

Bellabeat Smart Device Data Analysis Report

1. Introduction

Bellabeat is a high-tech wellness company that designs products to help women track their health and wellness. This report presents an in-depth analysis of Fitbit data to uncover trends in user behavior, focusing on activity levels, sleep patterns, calorie burn, and weight management. The goal is to provide insights that can guide Bellabeat's marketing strategy and help enhance their product offerings.

2. Objectives

- Analyze the relationship between daily activity, sleep, calories burned, and weight to identify key health trends.
- Provide actionable insights for Bellabeat to tailor its marketing strategy and improve user engagement.

3. Data Overview

The dataset used for this analysis was sourced from Fitbit and contains information on 30 users, including:

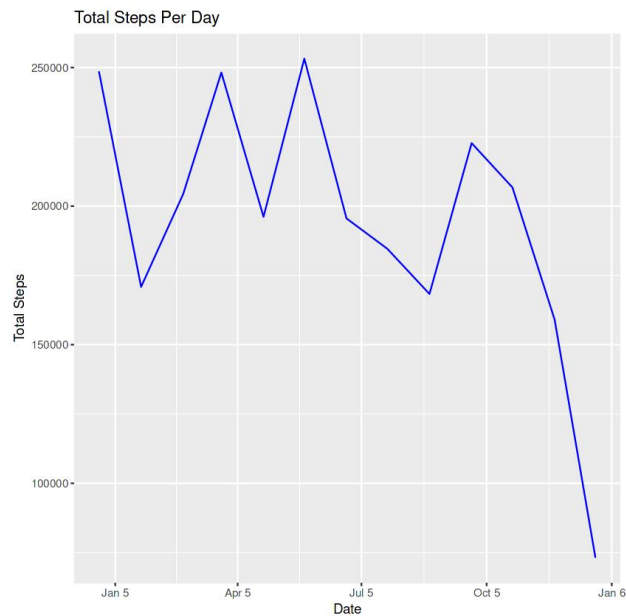
- Daily Activity: Steps, calories burned, and activity intensity.
- Sleep Data: Total minutes asleep and total time in bed.
- Weight Logs: User weights and correlations with activity.

The data was cleaned and merged to explore relationships across multiple variables, ensuring that no missing values or duplicate records were present.

4. Key Insights and Visualizations

4.1. Daily Activity

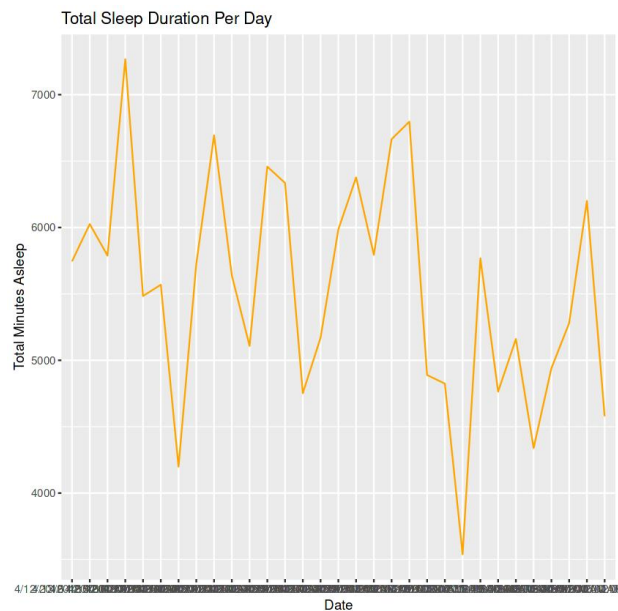
Average Daily Steps: Users logged an average of 7,418.32 steps per day. This is below the commonly recommended target of 10,000 steps per day for optimal health.



Insight: The lower-than-expected step count indicates an opportunity for Bellabeat to engage users by promoting physical activity, encouraging them to reach higher daily step goals.

4.2. Sleep Patterns

Average Sleep Duration: The average sleep time was 419.17 minutes (about 7 hours) per night, within the recommended sleep range for adults.

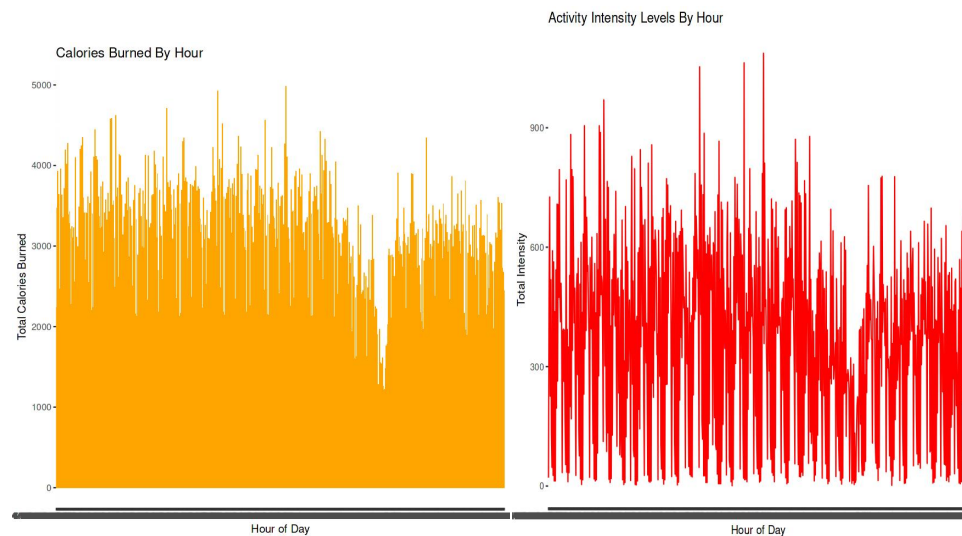


Visualization of Sleep Patterns

Insight: This suggests that users are getting adequate sleep, but the relationship between total time in bed and actual sleep time points to opportunities for Bellabeat to promote its sleep tracking features for better sleep efficiency.

4.3. Calories Burned and Activity Intensity

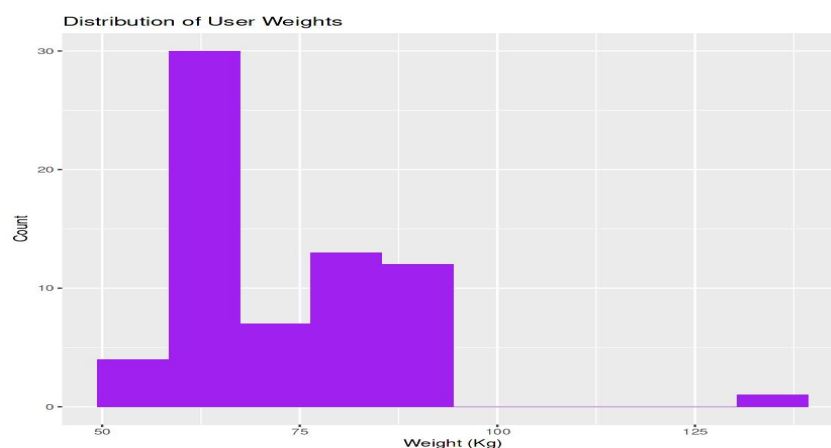
Calorie Burn Patterns: Users burn the most calories during high-intensity activity periods. There is a clear correlation between Total Intensity and Calories Burned.



Insight: Bellabeat can develop marketing strategies that focus on promoting the Time Watch and Leaf wellness tracker during peak activity hours (early mornings and late afternoons).

4.4. Correlation Between Weight and Steps

Weight and Steps Correlation: A weak positive correlation (0.14) was observed between weight and total steps. This suggests that users with higher weights may not be significantly more or less active than lighter users.

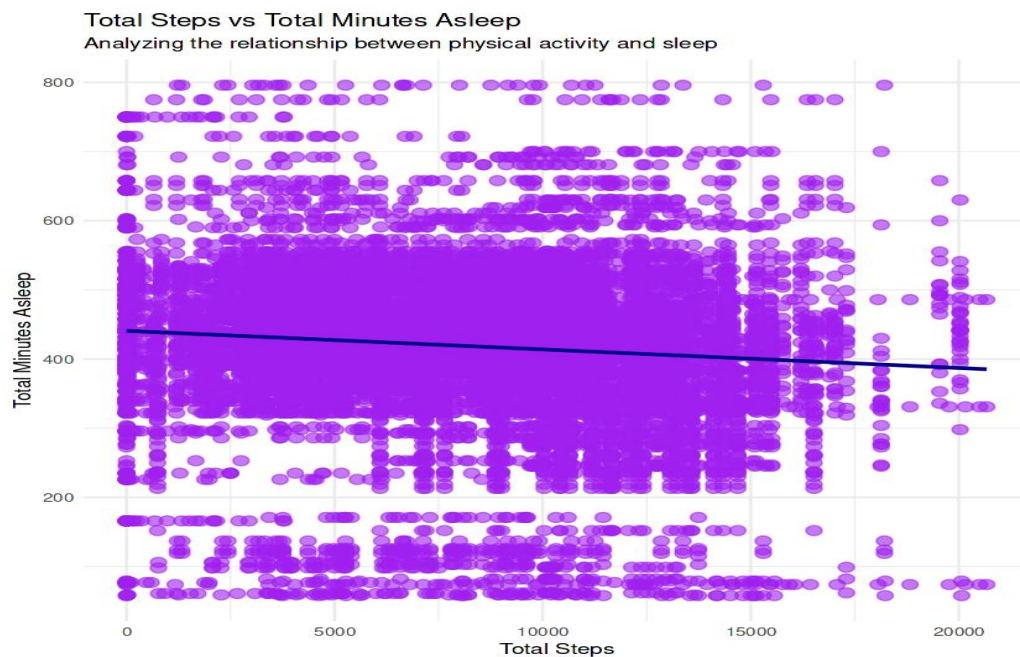


Visualization of Weight vs Steps Correlation

Insight: Bellabeat can create personalized weight management programs to encourage users to increase their activity levels, regardless of their weight.

4.5. Steps vs Sleep Quality

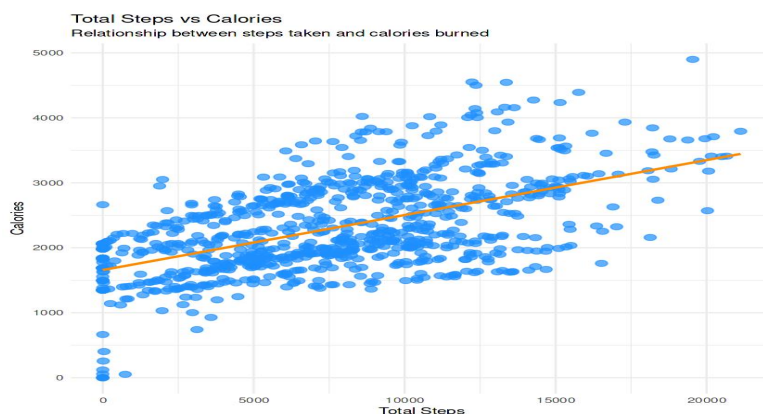
Steps vs Sleep: Users with higher daily step counts tend to have better sleep quality, as indicated by longer sleep durations.



Visualization of Steps vs Sleep

Insight: Bellabeat should promote the importance of physical activity for improving sleep quality, highlighting its Leaf wellness tracker for both activity and sleep tracking.

4.6. Total Steps vs Calories Burned



This scatter plot shows the relationship between total steps taken and calories burned.

- **Insight:**

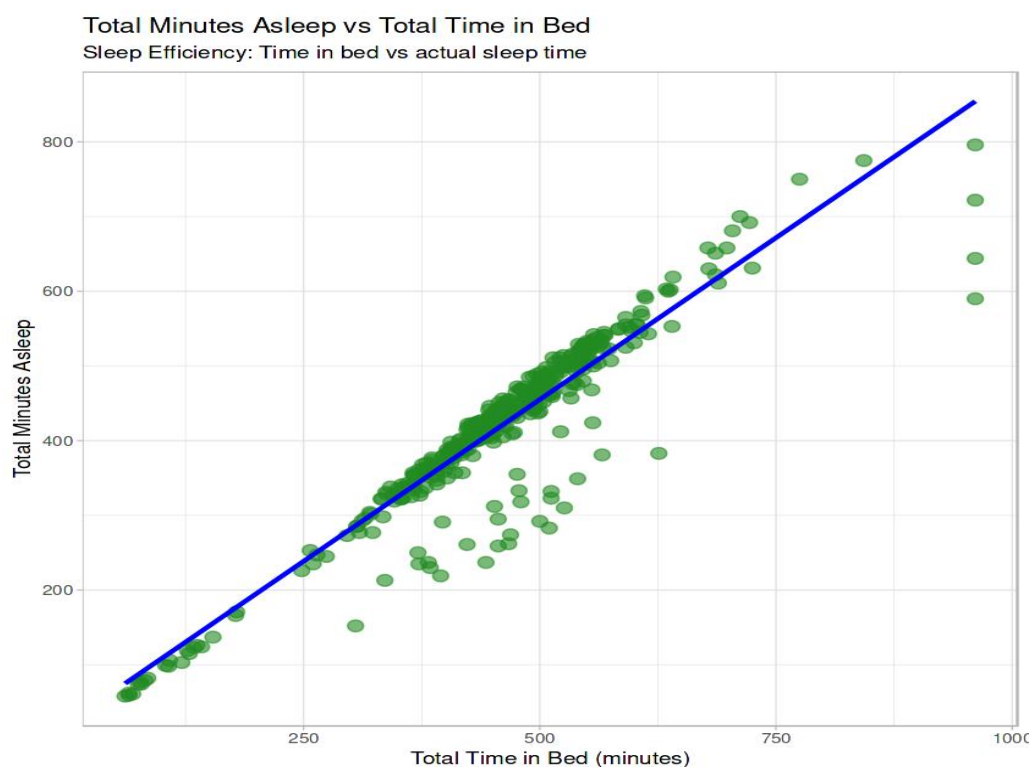
There is a positive correlation between the number of steps taken and calories burned. Users who take more steps tend to burn more calories throughout the day.

This insight shows that promoting products that track steps (e.g., Time Watch and Leaf Wellness Tracker) can help users increase their calorie burn by encouraging more walking.

- **Recommendation:** Bellabeat can create fitness challenges or campaigns to motivate users to increase their daily steps, which in turn can help them burn more calories and meet their fitness goals.

4.7. Total Minutes Asleep vs Total Time in Bed

- **Visualization:**



This scatter plot compares total minutes asleep versus total time in bed to evaluate sleep efficiency.

- **Insight:**

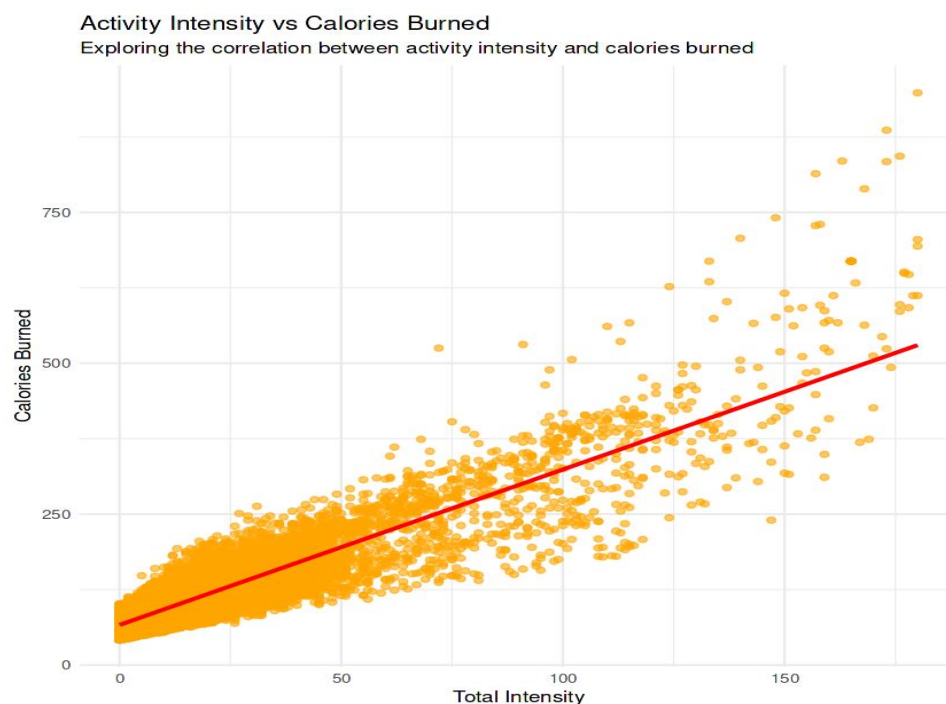
Users often spend more time in bed than they actually sleep. The closer the two values (total minutes asleep and total time in bed), the better the sleep efficiency.

While users are getting a healthy amount of sleep, improving sleep efficiency (reducing time spent awake in bed) is an opportunity for optimization.

- **Recommendation:** Bellabeat can market its sleep tracking features and mindfulness tools to help users improve their sleep quality by tracking the ratio of actual sleep time to time spent in bed. Educational campaigns on sleep hygiene can encourage users to improve this ratio.

4.8. Activity Intensity vs Calories Burned

- **Visualization:**



This scatter plot highlights the relationship between activity intensity and calories burned.

- **Insight:**

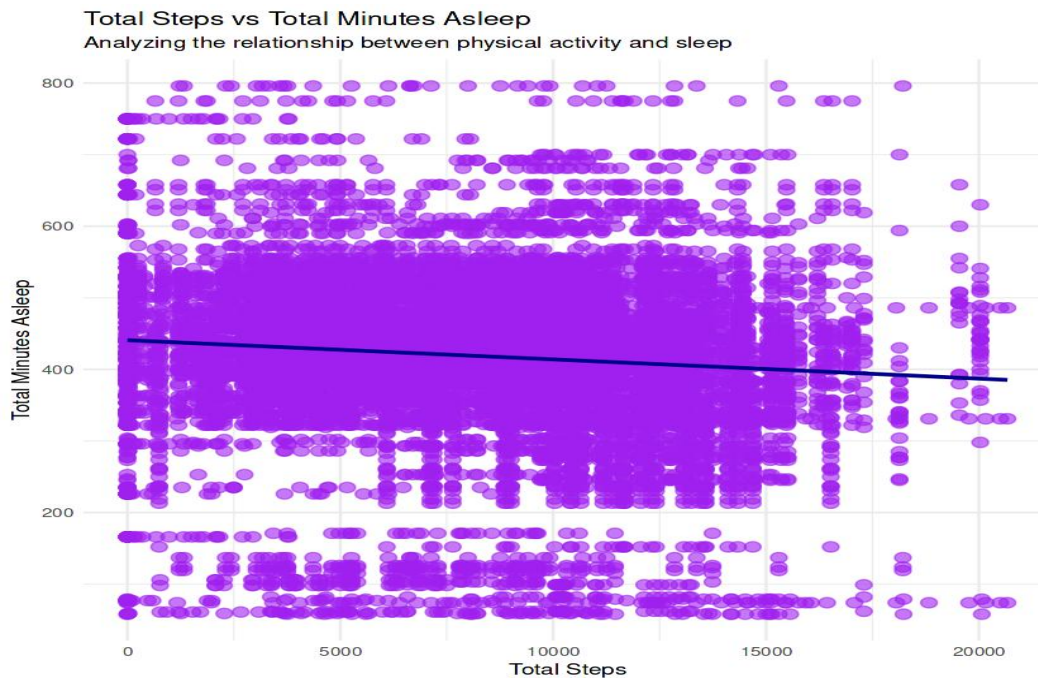
There is a strong positive correlation between activity intensity and calories burned. Users who engage in higher-intensity activities tend to burn more calories.

Promoting higher-intensity activities could lead to more effective calorie-burning routines for users.

- **Recommendation:** Bellabeat should promote high-intensity workout features in their fitness tracking products, particularly for users interested in weight loss or maximizing calorie burn. Time-specific campaigns (e.g., morning or afternoon high-intensity workout routines) can be designed to target these users.

4.9. Total Steps vs Total Minutes Asleep

- **Visualization:**



This scatter plot examines the relationship between physical activity (total steps) and sleep quality (total minutes asleep).

- **Insight:**

There is a slight positive relationship between physical activity (steps) and sleep duration. Users who are more active tend to sleep longer.

This highlights the link between physical well-being and sleep health: those who engage in more physical activity may experience better sleep quality.

- **Recommendation:** Bellabeat should emphasize the importance of physical activity for sleep health in their marketing campaigns. Products like the Leaf Wellness Tracker, which track both fitness and sleep, should be highlighted as tools that help users improve both aspects of their health.

5. Recommendations

5.1. Promote Physical Activity

With daily step counts lower than the recommended levels, Bellabeat should focus on:

- Promoting the **Time Watch** and **Leaf wellness tracker** as tools to help users reach their **10,000 steps/day** goal.
- Launching fitness challenges or competitions through the Bellabeat app, encouraging users to be more active.

5.2. Target Sleep Improvement

Bellabeat can market its **sleep tracking and mindfulness features** to help users improve their **sleep efficiency**. Campaigns focusing on sleep quality could highlight how the app tracks time in bed vs. actual sleep time.

5.3. Personalized Weight and Fitness Plans

Given the weak correlation between weight and steps, Bellabeat can target users with **personalized fitness and weight management plans** through the **Bellabeat Membership** service.

Bellabeat can offer advice and wellness routines tailored to individual fitness levels and weight goals.

5.4. Time-Based Marketing Campaigns

Users burn more calories during high-intensity activities, especially during specific times of the day (morning and late afternoon). Bellabeat could create **time-based campaigns** (e.g., **morning workout routines**) to capitalize on these activity peaks.

6. Conclusion

The analysis of Fitbit data provided valuable insights into user behaviors related to activity, sleep, and weight management. These insights can inform Bellabeat's marketing strategy by promoting personalized fitness and wellness programs, encouraging better sleep habits, and targeting users during high-activity periods. By leveraging this data, Bellabeat can enhance user engagement and continue to grow as a leader in the women's wellness technology space.