



Case Study

Fitbit Usage Data Analysis

Insights to guide Bellabeat's product positioning and marketing strategy

Project Objective

- Bellabeat wants to better understand how smart device users track their activity and sleep to improve its wellness product offerings.
- This analysis uses anonymized Fitbit data as a market proxy to identify behavioral patterns and opportunities relevant to Bellabeat's Leaf product.
- The goal is to derive insights that can inform product development, feature design, and marketing strategies.



Bellabeat Leaf Fitness Tracker



Guiding Questions

What are some trends in
smart device usage?



How could these trends
apply to Bellabeat
customers?



How could these trends
help influence Bellabeat's
marketing strategy?



Executive Summary

- Analyzed Fitbit user data from April 12 - May 12, 2016 to identify behavioral trends
- Average nightly sleep:
 - 6 hr 59 min minutes asleep
 - 7 hr 39 min minutes in bed
 - 92% sleep efficiency
- Average daily activity:
 - 7,638 steps
 - 3 hr 48 min minutes of physical activity (light, moderate, very active combined)
- Minimal variation between weekday and weekend behavior
- No strong correlation between sleep and physical activity levels



Key User Activity & Sleep KPIs (30-day Period)

Insights from Fitbit user data inform Bellabeat's strategic direction for the Leaf product line.

Avg Total Steps	Avg Very Active Minutes	Avg Fairly Active Minutes	Avg Lightly Active Minutes	Avg Sleep Efficiency	Avg Time Asleep	Avg Time in Bed
7,638	21 min	14 min	3 hr 13 min	92%	6 hr 59 min	7 hr 39 min

Insights:

- Users average 7 hours of sleep and 7.6k steps per day, showing moderate wellness engagement.
- Sleep is prioritized, but very active minutes (21/day) lag behind.
- Bellabeat could drive impact by promoting more vigorous activity through personalized nudges or in-app challenges.



Minutes Asleep by Weekday

Insights:

- Users sleep the most on **Wednesday**, with strong midweek averages overall.
- **Monday and Friday** show the **shortest sleep durations**, while **Sunday** has **moderate to high** totals.
- This pattern may reflect disruptions at the **start and end of the workweek**.

Recommendations:

- Bellabeat could offer **sleep reminders** or **wind-down prompts** on Sunday and Thursday nights to encourage better sleep before the workweek starts or ends.



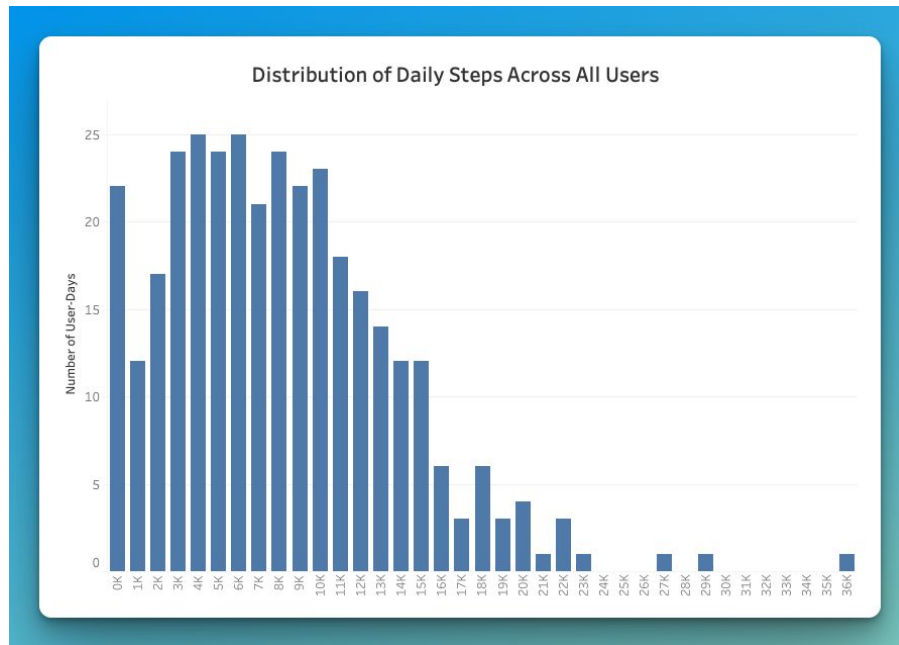
Daily Step Distribution

Insights:

- Most user-days average between **3k-12k steps**, with a steep drop-off beyond 15k.
- This suggests moderate activity levels are common, while high-activity days are rare.

Recommendations:

- Bellabeat could promote increased movement through **progress-based goals** or **streak incentives**.



Each data point represents a user-day
(1 user's activity on a given day)



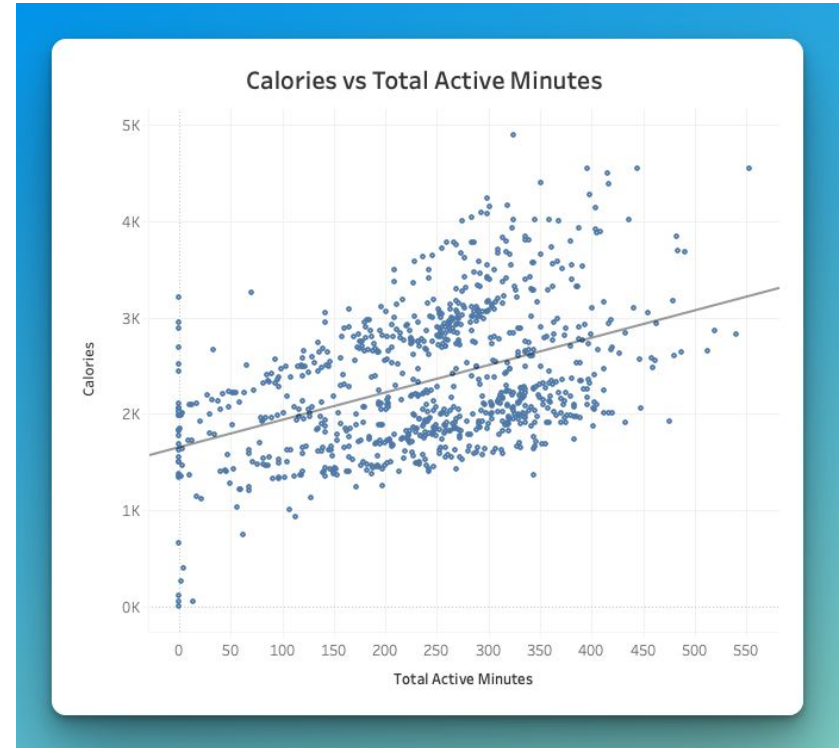
Calories vs Active Minutes

Insights:

- More active minutes per day generally lead to higher calorie burn, but the relationship is only moderately correlated. Individual variation likely plays a role.

Recommendations:

- Bellabeat can improve calorie tracking by personalizing estimates using user profiles and historical data.



Steps by Weekday

Insights:

- Users average the most steps on **Tuesdays** and **Wednesdays**.
- **Weekend step counts drop**, likely due to fewer routine-based activities (like commuting or gym sessions).

Recommendations:

- Bellabeat can nudge weekend movement using features like:
 - Weekend step goals
 - Social activity prompts
 - Mini fitness challenges



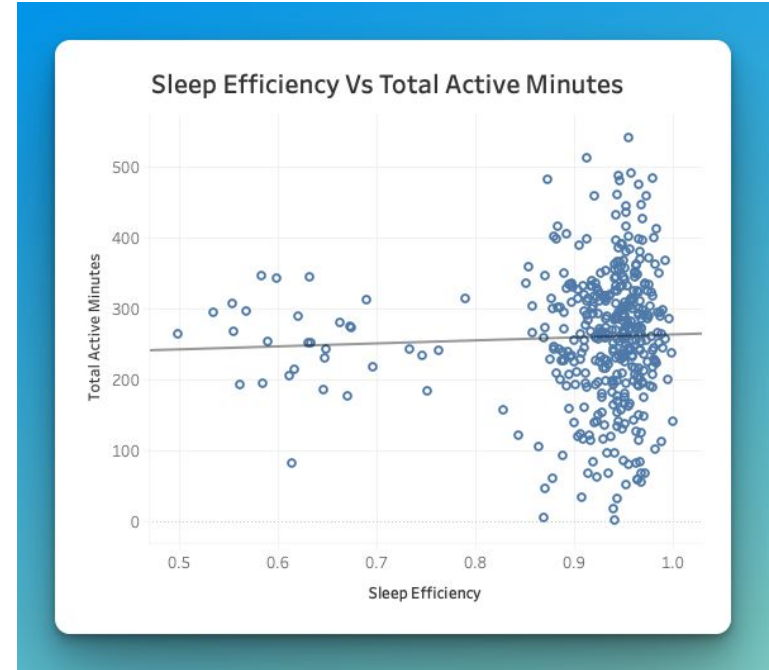
Sleep Efficiency vs Active Minutes

Insights:

- There's **no meaningful relationship** between daily active minutes and sleep efficiency in this dataset.

Recommendations:

- No action needed related to sleep efficiency.
Bellabeat may focus efforts on sleep duration instead.



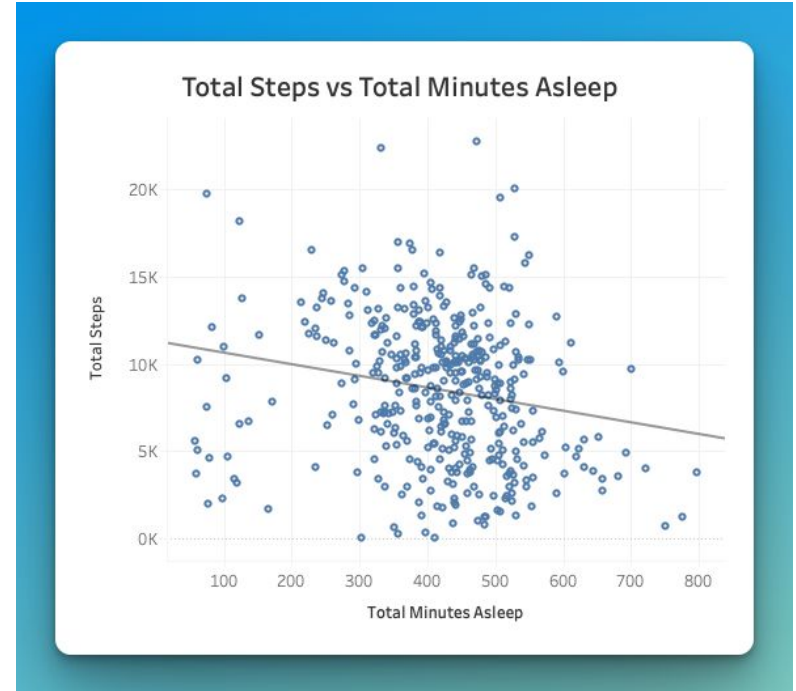
Steps vs Minutes Asleep

Insights:

- There's **no strong correlation** between total steps and minutes asleep.
- Some users who sleep more are less active, while others maintain moderate steps and sleep - suggesting **sleep and activity are independent** for most users.

Recommendations:

- Avoid linking sleep and activity in feedback or goals.
- Provide separate, personalized targets for rest and movement to support overall balance.



Steps vs. Calories Burned

Insights:

- Positive relationship: more daily steps generally lead to more calories burned.
- Most users fall between **3k-12k steps** and **1,800-2,800 calories**.

Recommendations:

- Encourage step-based calorie burn goals or badges to drive motivation and reinforce the activity-calorie link in Leaf marketing.



Key Insights & Recommendations



Insight	Recommendation
Users average ~7 hrs sleep but fall short on Mon & Fri	Introduce early-week sleep nudges or Sunday evening wind-downs to extend sleep duration
Most movement is light activity (~3 hrs/day) with low moderate / very active movement	Use goal streaks and progressive step challenges to boost higher-intensity engagement
Peak steps midweek , lower on weekends	Add weekend movement prompts or social challenges to maintain activity outside the work routine
Strong link between steps and calories burned	Reinforce “ steps = burn ” messaging in app to highlight value of even small increases in movement
Sleep efficiency high (92%) , but duration lacking	Market Bellabeat as a “ sleep optimizer ”: high-quality rest made even better with daily usage
3K–10K steps is the most common range among users	Design feature tiers or app rewards that align with this natural range, nudging users just past plateau

Next Steps

- **Validate Findings at Scale**

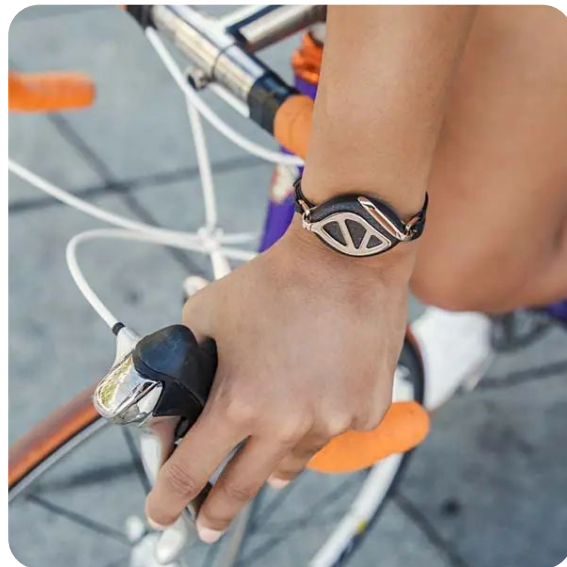
Current insights are based on ~30 users over one month. Larger, longer-term datasets are needed to confirm trends and improve generalizability.

- **Prototype Behavior Nudges**

Pilot in-app features like weekday sleep prompts or step streak rewards aligned with observed patterns.

- **Explore Deeper Segmentation**

Future analysis could classify users by lifestyle, consistency, or goal types to tailor experiences more effectively.



Thanks for viewing!

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Data Source: [FitBit Fitness Tracker Data on Kaggle](#)