and gender is unknown.
The data also has incomplete records, only 8 people recorded weight data.
- Originality : **LOW** – third party data collected using Amazon Mechanical Turk.
- Comprehensive : **MEDIUM** – dataset contains multiple fields on daily activity intensity, calories used, daily steps taken, daily sleep time and weight record.
- Current : **LOW** – data is 5 years old and the habits of how people live and behave may have changed significantly over the past few years.
- Cited : **HIGH** – data collector and source is well documented.

Data Limitations:

- **Unknown demographics:** The sex and age for these users have not been recorded. Bellabeat creates products exclusively designed for women. Therefore, the data provided may not be relatable to women due to different physiology and lifestyle habits.
- **Small sample size:** Having just only thirty users in this dataset may make observations unreliable, have low power, and is susceptible to outlier data points skewing the analysis, even more so considering there were over 23 million active fitbit users in 2016 ([Vailshery](#)).
- **Small collection period:** The data points come from one month of Fitbit user data and may not be representative of users habits over a longer time-span. Data from their own product would be a lot more reliable.

Process:

In this phase we will look for the consistency of the data and mutate the data in accordance with the needs of the process required and document the cleaning process.

I used both Excel and Rstudio to complete this phase of the analysis.

With Excel:

- I observed the data; making sure all the date formats are the same.
- Checked an overview of the data to make sure that there weren't any anomalies.
- Removed duplicate values.
- Removed empty rows.
- Changed the activity format from 14-Apr-16 to 04/04/2016.

The datasets I viewed:

Table Name	Type	Description
dailyActivity_merged	Microsoft Excel CSV	Daily Activity over 31 days of 33 IDs. Tracking daily: Steps, Distance, Intensities, Calories
sleepDay_merged	Microsoft Excel CSV	23 IDs, Daily sleep logs, tracked by: Total count of sleeps a day, Total minutes, Total Time in Bed

Data processing, analysing and visualisation will all be done using R Programming in RStudio.

Which can be viewed in the file name '**Bellabeat.rmd**'

Analyse:

In this phase, we are going to aggregate our data, identify trends and relationships.

Understanding *combined_data* summary statistics.

Daily Activity summary:

This summary shows the average user is taking 8506 steps a day, exceeding the recommended target of 7000 steps a day.¹ The myth that we need to achieve 10,000 steps a day was constructed in the 1960s by the Japanese company Yamasa Tokei — the producer of the first commercial pedometer. The company sold their product and the concept became popularised all over the world as a metric for health.² Recent studies suggest that as little as 4,400 steps a day reduces the risk of premature mortality in women by 41%,³ even though it's a modest amount of steps, it is encouraged to take more as walking has a great deal of benefits. The minimum number of steps

per day is 0. This is probably due to the fact that some of the participants in this survey did not use their Smart Device on those days.

On average, users are getting 24.95 minutes of very active or intense activity a day and 17.94 minutes of fairly active minutes or moderate activity a day, this equates to 175 minutes of intense activity a week and 126 minutes of moderate activity a week. The NHS recommends 75 minutes of intense activity and 150 minutes of moderate activity a week.⁴ This means that the typical Fitbit user is doing well in superseding it's aim for intense activity and achieving additional health benefits but slightly lacking in its moderate activity target.

In contrast, participants are averaging 712 minutes, or 12 hours of sedentary time a day! This is a significant amount of time and can lead to other health issues because the body functions best upright. The World Health Organisation also recommends that adults limit sedentary time and replace it with light physical activity.⁵ In fact, any kind of physical activity is beneficial. Scientists have determined that 40 minutes of moderate to intense activity a day will balance out the effects of sitting up to 10 hours a day.⁶

Furthermore, this summary shows the average user is burning 2387 calories a day. As we do not have sufficient data on the weight, age and gender of the individuals, the calories burned cannot really be interpreted. However, studies show the average person in the population burns 1800 calories a day,⁷ but you need to be burning 3500 calories to lose a pound of weight. The Fitbit users in this case are burning more than the norm and are on track to lose a few pounds a week if they choose to do so.

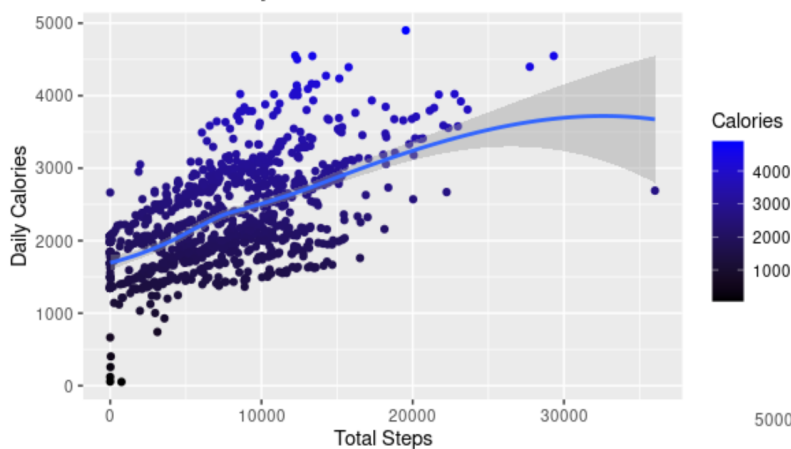
Sleep Summary:

On average people are spending 7 hours in bed asleep. This is well and in line with the Sleep foundation's guidelines, assuming that the FitBit users in this dataset fit into that range as an average healthy adult needs 7 to 9 hours per night.⁸ Although, in some cases, sleeping an hour more or less than the general range may be acceptable based on a person's circumstances. The minimum is 58 minutes of sleep which is very concerning. According to some studies of the Sleep Council in Great Britain, the normal sleep time is about 20 minutes for adults. We notice here that the average time to fall asleep is 39.3 minutes which is almost double the conclusions of the Sleep Charity.⁹

Additionally, the quality of sleep we get each night also affects our general health. If we're getting quality sleep we could see a reduction in the amount of time people spend awake in bed. Our sleep quality can be improved by creating a night time routine which helps your mind and body relax before bed.¹⁰

Share - Visualisations:

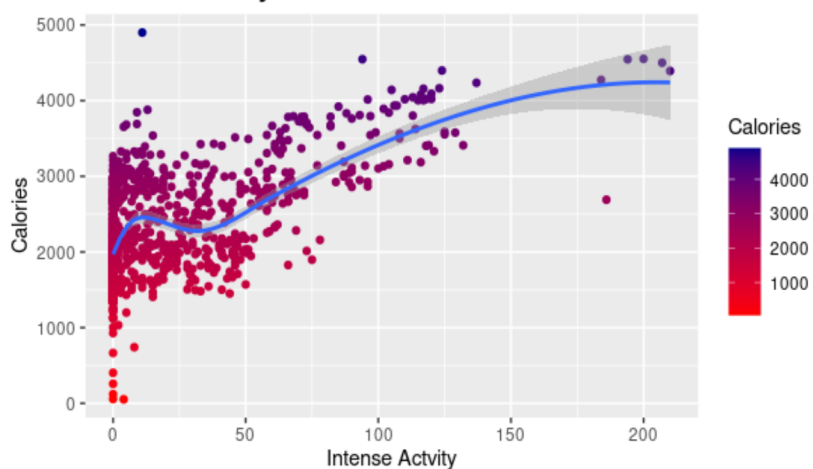
Calories vs Steps



Unsurprisingly, as the amount of steps increases, so does the amount of calories burned.

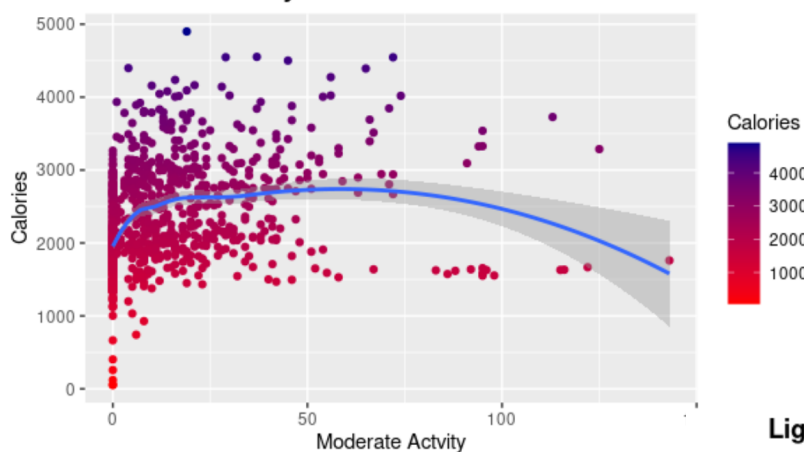
Intense activity has a positive relationship with calories. This implies that as the intense activity increases, the number of calories burned will increase.

Intense Activity vs Calories



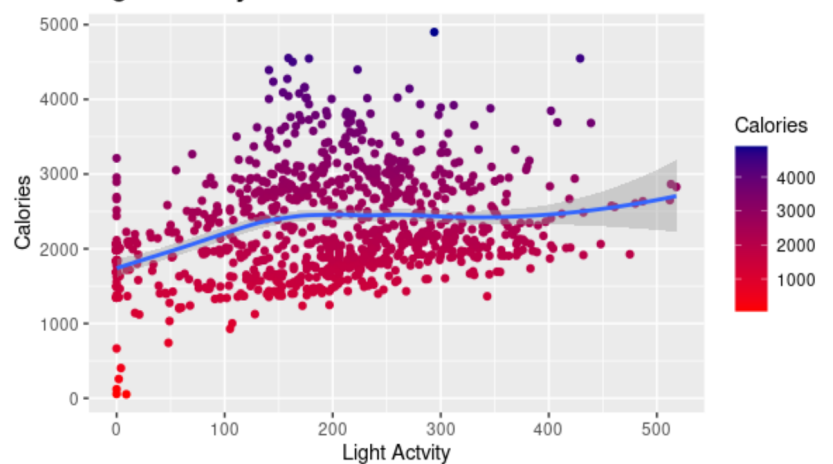
The positive relationship between these two variables is quite low, as you can see after 60 minutes of moderate activity, there is a loss of momentum in calories burned, this could be due to a myriad of factors, which we unfortunately have no insight to.

Moderate Activity vs Calories

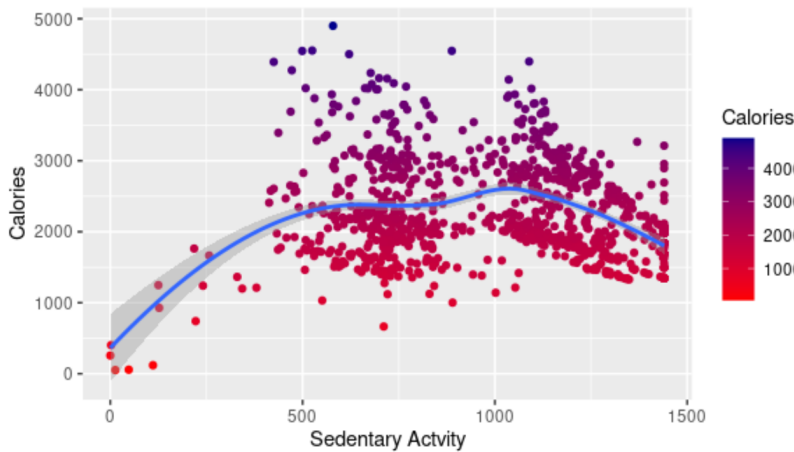


The correlation coefficient between these two variables is too low to say that there is a direct correlation between them. The sampling bias could have an impact on this rather low correlation.

Light Activity vs Calories



Sedentary Activity vs Calories

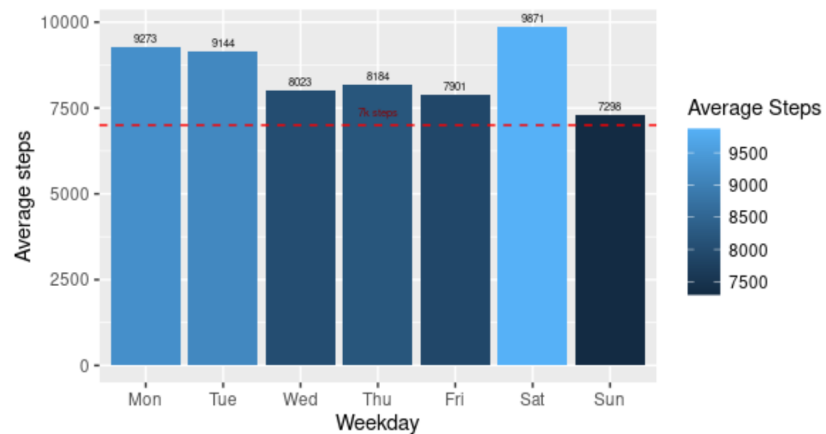


Sedentary activity has no impact on the number of calories burned. Even though, the graph shows that there is no relationship between these two variables, according to the Harvard Medical School, when an individual is sitting, he or she still burns 40 - 55 calories on average per hour.¹¹

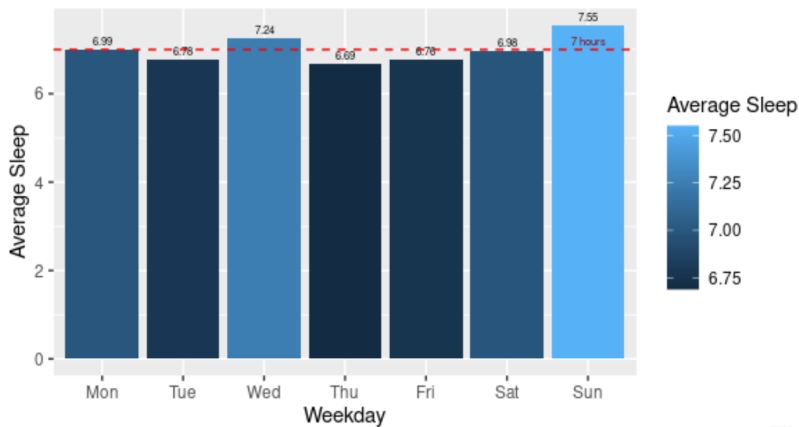
***All activity is measured in minutes**

The highest number of steps achieved are on Monday and Saturday and the least being on Sunday this is because people tend to have a lie in on that day. As seen in our analysis you should aim for 7000-8000 steps a day and Fitbit Users manage to hit the target everyday.

Average Steps by Weekday



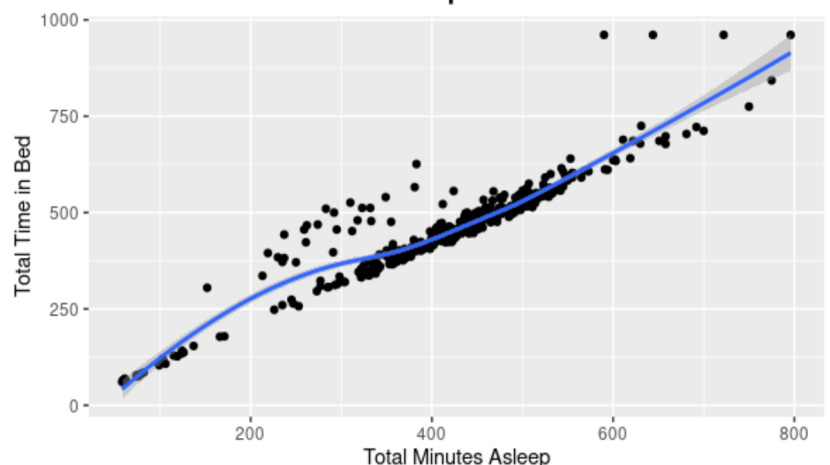
Average hours of sleep by Weekday



Users are achieving the seven hour baseline on Wednesday and Sunday, with all the other days being slightly below average. Extra sleep on Sunday is expected as it's known to be a rest day.

There is a positive relation between time in bed and the number of minutes asleep.

Time in Bed vs Minutes Asleep



Act:

Trends identified:

- Only 72% of users tracked their sleep patterns. It is possible that these users found it uncomfortable to wear them to sleep or used this time to charge their device overnight. A survey can help investigate further the reasons why these users didn't record their sleep.
- Only 24% of users recorded their weight. It is possible that this happened because users have to input this information manually. Also not everyone is trying to lose/gain weight, so only those who have a target goal should receive notifications to track their weight.
- The data collected from their devices could be used to provide personalised suggestions of how to improve their fitness performances.

Recommendations

For Bellabeat App:

Widget for Android/Iphone

We can see that the sedentary lifestyle is quite high. Bellabeat can create a widget so users can constantly see their activity, without going on the app and serve as a reminder to achieve their goals e.g. they can see how many steps they've taken during the day.

- Good job! You've taken **5000** steps so far!
- Keep it up! Only **2000** steps left! Go Go Go!

Creation of badges

A way to encourage physical activity among users. Setting up a system of rewards and badges for people who succeed in various challenges. This could have the effect of encouraging users to go on the app more regularly to share their progress with others.

- Wow **30** day streak!
- Good! You've reached **Level 3!** Better than **59.6%** of our users.
- Great! You've walked **20 Km** in total!

Create Features for sleep

The Bellabeat app can also remind them to turn their phone brightness down and remove the blue light filter on their phone 2-3 hours before bed. This could be achieved if users are able to set their bedtime on the app and the app will begin to send notifications at the 2 hours mark before bed, the 30 minute mark and so forth. The time it takes to fall asleep is quite long. In order to promote quality sleep, it could be interesting to promote a meditation session before going to sleep to help calm the mind.

Educate

They can create short blog posts or notifications to educate about healthy eating habits, exercise, and sleep. These can also feature tips to keep notification short and simple. Bellabeat can take a step further and send users posts to encourage them to continue pursuing certain goals. For example if they see that a user hasn't gotten enough sleep lately, a blog post about setting a night time routine to relax the mind before bed can pop-up as a notification. This could also include getting a notification 30 minutes before bed to remind them to put their phone away and start a meditation.

Additional studies needed

The Bellabeat leaf is a great product that will encourage users to wear their smart devices comfortably at all times as it comes in a bracelet, necklace, or clip. Users are able to choose which style they like best, whilst still tracking their own health and habits. A further analysis and survey would help target the reasons as to why people do not wear their tracker daily.

Recommendations for Bellabeat Membership:

- Offer a reduced subscription fee for 3 months for both parties, when a member refers a friend.
- Offer monthly discounts for Bellabeat smart device products with membership.
- Partner with health and fitness brands and offer discounts for members.
- Offer a 30-day free trial period

-
1. <https://www.insider.com/walking-10000-steps-for-health-not-science-based-in-marketing-2021-7>
 2. <https://www.insider.com/walking-10000-steps-for-health-not-science-based-in-marketing-2021-7>
 3. https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2734709?guestAccessKey=afffe229-3940-4dd1-94e6-56cdd109c457&utm_source=jps&utm_medium=email&utm_campaign=author_alert-jamanetwork&utm_content=author-author_engagement&utm_term=1m
 4. <https://www.nhs.uk/live-well/exercise/>
 5. <https://www.who.int/publications/i/item/9789240015128>
 6. <https://www.sciencealert.com/getting-a-sweat-on-for-30-40-minutes-could-offset-a-day-of-sitting-down>
 7. <https://www.goodto.com/wellbeing/diets-exercise/what-is-calorie-how-many-lose-weight-425557>
 8. <https://www.sleepfoundation.org/how-sleep-works/how-much-sleep-do-we-really-need>
 9. <https://thesleepcharity.org.uk/how-long-should-it-take-to-fall-sleep/>
 10. <https://healthysleep.med.harvard.edu/need-sleep/what-can-you-do/good-sleep-habits>
 11. <https://www.health.harvard.edu/staying-healthy/burning-calories-without-exercise>

Hyperlinks:

<https://bellabeat.com/>

<https://www.kaggle.com/arashnic/fitbit>

<https://www.statista.com/statistics/472600/fitbit-active-users/>