Bellabeat Analysis for: Users Activities & Trends

bellabeat

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Introduction:

This analysis presents key insights derived from analyzing consumer smart device usage data collected by Fitbase.

- Business Task: Leveraging data analysis to understand consumer behaviors and preferences for effective marketing strategies aligned with Bellabeat’s mission.
- Objective: Gain insights into sleep patterns, activity levels, and the relationship between activity and sleep quality using Fitbase dataset.
- Importance: Enhance product offerings, develop targeted marketing strategies, and promote women's health and wellness.

Methodology:

"Analytical Approach And Data Preparation"

- Statistical Analysis: Leveraging the power of Microsoft SQL and R, I utilized various statistical techniques such as descriptive statistics, hypothesis testing, and regression analysis to examine relationships and derive insights from the FitBase dataset.
- Data Preprocessing: To ensure data quality and accuracy, I conducted comprehensive data preprocessing steps using Microsoft SQL,.Microsoft SQL was employed for data cleaning and transformation tasks; the R programming language facilitated exploratory data analysis and statistical modeling; and Google Sheets provided a collaborative environment for data review and sharing.

DATA OVERVIEW

DATA ROCCC

- Reliability: Concerns exist regarding variations in unique IDs, absence of age field, and incomplete fat percentage field.
- Originality: Data collected from third-party sources using Amazon Mechanical Turk, indicating lack of originality.
- Comprehensive: Dataset includes multiple tables with metrics like heart rate, activity intensity, calories used, daily steps, sleep time, and weight.
- Current: Data dates back to 2016, but the data is still valuable.
- Cited: Properly cited with well-documented data collector and source for transparency and further research.

Exploratory data Analysis(EDA):

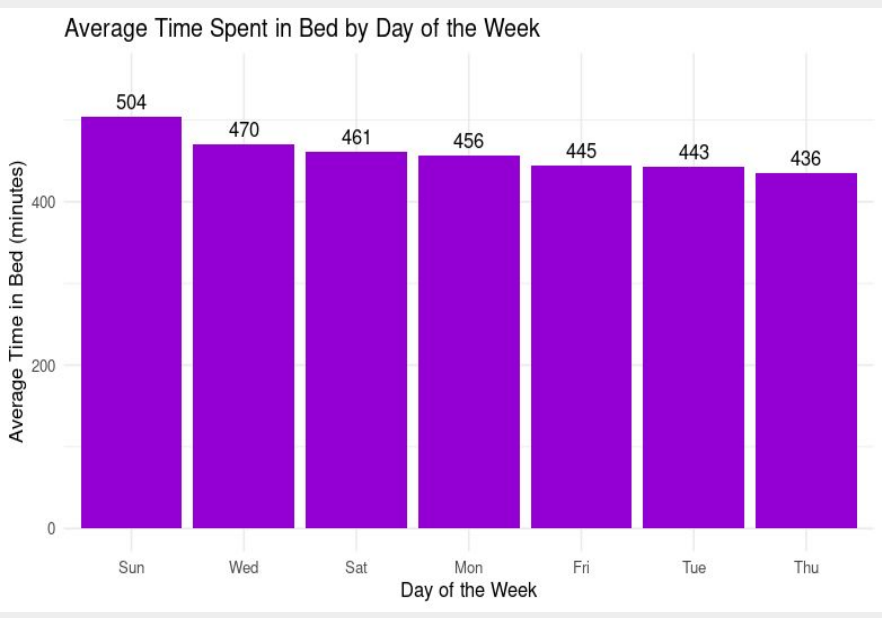
Uncovering Insights From The Fitbase Dataset

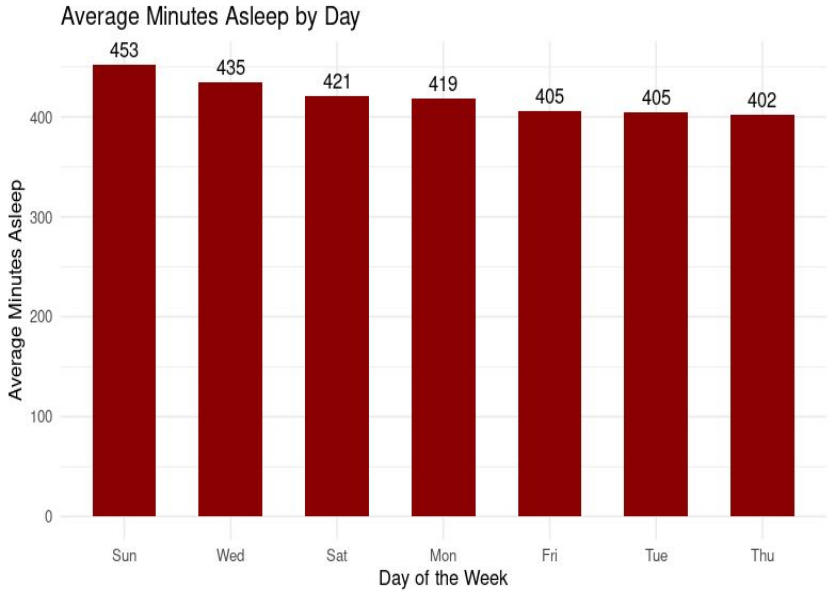
Introduction to EDA:

EDA is a crucial step in analyzing the FitBase dataset, allowing us to gain a deeper understanding of the data and uncover initial insights.

Visualizations To Illustrate Patterns

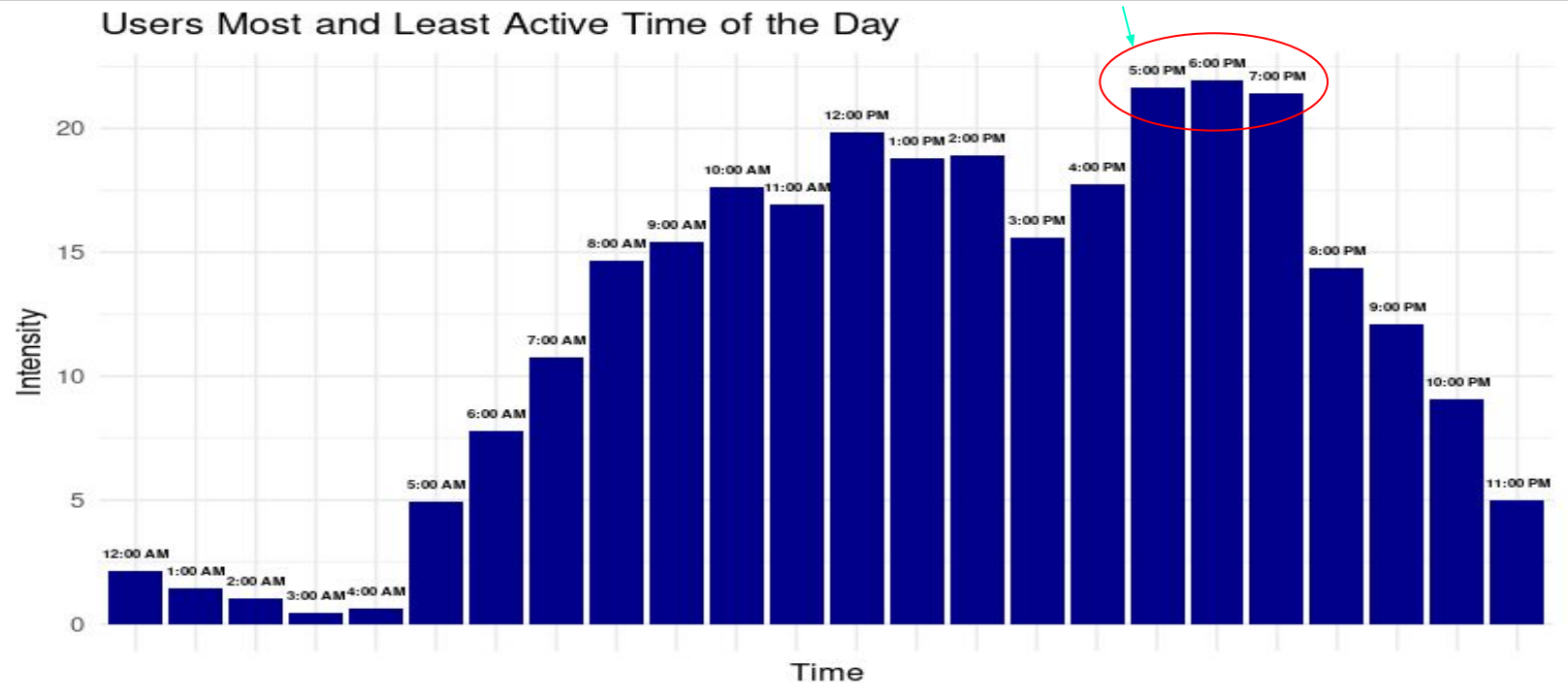
The graphs portrait in in this slide shows the average users sleeping behavior during the week





Peak Time Activity

Peak activity

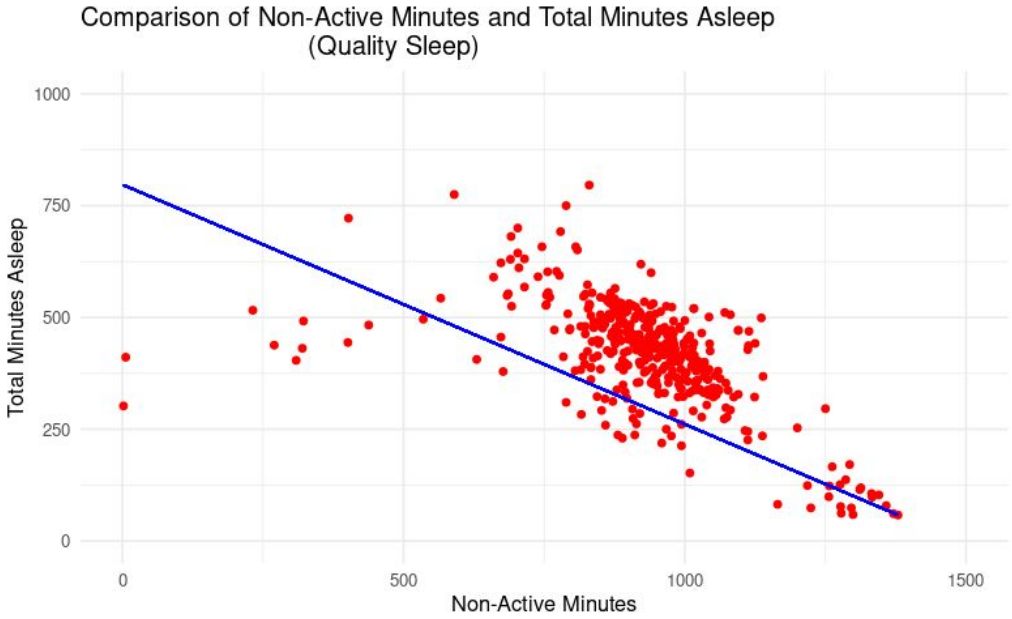


Sleep Quality

Comparing the data of the users non-active minutes spent during the day with their sleeping behaviour might reveal that the quality of sleep declines when users spend more time inactive.

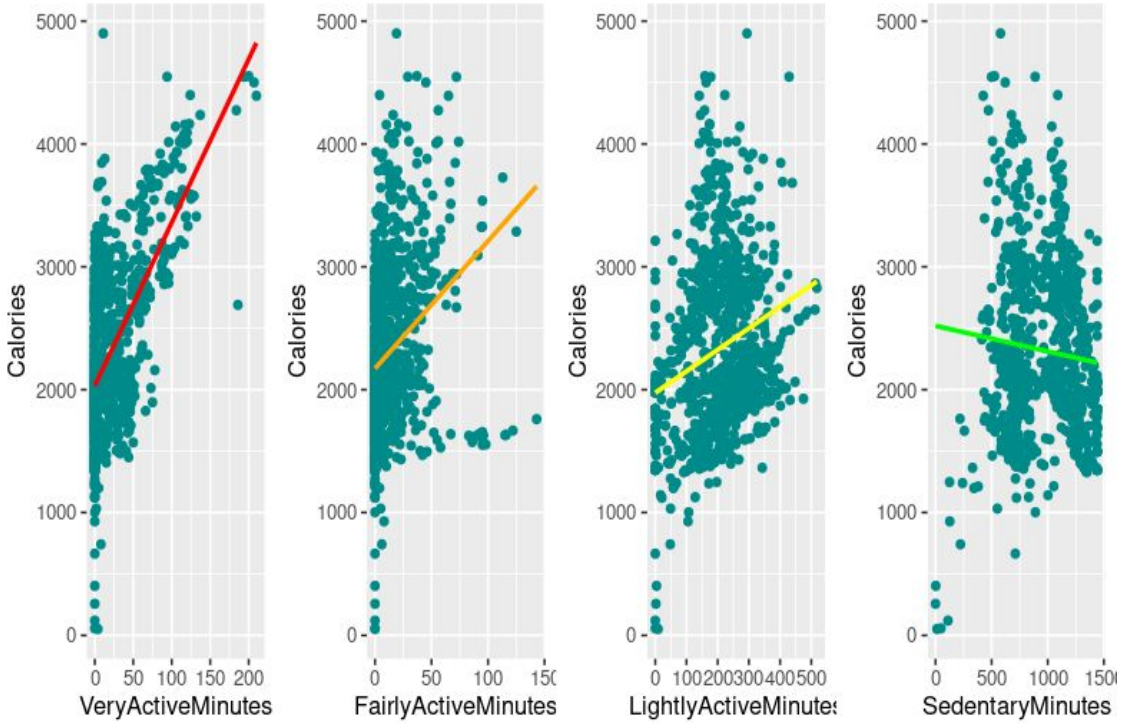
Non-Active Minutes

Minutes Asleep



Activity level and calories burnt relation

The next chart that a person who has higher active minutes tends to burn more calories in a day, the more time they spend inactive, the lower calories they tend to burn in a day.



Limitations:

1. Incomplete Data for Unique IDs:
    a. The dataset was expected to include data for 30 unique IDs across all tables.
    b. However, some tables exhibit missing unique IDs, with 8, 12, and 22 IDs not present.
    c. This limitation may affect the completeness and representativeness of the analysis.
2. Inconsistent Data Collection Duration:
    a. The data lacks consistency in tracking and collecting data for users over a complete month.
    b. This variation in data collection duration may impact the analysis, potentially leading to biased results or incomplete insights.
3. Missing Demographic Information:
    a. The dataset does not provide information regarding the age or gender of the users.
    b. This absence of demographic variables limits the ability to perform age or gender-specific analysis or draw conclusions related to these factors.

Summary of Key Findings and Insights:

1. **Sleep Patterns:**
   - Users tend to spend more time in bed and sleeping on Sundays, indicating a day of increased relaxation and rest. This insight can help individuals prioritize rest and self-care on weekends.
2. **Active Hours:**
   - Users show peak activity levels between 5pm and 7pm, suggesting a time of increased physical activity and energy expenditure. After this peak, activity levels gradually decline. This finding can inform individuals about the optimal time for engaging in physical activities.
3. **Activity and Sleep Quality:**
   - The analysis reveals a significant correlation between activity levels and minutes asleep. Inactive users tend to sleep less. This insight could be correlated to quality sleep and might emphasizes the importance of regular physical activity for promoting better sleep.
4. **Activity Level and Calories:**
   - The data strongly indicates that higher levels of activity are associated with greater calorie burn, while lower activity levels correspond to fewer calories burned. This finding underscores the relationship between physical activity and calorie expenditure.

Recommendations

1. **Sleep Tracking and Recommendations:**
    - **Bellabeat should consider leveraging the insight on sleep patterns to develop features that encourage users to prioritize rest and establish healthy sleep routines. This can include personalized sleep recommendations and reminders for consistent bedtimes.**
2. **Activity Monitoring and Motivation:**
    - **The peak activity hours between 5pm and 7pm present an opportunity for Bellabeat to provide targeted activity reminders, challenges, or motivational messages during this period. This can help users maintain their activity levels and sustain their energy throughout the day.**

1. **Integration of Activity and Sleep Tracking:**
    - **Bellabeat can further enhance its product by integrating activity and sleep tracking features. This integration can provide users with a comprehensive view of how their activity levels impact their sleep quality, encouraging them to make informed lifestyle choices.**
2. **Calorie Tracking and Insights:**
    - **Considering the strong relationship between activity level and calorie burn, Bellabeat can introduce a calorie tracking feature to provide users with real-time feedback on their calorie expenditure. This can help individuals better understand the impact of their activities on their overall energy balance.**

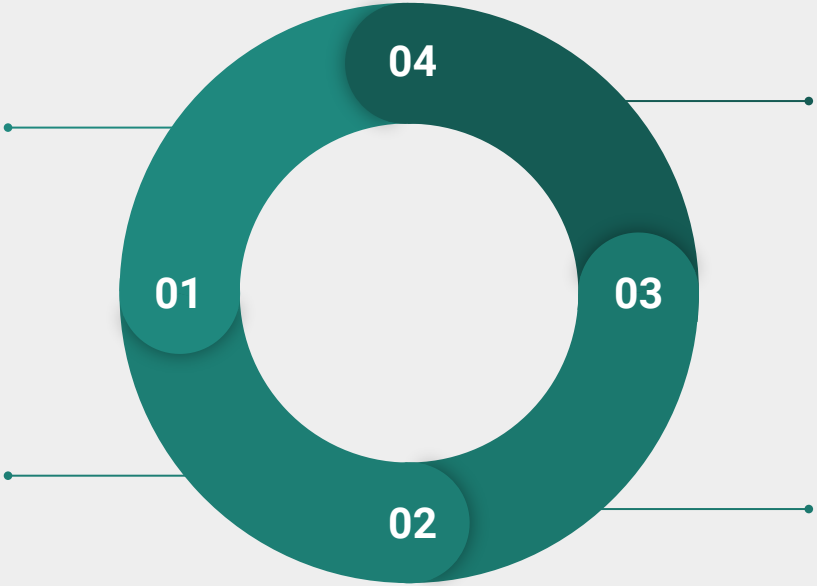
Conclusion

Sleep Patterns

The analysis showed that users on average tend to spend more time in bed and asleep on sundays more than the rest of the of the days of the week.

Active Hours

The data provided an incredible insight about the most active hours and the least active hours of the day which the company can use in there next upcoming update of their product.



Activity Level And Time Asleep

Although the data clearly shows the activity level affects the amount of time spent asleep, a further analysis should be conducted on a larger dataset to confirm if it affects the quality sleep on individuals.

Activity Level And Calories

The correlation is strong based on the data available and well known in the field of health and fitness.