Bellabeat Case Study – Final Analysis Summary

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Role: Data Analyst
Tools Used: R, tidyverse, ggplot2, Tableau Public (Dashboard),Google docs (Documentation)
Dataset: Fitbit Fitness Tracker Data (Kaggle Dataset)

1. Key Metrics

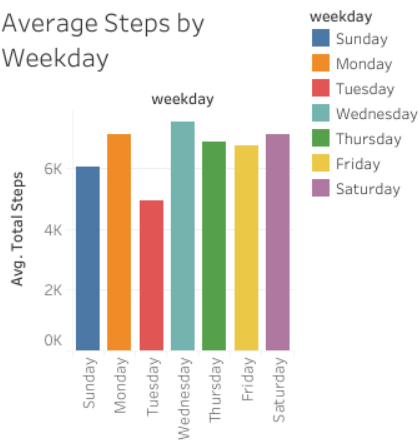| Metric	Value	Insight
Average Steps per Day	6,546 steps	Users are moderately active, but most are below recommended activity levels (10k/day).
Average Sleep Duration	7.4 hours	Users are generally within healthy sleep ranges.
Steps–Calories Correlation	0.58	More steps lead to higher calories burned — clear link between movement and energy expenditure.
Most Active Day	Wednesday	Midweek is the peak activity period.
Least Active Day	Tuesday & Sunday	Early weekdays and weekends show lower engagement.

2. Visual Summary
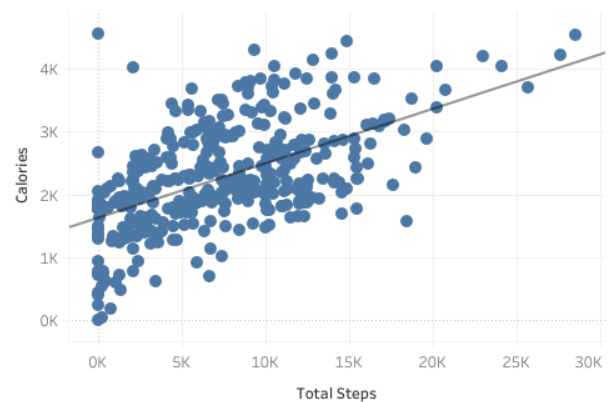
Dashboard Overview:

- **Bar Chart:** Shows average steps per weekday, highlighting midweek peaks.

- **Scatter Plot:** Visualizes the positive relationship between steps and calories.

- **Steps Distribution Histogram:** Displays overall activity spread among users.

- **Sleep Duration Histogram:** Shows how users' sleep is distributed across the dataset.
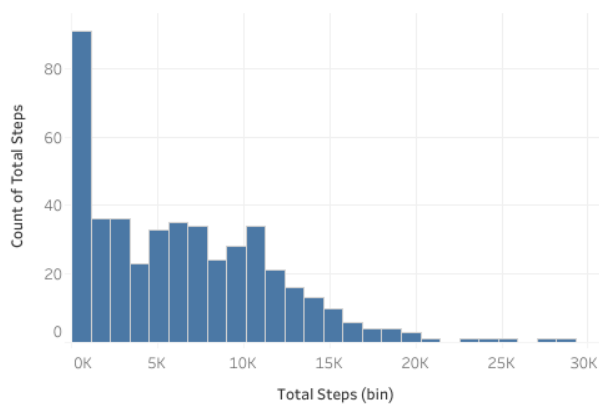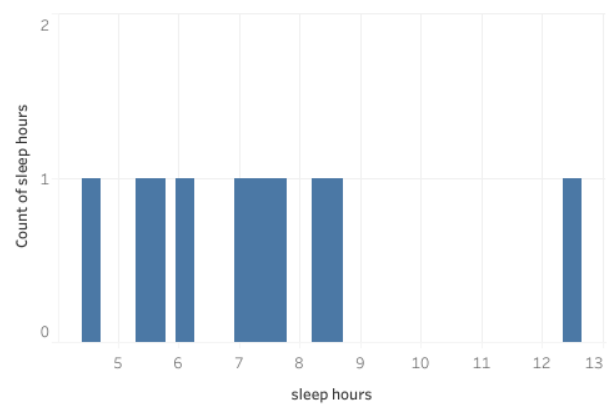
3. Insights

1. **Moderate Physical Activity:**

   ○ Users average is 6.5K steps/day, below the recommended 10K steps.

   ○ Engagement programs or step challenges could motivate users.

2. **Sleep Behavior is Healthy:**

   ○ Average sleep of 7.4 hours indicates users are generally sleeping enough.

3. **Steps Strongly Affect Calories Burned:**

   ○ Positive correlation (0.58) suggests higher activity directly impacts energy expenditure.

4. **Weekly Activity Patterns:**

   ○ Peak activity midweek (Wednesday)

   ○ Lower activity on Tuesday & Sunday

   ○ Useful for timing notifications, campaigns, and challenges.

5. **Sleep Logging Inconsistency:**

   ○ Some users don't track sleep regularly → opportunity to improve engagement.

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4. Recommendations

Insight	Recommendation
Low daily step count	Launch a "10K Steps Challenge" with badges and rewards to boost motivation.
Inconsistent sleep tracking	Add nightly reminders to log sleep for better awareness.

Correlation between steps & calories	Share personalized messages like "Great job! You burned X calories today."
Midweek activity peak	Promote "Wellness Wednesday" campaigns, mini workouts, and hydration tips.
Weekend inactivity	Suggest light exercises or a "Sunday Reset Routine" to improve weekend engagement.
Suggest light exercises or a "Sunday Reset Routine" to improve weekend engagement.	Encourage use of Bellabeat Spring water bottle, wellness band, and tracking features.

5. Conclusion

The analysis of Fitbit user data shows:

- **Moderate engagement** in physical activity with **midweek peaks**.

- **Sleep patterns are relatively stable**, but logging is inconsistent.

- **Steps and calories burned are strongly correlated**, highlighting opportunities for step-based engagement.

By applying these insights, **Bellabeat can improve user engagement, promote healthier habits, and increase adoption of its smart wellness products**.