BELLABEAT:

HOW CAN A WELLNESS TECH COMPANY PLAY IT SMART

Google Data Analytics professional certificate capstone

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ABOUT

Bellabeat, a technology company focused on women's health products, has great potential for growth in the global smart device market. To realize this, this case study will analyze data and identify new growth opportunities for the company.

STAKEHOLDERS

01

URŠKA SRŠEN

Co-founder of Bellabeat and Chief Creative Officer

02

SANDO MUR

Mathematician and co-founder of Bellabeat; key member of the Bellabeat executive team

03

BELLABEAT MARKETING ANALYSIS TEAM

A team of data analysts responsible for collecting, analyzing, and reporting data that can help inform Bellabeat's marketing strategy.

For the past six months, our team has focused on understanding Bellabeat’s mission and business goals, while exploring how we, as junior data analysts, can contribute to achieving them.

DATA PREPARATION AND METHODOLOGY

The project founders recommended using the 'FitBit fitness tracker data' provided by Mobius on Kaggle, to address the business tasks.

CONTENT

01

The dataset includes personal fitness information from FitBit users who consented to share their tracker data covering physical activity, steps, heart rate, and sleep patterns which can be used to explore user habits.

PERIOD

02

According to Mobius on Kaggle, the dataset generated by respondents to a distributed survey via Amazon Mechanical Turk between April 12th 2016 to May 12th 2016

LICENSE

03

The FitBit dataset is under a CC0 license, meaning it is in the public domain. This allows anyone to use, share, remix, and adapt the data freely, without restrictions.

FORMAT

04

The database consists of 18 files in CSV format. Considering the sufficiency and validity of the data in the files, 7 files were used in this analysis.

SAMPLE SIZE AND LIMITATION

05

Analysis of 33 users. The small sample size means trends are indicative, not conclusive, of the broader population.

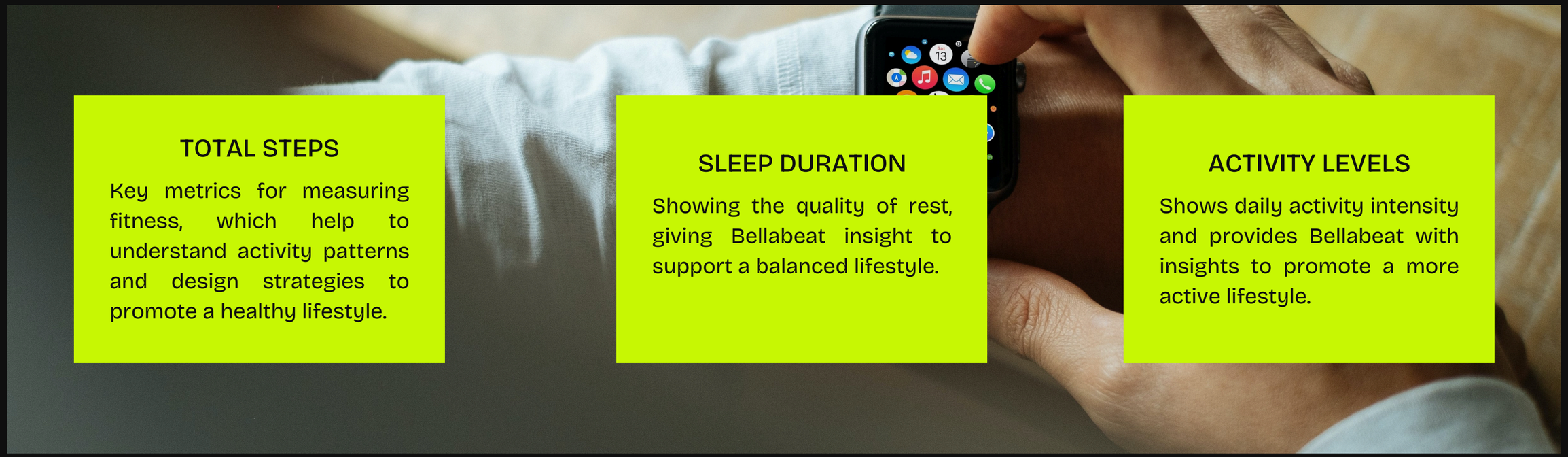
ANALYTICAL TOOLS AND SOFTWARE

06

The analysis was conducted using Python (with Pandas and Seaborn/Matplotlib libraries) for data cleaning, transformation, and advanced visualization. Microsoft Excel was utilized for initial data exploration and supplemental analysis

TRENDS IN SMART DEVICE USAGE

Analysis of smart device usage trends shows when and how users interact with the device. These insights will help Bellabeat to understand daily patterns in order to optimize features and engagement strategies.



TOTAL STEPS

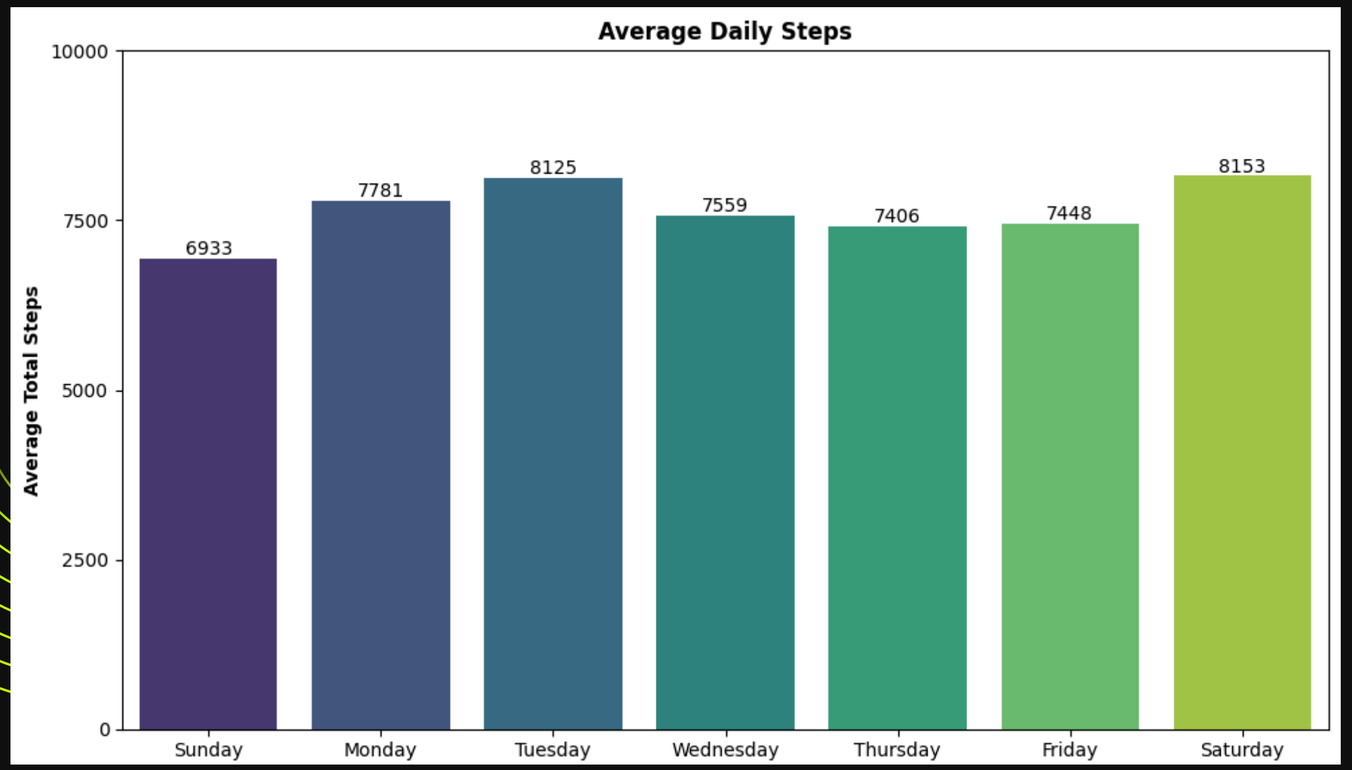
Key metrics for measuring fitness, which help to understand activity patterns and design strategies to promote a healthy lifestyle.

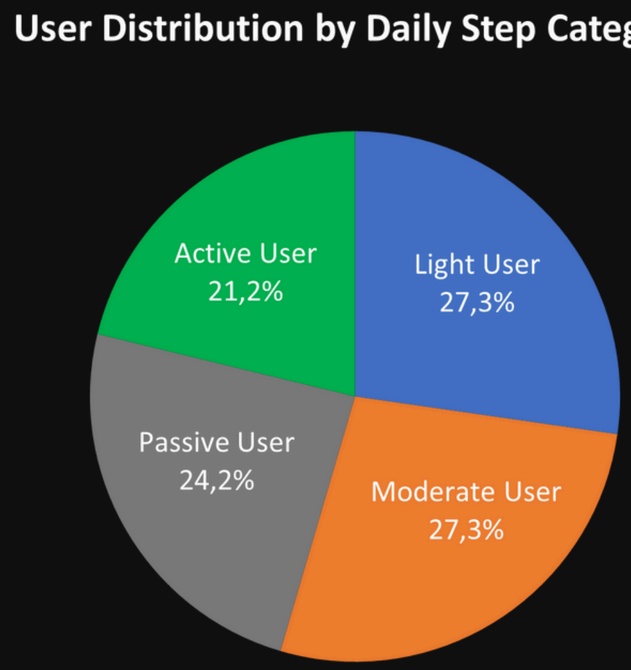
SLEEP DURATION

Showing the quality of rest, giving Bellabeat insight to support a balanced lifestyle.

ACTIVITY LEVELS

Shows daily activity intensity and provides Bellabeat with insights to promote a more active lifestyle.



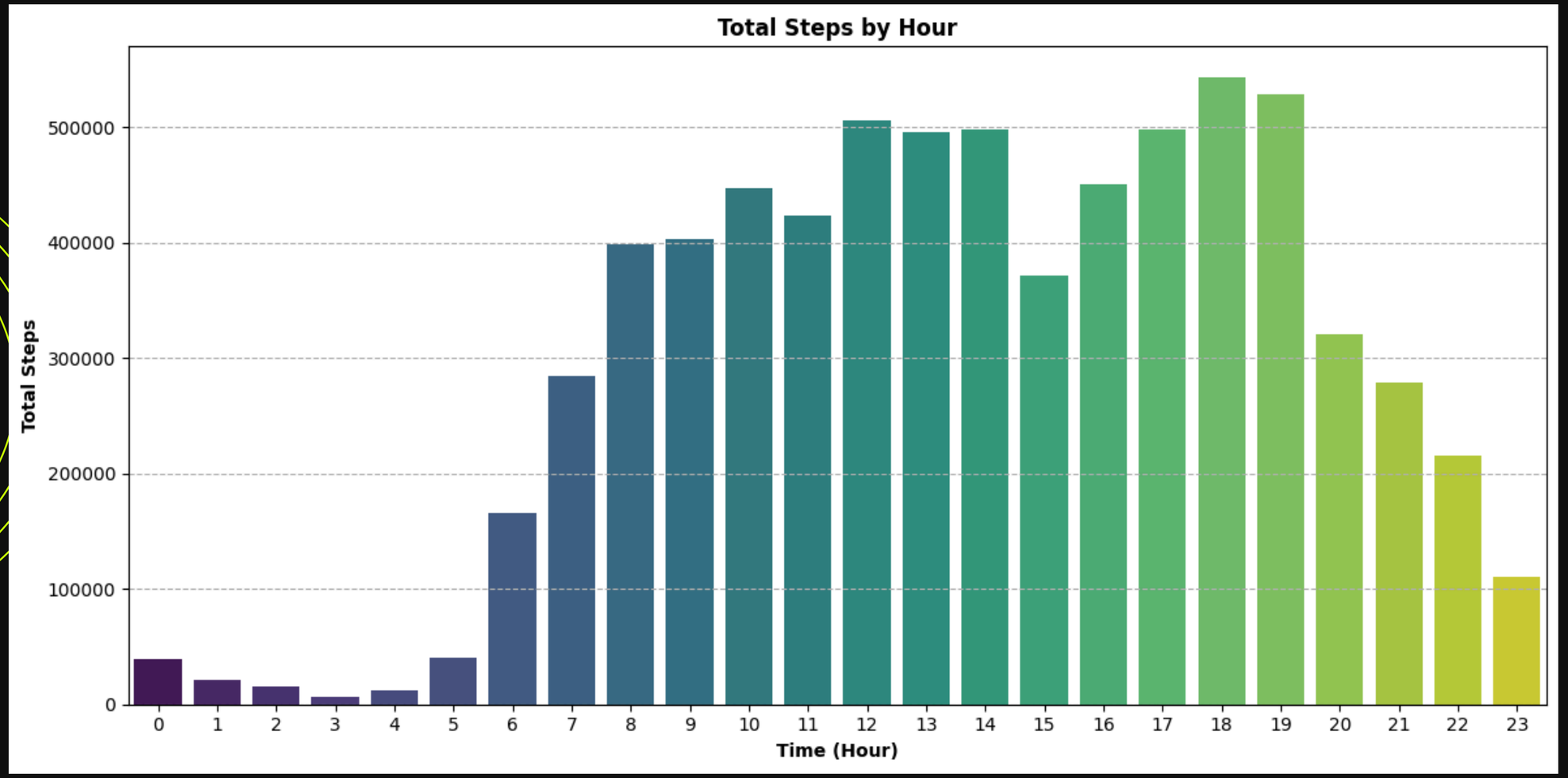


TOTAL STEPS ANALYSIS

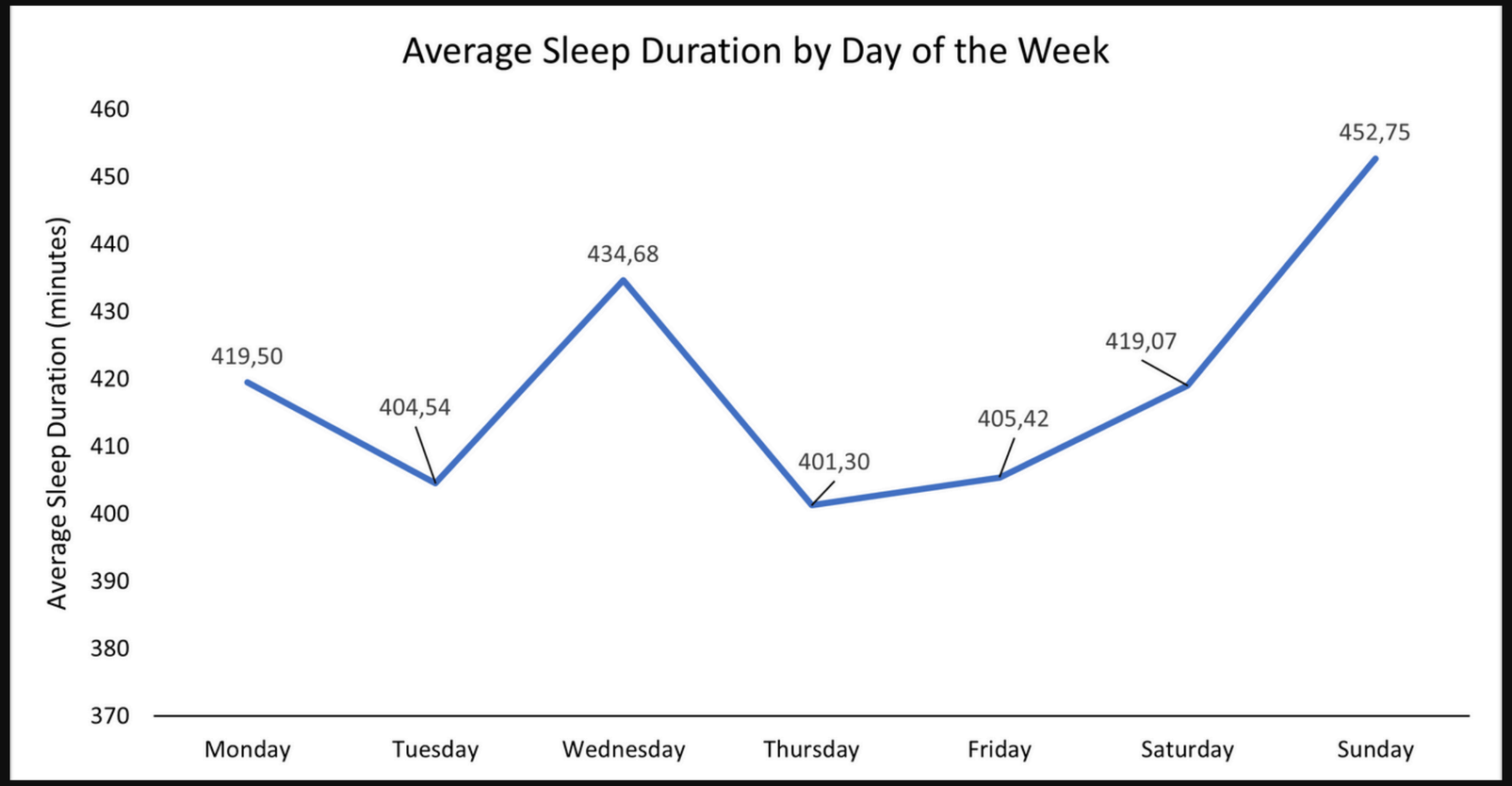
The Karolinska Institute in Sweden recommends taking at least 7,000 steps per day to maintain a healthy lifestyle. This guideline, which is also supported by the World Health Organization (WHO), highlights the importance of regular physical activity in reducing health risks and improving overall well being.

Daily step category:

- 0-4999: Passive User
- 5000-7499: Light User
- 7500-9999: Moderate User
- 10.000 and above: Active User

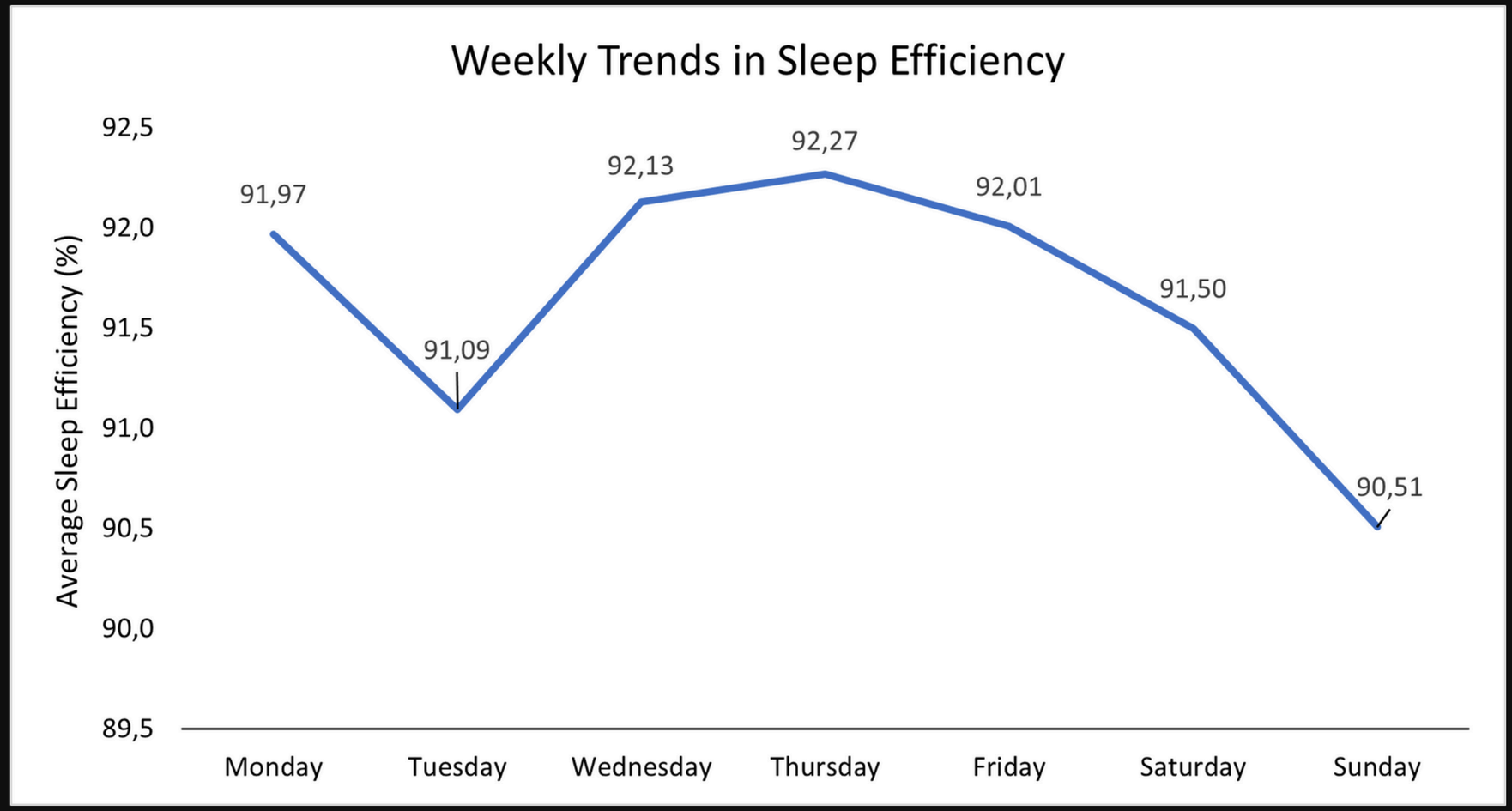


The chart illustrates users' hourly step patterns. Activity begins to rise around 6 AM, remains consistently high throughout midday, and peaks in the late afternoon to early evening (5–7 PM), before declining steadily after 8 PM into the night.



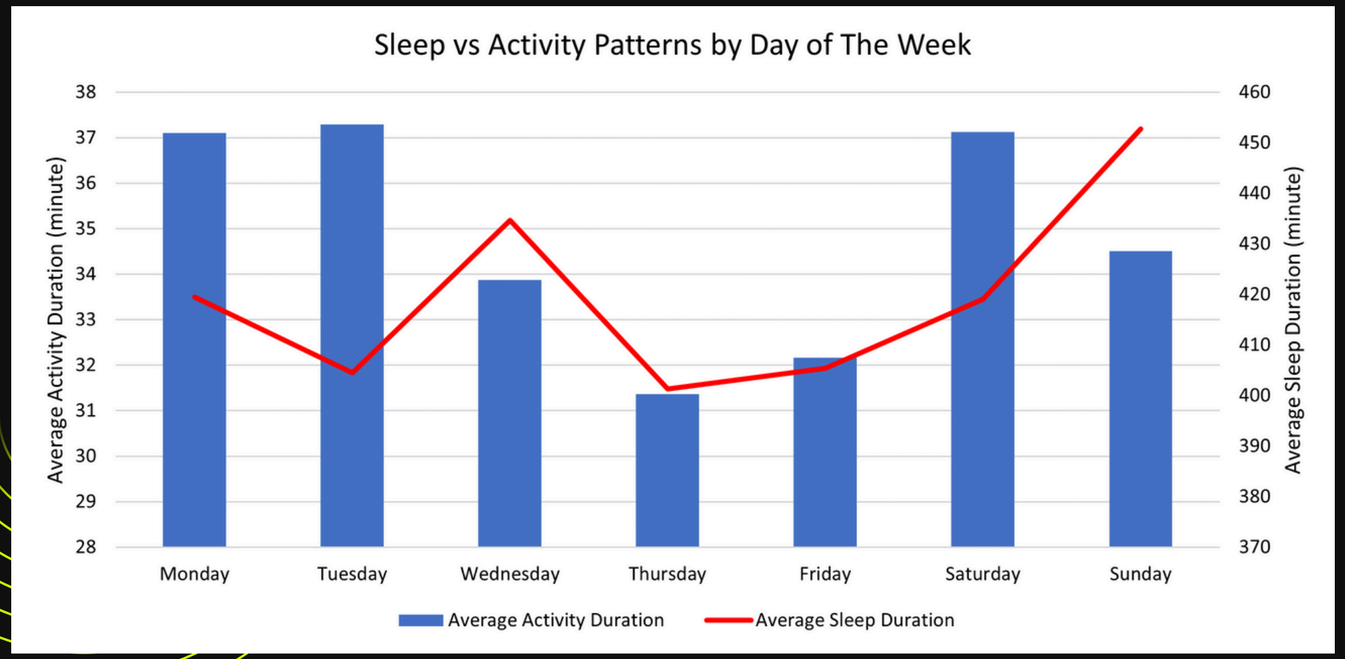
SLEEP DURATION ANALYSIS

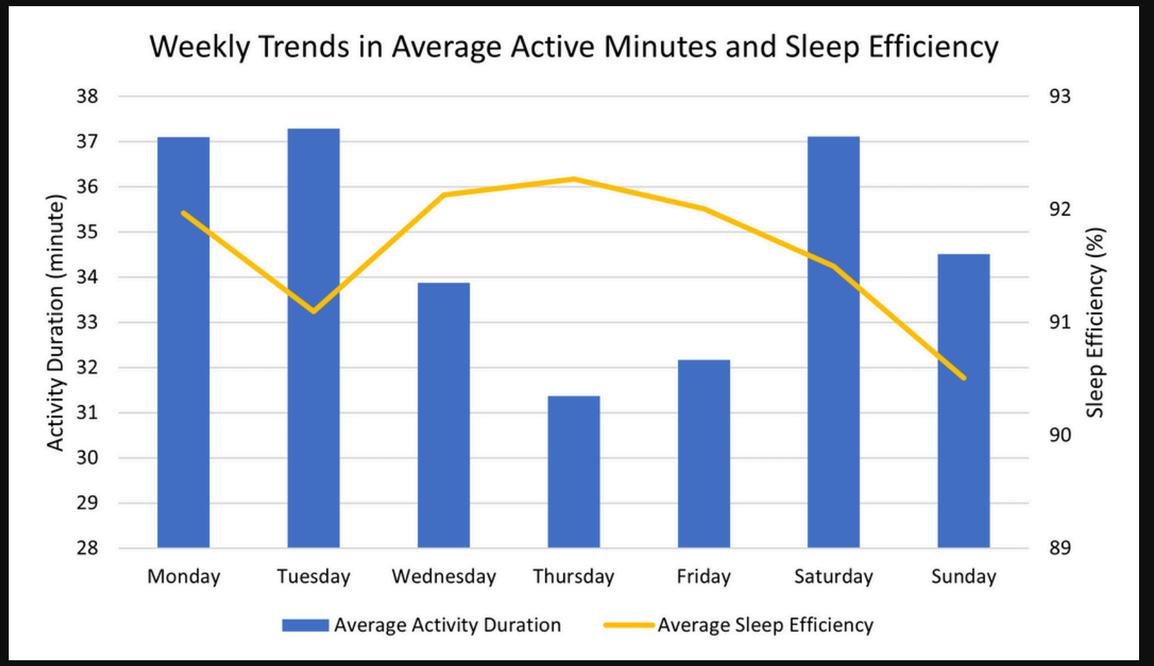
Average sleep duration tends to be shorter on weekdays, with the lowest point on Thursday at around 6.7 hours. In contrast, users sleep longer on weekends, peaking on Sunday at ~7.5 hours. This pattern suggests that many users experience reduced sleep during the workweek and try to compensate by sleeping longer on weekends.



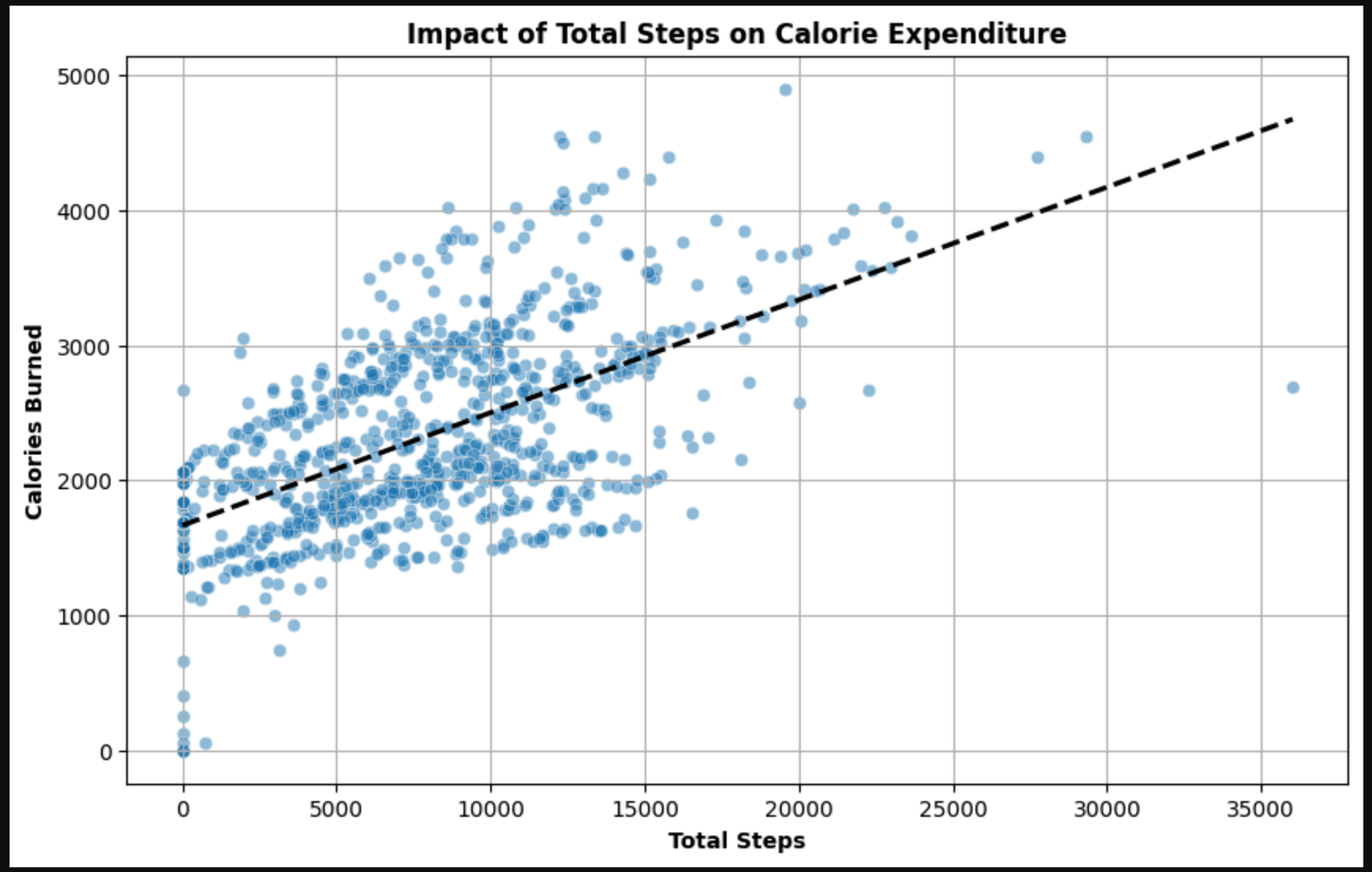
Sleep efficiency remains stable on weekdays, peaking on Thursday. However, it drops during the weekend, with the lowest point on Sunday, which may be linked to lifestyle changes such as staying up late or irregular sleep schedules.

SLEEP DURATION ANALYSIS



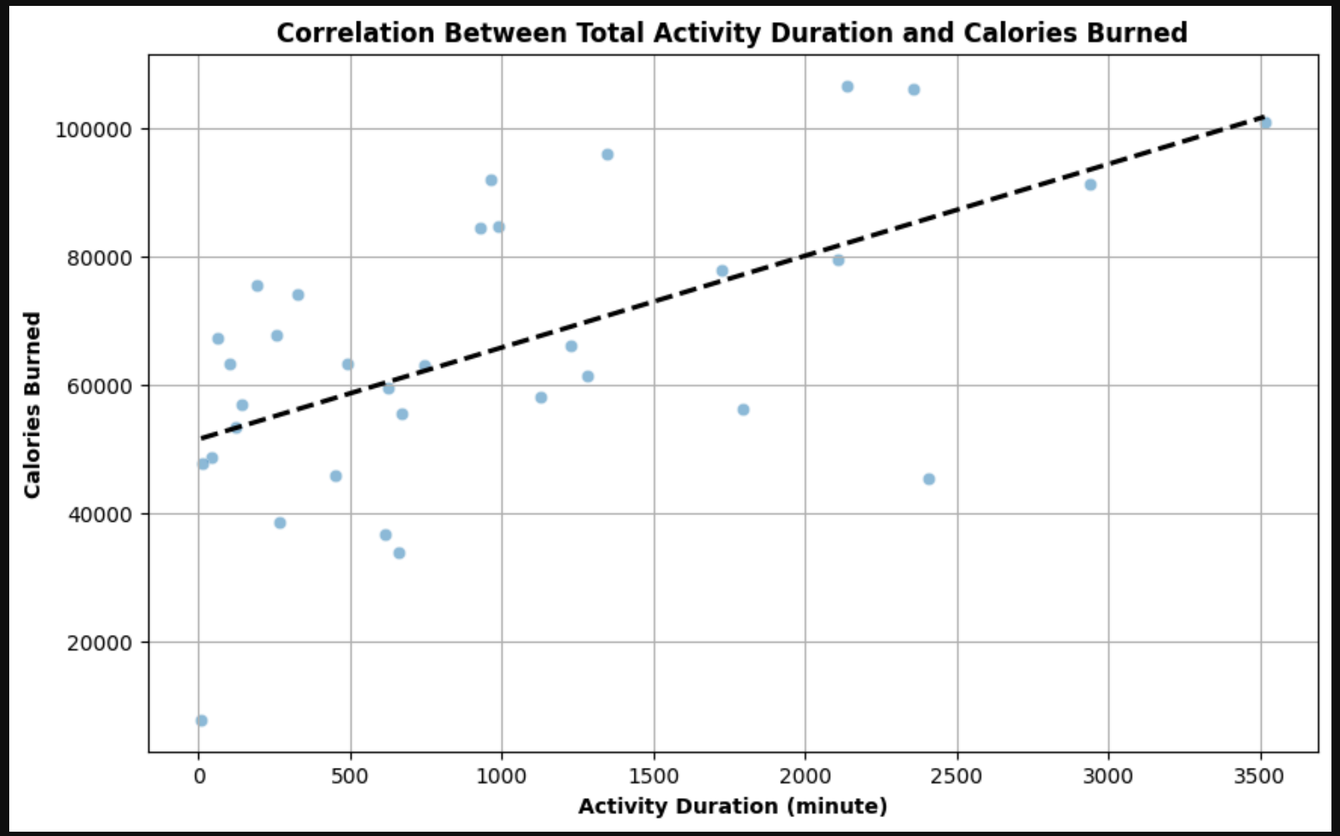


This reveals a unique pattern: activity peaks on Tuesdays and Saturdays, but sleep quality is better in the middle of the week. Interestingly, although sleep duration increases on weekends, sleep efficiency decreases, indicating that sleep quality does not always be aligned with the length of sleep.

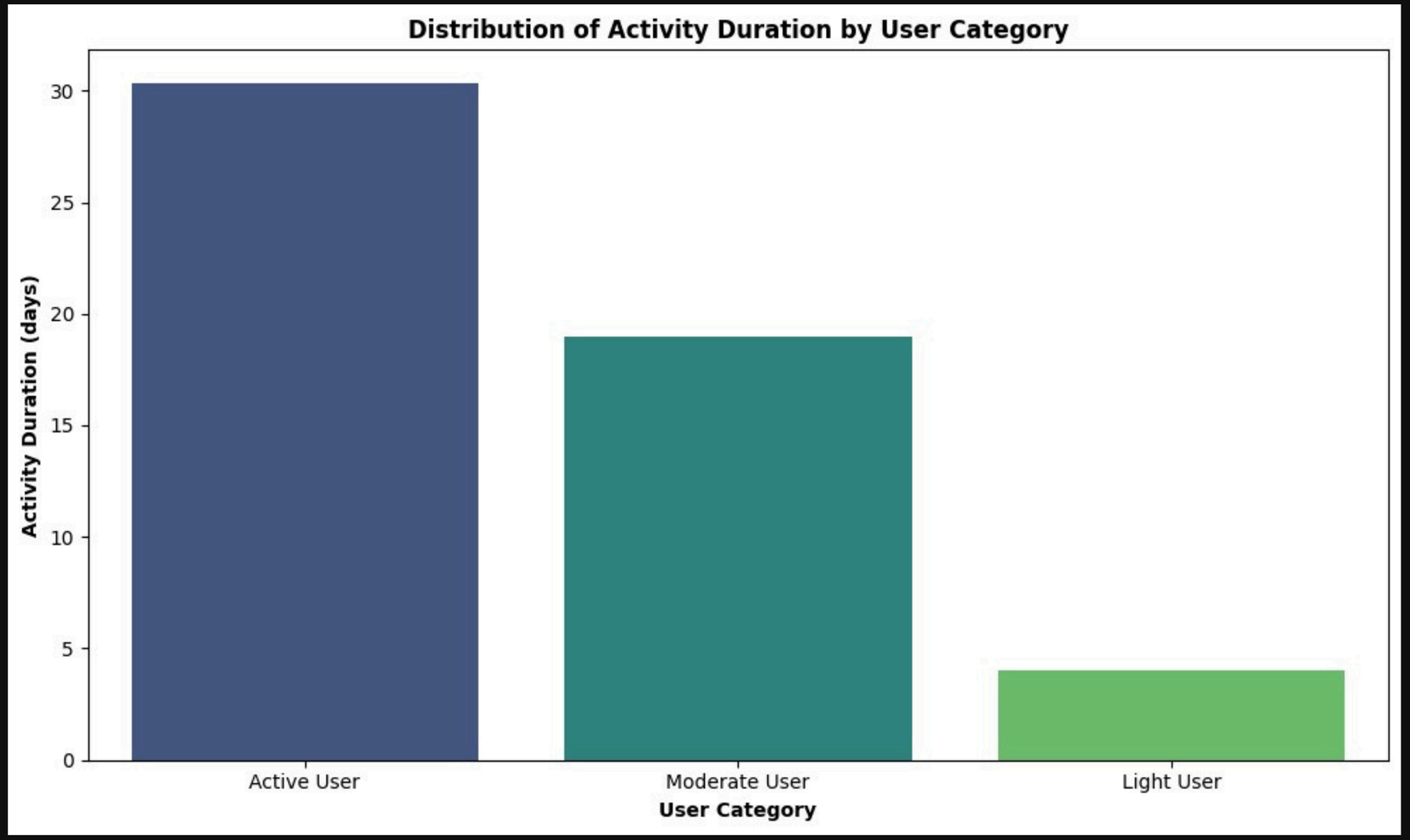


ACTIVITY LEVELS ANALYSIS

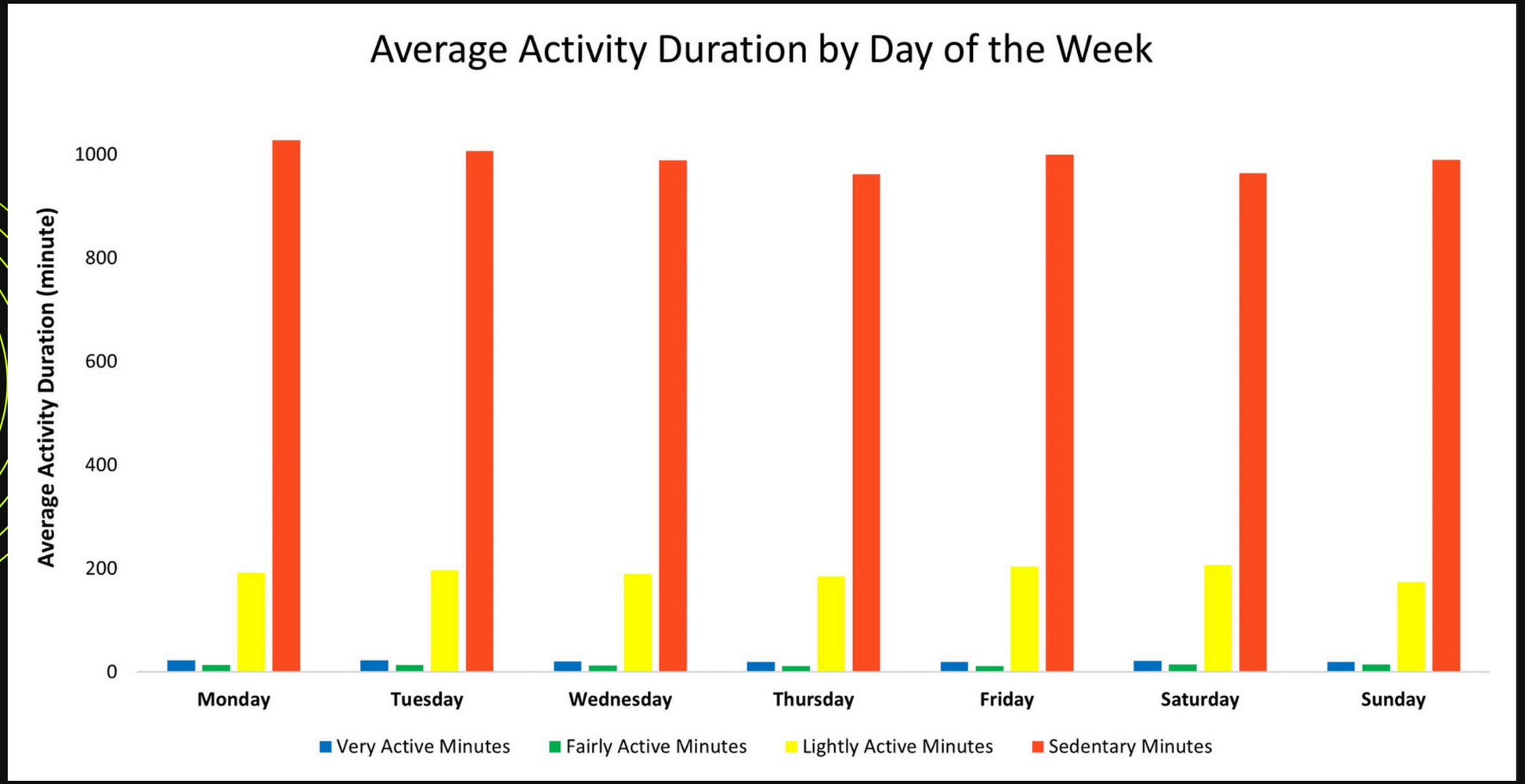
The scatter plot illustrates a positive correlation between Total Steps and Calories Burned. As the number of daily steps increases, calorie expenditure also tends to rise, despite some variability and outliers in the data. This trend highlights that consistent physical activity, even in the form of walking, plays a significant role in overall energy management and user health.



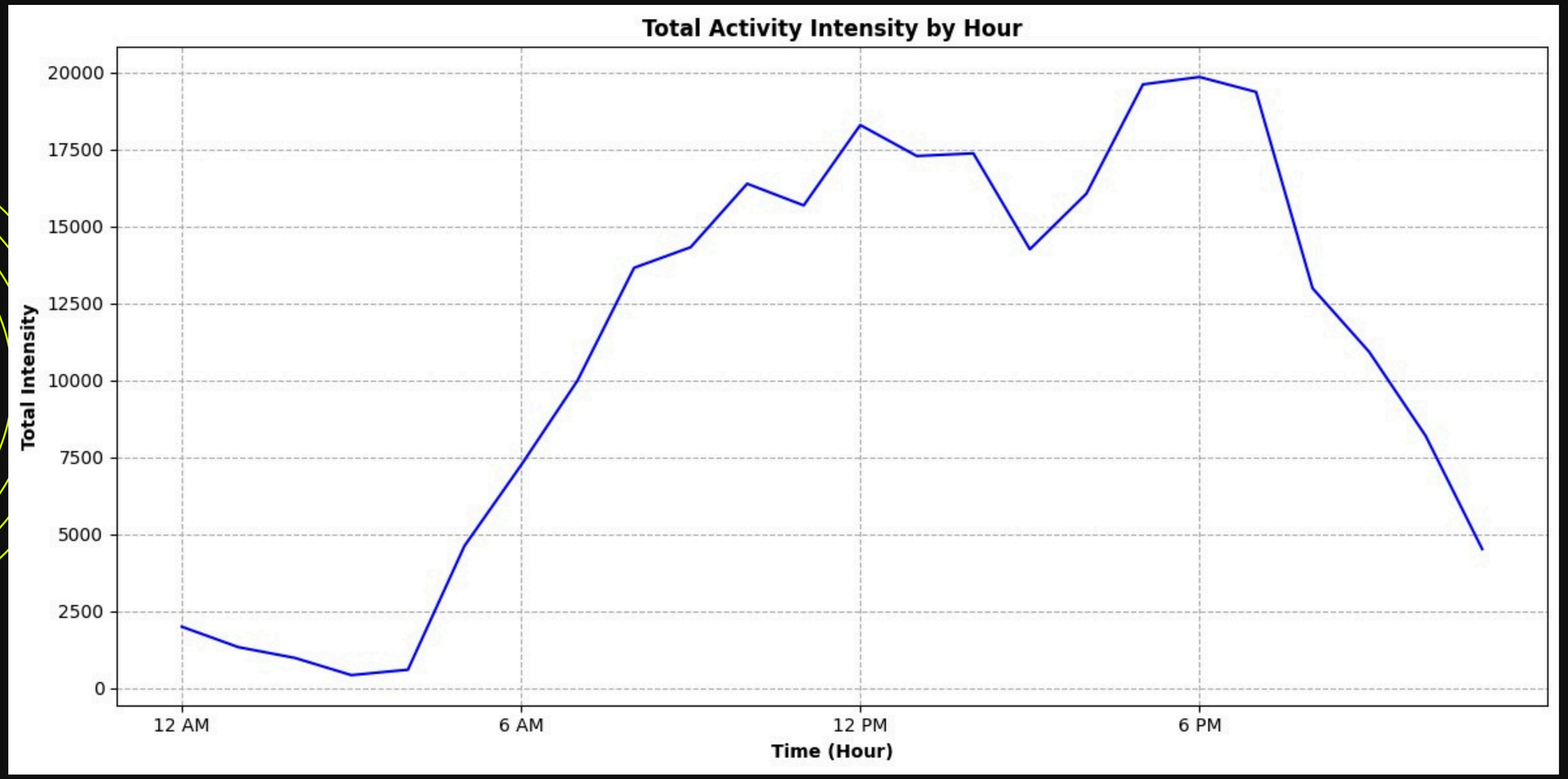
As the duration of activity increases, so does the number of calories burned. The linear regression line highlights this relationship, providing a predictive model for our users. While some data points deviate, suggesting other factors like exercise intensity or individual metabolism are at play, the primary takeaway remains that longer activity durations lead to higher calorie expenditure.



Most Bellabeat users are quite consistent, logging their activities virtually every day and demonstrating a high level of engagement with the device. Some users are moderately constant, while a small percentage utilize it infrequently. Bellabeat has already established a dedicated user base, but there is still opportunity to inspire lighter users to be more involved.



The data shows that Bellabeat users spend most of their time in sedentary activities across all days of the week, with little variation between weekdays and weekends. Lightly active minutes are the second most common activity, while very active and fairly active minutes remain consistently low.



Bellabeat users frequently begin their days slowly, with little activity throughout the late night and early morning hours. Around 5 AM., activity rises as people begin their morning activities. The intensity increases, peaking between late afternoon and early evening when most users are expected to be working exercise or pursuing to do things—before gradually decreasing at night.

TREND RELEVANCE FOR CUSTOMERS

In order to better understand customer lifestyle patterns, we examined three key dimensions:

STEPS

which often correlate with calories burned and overall activity intensity.

SLEEP DURATION & EFFICIENCY

Reflects rest and recovery quality.

ACTIVITY LEVELS

Highlighting how daily activities contribute to energy expenditure and sleep efficiency.

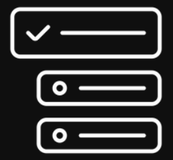
These metrics together provide valuable insights into customer wellness and behavior trends.

STEPS

TREND RELEVANCE FOR CUSTOMERS

WEEKLY STEP TRENDS

- Highest steps on Saturday and Tuesday
- Sunday lowest → **Potential for targeted reminders**



DISTRIBUTION BY CATEGORY

- 51,5% users below WHO's reccomendation (7000 steps daily)
- Only 21,2% users are Active Users → **Opportunity for engagement programs**

DAILY ACTIVITY PATTERN

- Steps increase after 6 AM, peak 12-6 PM decline at night
- Ideal timings for reminders: **Morning boosts and evening nudges**

STEPS VS CALORIES

- Strong positive correlation → **More steps = More calories burned.**
- Supports Bellabeat's strategy to promote daily movement goals.

SLEEP DURATION & EFFICIENCY

TREND RELEVANCE FOR CUSTOMERS

SLEEP DURATION

- Weekdays often < 7h → **Below CDC recommendation**
- Sunday shows longest sleep → **Sign of weekend recovery**

Users accumulate "Sleep Debts" during weekdays, then catch up on weekends

SLEEP EFFICIENCY

- Stable around 91-92%
- Midweek peaks: Wednesday-Thursday
- Lowest on Sunday: ~90,5%

Efficiency drops with irregular weekend schedules despite longer sleep

SLEEP & ACTIVITY BALANCE

- High activity (Monday-Tuesday) → **Shorter sleep**
- Lower activity (Sunday) → **Longer sleep**
- Best balance = Moderate activity midweek

Balanced activity leads to optimal sleep quality, not extremes.

ACTIVITY LEVELS

TREND RELEVANCE FOR CUSTOMERS

USER ACTIVITY CATEGORY

- Majority of users fall into Moderate and Active categories.
- A smaller segment remains in the Light/Low Activity group.

Opportunities to encourage less active users through customized goals and reminders.

STEPS & CALORIES

- Clear positive correlation between daily steps and calorie expenditure.
- Higher step counts lead to higher calorie burn, though with individual variations.

Visual feedback in the app can boost motivation to increase steps.

WEEKLY ACTIVITY DURATION

- Light and fairly active minutes dominate user activity patterns.
- Sedentary minutes remain consistently high across all days.

Opportunity: Bellabeat can use nudges to reduce long sedentary periods.

HOURLY ACTIVITY INTENSITY

- Activity rises from 6 AM, peaks between 12 PM – 6 PM, and declines afterward.
- Evening peaks may reflect commuting habits or exercise routines after work.

Opportunity: Smart notifications at low-activity hours (early morning & late evening)

IMPLICATIONS FOR MARKETING STRATEGY

Recognizing user behavior patterns is not only beneficial for product development but also offers essential insights for influencing Bellabeat's marketing approach. Translating these behavioral trends into practical strategies allows Bellabeat to effectively segment its customers, customize personalized campaigns, and adjust its offerings to align with users' daily routines and health objectives

USER SEGMENTATION & TARGETING

- Many users are still below the WHO recommendation (≤7,000 steps/day).
- Only 21.2% are in the Active Users category → **Great opportunity to encourage Light/Moderate Users to be more active.**

Strategy: Create segmented campaigns such as personalized goals, reminder systems, or gamification programs for Light Users, while Active Users are given advanced challenges to maintain engagement.

PERSONALIZED COMMUNICATION & TIMING

Data shows that peak activity occurs in the morning after 6 AM and in the afternoon between 5–7 PM, while activity is very low at night and in the early morning

Strategy: Optimize push notifications and reminders during inactive hours (before 6 AM and after 8 PM), and send motivational messages during peak hours to maintain consistency.

IMPLICATIONS FOR MARKETING STRATEGY

POSITIONING BELLABEAT AS A WELLNESS COMPANION

- Many users have a sleep debt on weekdays, then compensate with long sleep on weekends.
- Sleep efficiency decreases when sleep timings are inconsistent.

Strategy: Reposition the Bellabeat not only as a step tracker, but as a companion for a healthy holistic lifestyle (activity + sleep + women's health).

BEHAVIOR CHANGE & RETENTION

Throughout the week, inactive minutes and light activity are still dominate.

Strategy: Implement nudges and micro-content (e.g., “Take a 5-minute stretch now!” or “#BetterSleep”) to encourage small but consistent behavior changes that strengthen long-term retention.

COMMUNITY & ENGAGEMENT CAMPAIGNS

Weekly and daily patterns can be used to create community challenges (e.g., weekend challenges or weekday step streaks).

Strategy: Build a Bellabeat community that encourages fellow users, increases loyalty, and promotes word-of-mouth.

RECOMMENDATIONS

SEGMENT & PERSONALIZE

- Advertising campaigns for Light, Moderate, and Active Users should be different.
- To improve adoption, use gamification, reminders, and customized goals.

LEVERAGE SMART TIMING

- Target peak activity times in the morning (after 6:00 AM.) and evening (5:00–7:00 PM).
- Send motivational messages during low-activity hours (before 6:00 AM and after 8:00 PM).

POSITION AS A WELLNESS COMPANION

- Promote the Bellabeat not only as a tracker, but also as a holistic health partner (activity, sleep, and women's health).
- Emphasize the balance: steps, sleep, and energy management.

RECOMMENDATIONS

DRIVE BEHAVIOR CHANGE

- Use short reminders (“Take a 5 minutes walk”, “#SleepBetter tonight”) to reduce sedentary time.
- Focus on small but consistent habits that can enhance retention.

BUILD COMMUNITY ENGAGEMENT

- Launch challenges and series campaigns (e.g., daily step challenges, weekend sleep goals).
- Build a community of Bellabeat users to boost brand loyalty and advocacy.

By combining segmentation, smart communication time management, wellness positioning, behavioral nudges, and community building, Bellabeat could improve user engagement, retention, and strengthen its brand as a trusted companion for women's health.

ACCESS THE FULL ANALYSIS

SCAN THIS QR CODE

OR CLICK HERE