BELLABEAT DATA ANALYSIS CAPSTONE

Unlocking Insights from Smart Device Usage

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PROJECT OVERVIEW

Content

- **Company**: Bellabeat, a health-focused smart device brand for women

- **Objective**: Analyze smart device data to uncover user behavior patterns

- **Goal**: Provide actionable insights to guide Bellabeat's marketing strategy

DATA OVERVIEW

Content

◉ Aggregated user data from smart devices

◉ Activity data: steps, calories, active minutes (very/fairly/lightly/sedentary)

◉ Sleep data: average sleep minutes and hours

◉ Hourly intensity, steps, and calorie burn trends

◉ Weight and BMI for subset of users (11 total)

- **Title:** Daily Activity Summary

Content

- Average daily steps: 6540 Steps
- Average calories burned:94.41 Calories Burned
- Average Sleep : 6.60 Hours

# Average Activity Level

Very Active:
Users spend only **1.48%** of their total active time in very active movement (e.g., running, high-intensity workouts). This suggests minimal engagement in high-effort activities across the user base.

Lightly Active:
On average, **14.53%** of the time is spent in light activities (e.g., casual walking, household chores). While better than very active levels, it still indicates a relatively sedentary lifestyle.
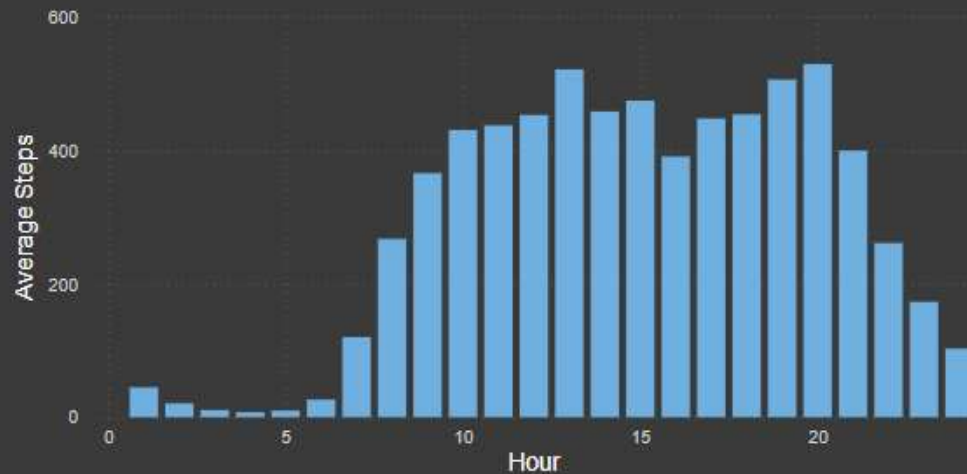
Sedentary:
A significant **82.79%** of the time is spent in sedentary behavior — such as sitting or minimal movement. This is the dominant activity category, pointing to potentially unhealthy daily routines for most users.
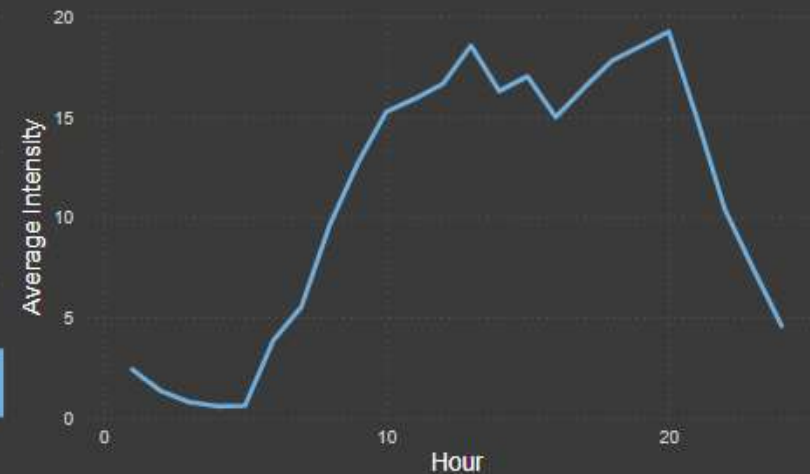

Activity Level

Very Active
Lightly Active
Sedentary

ActivityType
● Sedentary
● Lightly Active
● Very Active
● Fairly Active
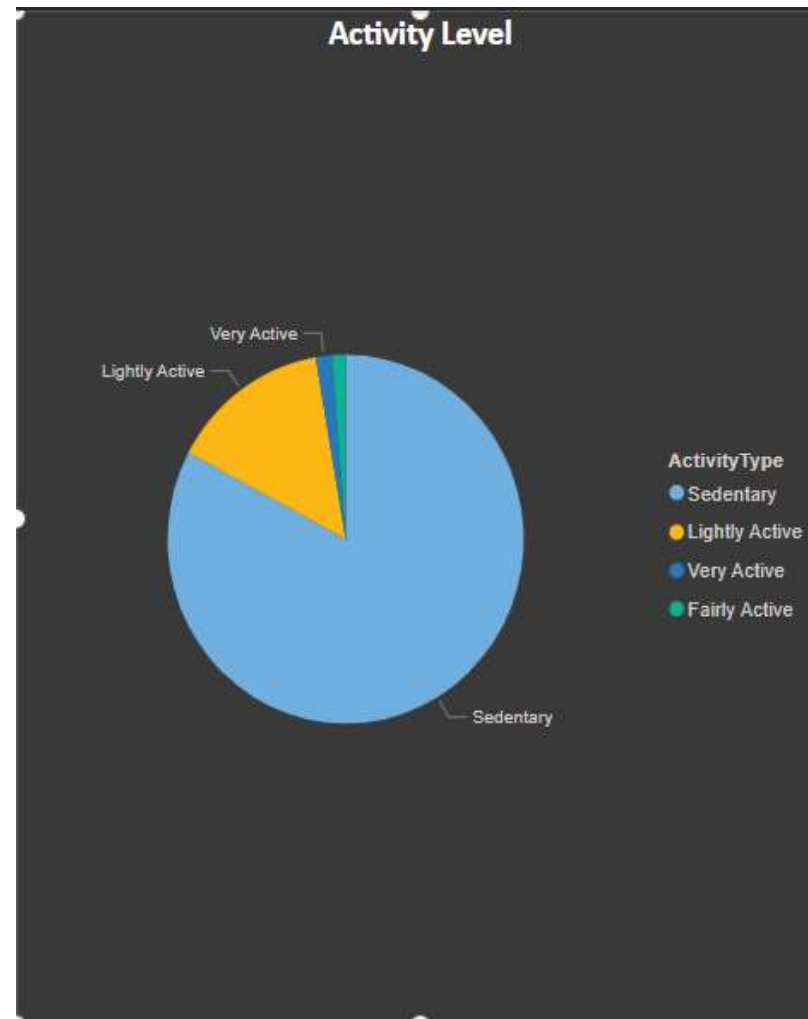
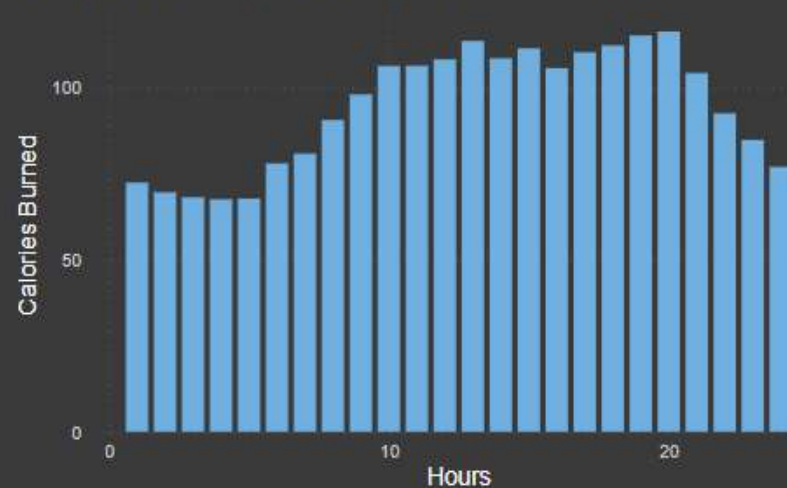# WHEN ARE USERS MOST ACTIVE?

Average Steps at each hour

Average intensity at each hour

Average calories burned at each hour

Observations:

◉ Visualizations indicate that all three metrics — **activity intensity**, **calories burned**, and **total movement** — rise sharply and align during these hours.

◉ This overlap in the graph and line chart suggests a **strong correlation** between user movement and energy expenditure.

◉ These time periods likely reflect post-lunch activity or scheduled workout sessions

Conclusion:
Midday and evening are the most active hours for users. Understanding these peaks can inform targeted health nudges or activity planning to reinforce user engagement during these windows.

SLEEP PATTERNS
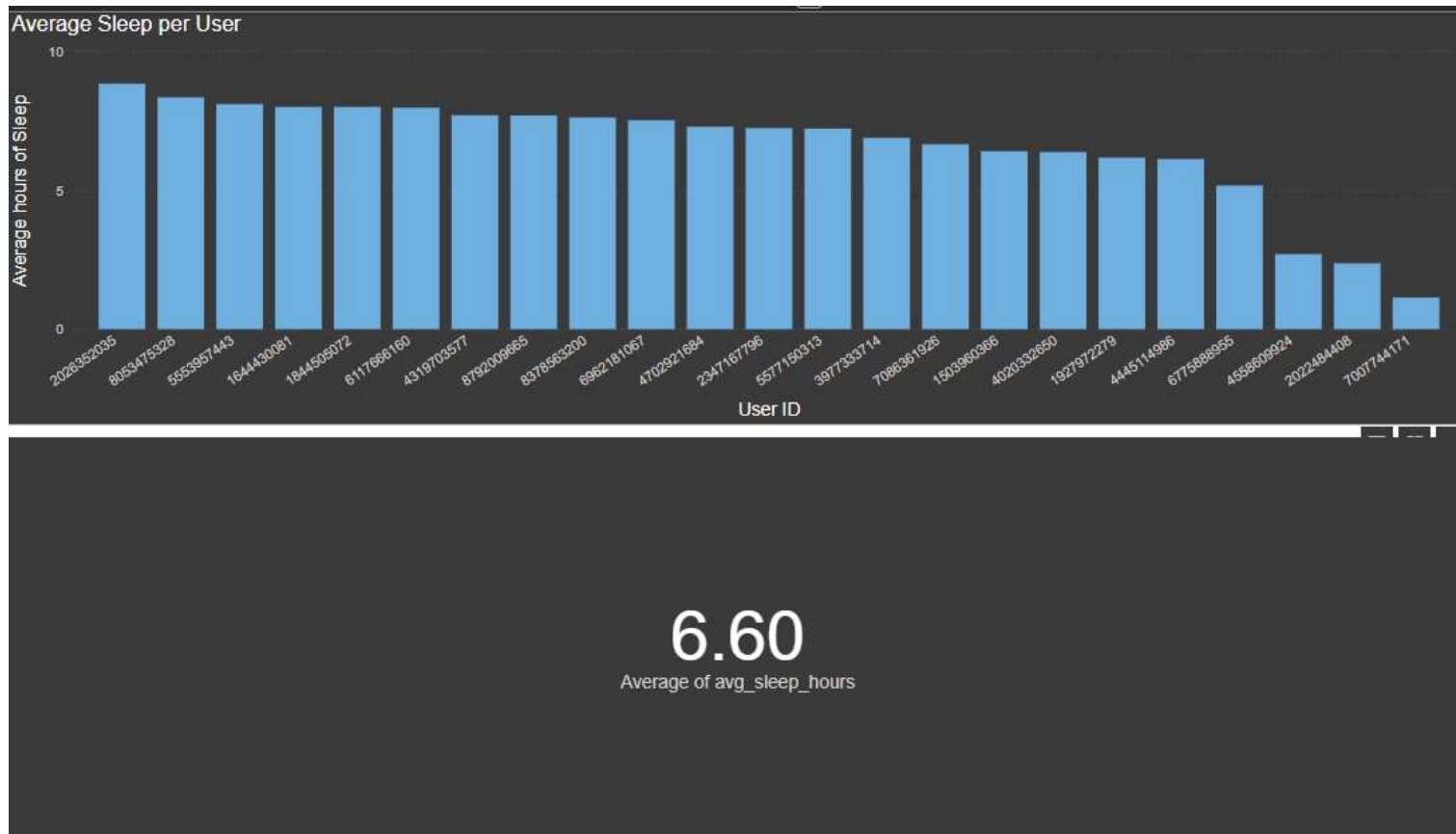
Observations:

◉ The **average sleep duration** across all users is **6.60 hours**, which falls **below the minimum healthy threshold.**

◉ The histogram visualization clearly shows that a significant portion of users sleep less than 7 hours.

◉ Insufficient sleep can negatively impact physical health, mental alertness, and overall well-being.

WEIGHT & BMI INSIGHTS

Title: Weight & BMI Insights

Content

- Only 11 users provided weight data
- Average weight: **73.44 kg**
- Average BMI: **25.73** → slightly overweight (WHO classification)

KEY BEHAVIORAL TRENDS

Key Insights Summary

- **Low Activity Levels:**
  Most users are either **lightly active** or **predominantly sedentary**, with minimal time spent in very active movement.

- **Activity Peaks Identified:**
  User activity levels and calories burned **peak around 13:00, 19:00, and 20:00**, suggesting midday and evening are the most engaged hours.

- **Suboptimal Sleep Patterns:**
  The **average sleep duration is 6.60 hours**, indicating that many users are **not meeting the recommended 7-8 hours** of nightly rest.

- **BMI Insights Point to Wellness Needs:**
  BMI values show that most users fall within a **normal to slightly elevated range**, suggesting that **wellness and maintenance**—not aggressive weight loss—should be the **focus of health interventions**.

MARKETING RECOMMENDATIONS

Strategic Recommendations

◉ **Target Sedentary Users**
Use **movement nudges** and **habit-building challenges** to encourage more active behavior throughout the day.

◉ **Promote Sleep Optimization Tools**
Highlight features like **sleep tracking**, **wind-down routines**, and **meditation content** to support better rest.

◉ **Leverage Peak Activity Hours**
Schedule **push notifications** and **wellness prompts** around **13:00, 19:00, and 20:00** when users are most active.

◉ **Shift Focus to Holistic Wellness**
Emphasize benefits like **energy**, **mindfulness**, and **confidence** rather than just weight loss.

◉ **Launch 30-Day Micro-Challenges**
Introduce monthly goals (e.g., **7k daily steps**, **hydration tracking**, or **sleep consistency**) to build lasting habits.

FINAL RECOMMENDATIONS

Final Thoughts

- **Position Bellabeat as a Lifestyle Companion**
  Move beyond fitness tracking — promote Bellabeat as a **daily wellness partner** supporting users' physical, mental, and emotional health.

- **Leverage Data to Personalize Experiences**
  Use behavioral insights (e.g., peak activity times, sleep patterns) to **optimize content delivery** and **promote relevant features** at the right moments.

- **Prioritize Sustainable Wellness Engagement**
  Shift the brand narrative from short-term goals to **long-term well-being**, emphasizing **balance**, **mindfulness**, and **healthy habits** over time.