

Bellabeat Usage Patterns: Case Study Report

Business Task/Goal

Bellabeat wants to understand how women use wearable devices to track activity, sleep, and overall wellness. Using Fitbit data from 30 users, this analysis identifies daily and weekly patterns in steps, calories, and sleep to generate actionable marketing and product recommendations.

Data Sources & Limitations

- Dataset: Public Kaggle Fitbit dataset (30 users, CC0 license).
- Data prep: Cleaned and transformed in Google BigQuery (SQL) and Excel; built `agg_by_dow`, `daily_analytic`, and `hourly_profile` tables.
- Visualization: Tableau dashboard with four key charts.
- Limitations: Small sample size, skewed demographics, limited timeframe; cannot generalize to all users.

Process Summary

- Imported and cleaned raw activity, sleep, and hourly step data.
- Removed duplicates and standardized dates.
- Built aggregated tables by weekday, by hour, and by daily totals.
- Created Tableau visuals to uncover patterns and relationships.

Key Findings

- **Weekday activity:** Users are most active on Wednesday and Saturday, averaging 7,000–7,500 steps, while Tuesday is the lowest with 4,900 steps.
- **Steps vs Calories:** A strong positive correlation exists; more steps consistently means more calories burned.

- **Sleep vs Steps:** A weak negative trend; users sleeping <6 hours averaged ~4,000 steps, compared to ~7,000 steps for those sleeping 7–8 hours.
- **Hourly rhythm:** Activity is low overnight, peaks around midday (12–1 pm) and again in the evening (6–8 pm).

Recommendations (Bellabeat Leaf Tracker)

1. **Timing prompts:** Send activity nudges 30–60 minutes before peak times (late morning and early evening) to reinforce healthy habits.
2. **Weekday programs:** Launch midweek challenges (“*Wednesday 7k Step Streak*”) and weekend streaks to align with natural high activity days.
3. **Sleep balance:** Encourage bedtime reminders and gentle alarms for users sleeping <6 hours, linking better rest with higher activity.
4. **Sedentary alerts:** Add prompts after 2 hours of inactivity to stimulate micro-workouts or step breaks.
5. **Premium upsell:** Market personalized coaching around peak hours and sleep activity patterns to drive subscription adoption.