



INTRODUCTION

Bellabeat is a high-tech manufacturer of health-focused products for women. Bellabeat is a successful small company with the potential to become a larger player in the global smart device market. Urška Sršen, cofounder and Chief Creative Officer of Bellabeat, believes that analyzing smart device fitness data could help unlock new growth opportunities for the company.

Business task

1. Focus on one of Bellabeat's products and analyze smart device data to gain insight into how consumers are using their smart devices.
2. The insights you discover will then help guide marketing strategy for the company. Provide high-level recommendations for Bellabeat's marketing strategy.

Stakeholders and Products

● Stakeholders

1. Urška Sršen: Bellabeat's cofounder and Chief Creative Officer.
2. Sando Mur: Mathematician and Bellabeat's cofounder; key member of the Bellabeat executive team.
3. Bellabeat marketing analytics team: A team of data analysts responsible for collecting, analyzing, and reporting data that helps guide Bellabeat's marketing strategy.

● Products

1. Bellabeat app: The Bellabeat app provides users with health data related to their activity, sleep, stress, menstrual cycle, and mindfulness habits. This data can help users better understand their current habits and make healthy decisions. The Bellabeat app connects to their line of smart wellness products.
2. Leaf: Bellabeat's classic wellness tracker can be worn as a bracelet, necklace, or clip. The Leaf tracker connects to the Bellabeat app to track activity, sleep, and stress.

3. Time: This wellness watch combines the timeless look of a classic timepiece with smart technology to track user activity, sleep, and stress. The Time watch connects to the Bellabeat app to provide you with insights into your daily wellness.
4. Spring: This is a water bottle that tracks daily water intake using smart technology to ensure that you are appropriately hydrated throughout the day. The spring bottle connects to the Bellabeat app to track your hydration levels.
5. Bellabeat membership: Bellabeat also offers a subscription-based membership program for users. Membership gives users 24/7 access to fully personalized guidance on nutrition, activity, sleep, health and beauty, and mindfulness based on their lifestyle and goals.

DATA SOURCE

The data I used in the project is a Kaggle data set named Fitbit Fitness Tracker data. Link to the dataset: <https://www.kaggle.com/arashnic/fitbit>.

The dataset contains personal fitness tracker from 33 Fitbit users who consented to the submission of personal tracker data, including minute-level output for physical activity, heart rate, and sleep monitoring. It also includes information about daily activity, steps, and heart rate that can be used to explore users' habits.

The dataset contains 18 tables of CSV formats. Some have wide and other long data. I arranged them in folders according to the attribute being measured which include; calories, heartrate, intensity, sleep, steps and daily activity merged.

Does the data ROCCC? I have rated the data in three categories (LOW, MED, HIGH)

1. Reliable- LOW. The data has a small sample size of 33 respondents. In some instances sample size is as low as 8.
2. Original- LOW. The data is from a third party source. Amazon Mechanical Turk and not from Fitbit.
3. Comprehensive- MED. The data covers a diverse range of fitness variables needed to answer questions.

4. Current- LOW. The data is from 2016. Data that is five years old is outdated since lifestyle is dynamic.

5. Cited- MED. The data has a CCO: Public domain license and is collected by a third party company.

The data has many limitations hence cannot be used to make key business decisions. The data is accessible on Kaggle and has been given a 10 rating by users. The fitness data can be used for exercise. The main limitation is the small sample size. Fitbit Tracker Data had many datasets that ran into tens of thousands of rows. R provides the environment to view, verify, clean, analyze and visualize the data.

DATA EXPLORATION

[Quick take away.](#)

1. Names of columns are in Pascal case.
2. Dates columns are in character data type.
3. Weight log info data frame has 65 NULLs.
4. The data covers one month period.
5. Data completeness and number of user participant is as follows:

No.	Dataset	Completeness	Number of Fitbit users
1	Hourly_calories	90.99%	33
2	Daily_calories	91.89%	33
3	Daily_intensities	91.89%	33
4	Hourly_intensities	90.99%	33
5	Minute_MET	90.96%	33
6	Daily_sleep	55.11%	24
7	Daily_steps	91.89%	33
8	Hourly_steps	90.99%	33
9	Hourly_Heartrate	58.36%	14
10	user_info	29.91%	8

6. The data was collected from 12th April 2016 to 9th May 2016. Highest number of days recorded is 31 while the least is 4 days

ANALYSIS

KEY FINDINGS

STEPS.

1. People walk most on Saturdays closely followed by Tuesdays.
2. People walk least on Sundays.
3. The average number of steps is 7645.
4. The number of steps are likely to vary based on one's age, occupation, sex, height and stride.
The data should be added for further analysis.
5. Most time is sedentary which we presume they are a working class who do most of their work sited in an office.

INTENSITY

1. On average, people are more active between 5pm and 7pm in the evening. This may be attributed to the assumption that people are going home from their work places or have free time.
2. People are least active at night, which we assume they are asleep. The intensity decreases steeply from 8pm to 4am.
3. There is a high intensity at noon meaning people might be exercise while going out for lunch.
4. Trends throughout the working weekdays are almost similar. Monday and Tuesday has people active from 4pm to 7 pm.
5. Saturday has many people active at around 1pm.

CALORIES

1. There is a positive linear correlation between steps and calories.
2. People who walk for burn more calories hence are healthier.

WEIGHT

1. One out of 8 people is obese.
2. Only 3 out of 8 have a normal weight.

BELLABEAT MARKETING STRATEGY RECOMMENDATIONS

1) Bellabeat promotion target should be the women who are very busy with work and start to have a higher body fat level, but still believe in healthy life style and want to stay active and get into a good shape with the time after work.

2) Bellabeat should invest more in online ads since most people work seated. They most probably work on their laptops and have good access to the internet.

3) Bellabeat can focus on advancing the belief of work-life balance and helping women manage their body in a flexible and friendly way with our membership which is a subscription-based membership program that gives users 24/7 access to fully personalized guidance on nutrition, activity, sleep, health and beauty, and mindfulness based on their lifestyle and goals.

4) Bellabeat can partner with health practitioners and hospitals to market wellness products to the patients. Most people are likely to be conscious of their health status when they visit a hospital.

5) Bellabeat can launch a campaign / seminars to teach people on the benefits of monitoring and keeping fit to boost sales.

6) Bellabeat should focus on features that are matter most to users which is track their calories burned, the steps taken, the intensity of their activities and their MET value.

ANALYSIS NEXT STEPS

Collect more data to understand the customer more. The age, occupation, and height.

A lot has changed since data was collected. E.g., Covid 19 pandemic. New data is highly recommended.

