10-30-2026

Bellabeat Case Study

How Can a Wellness Technology Company Play It Smart?

By Group Members and Katherine

bellabeat

Overview

- Bellabeat and Stakeholders
- Business Task
- Data Sources
- Data Prep
- Analysis & Visuals
- Conclusions

bellabeat

About bellabeat and Its Stakeholders

Company Background

- Founded in 2014 by Urska Srsen and Sando Mur.
- Focuses on women's health and wellness.
- Developed smart jewelry and devices (Leaf, Time, Spring) to monitor activity, sleep, stress, and mindfulness.

Stakeholders Involved

- ***Urka Sren*** - The cofounder and Chief Creative Officer of bellabeat.
- ***Sando Mur*** - bellabeat cofounder and key member of bellabeat executive team.
- The ***Marketing Analytics team*** at bellabeat.

bellabeat

Business task

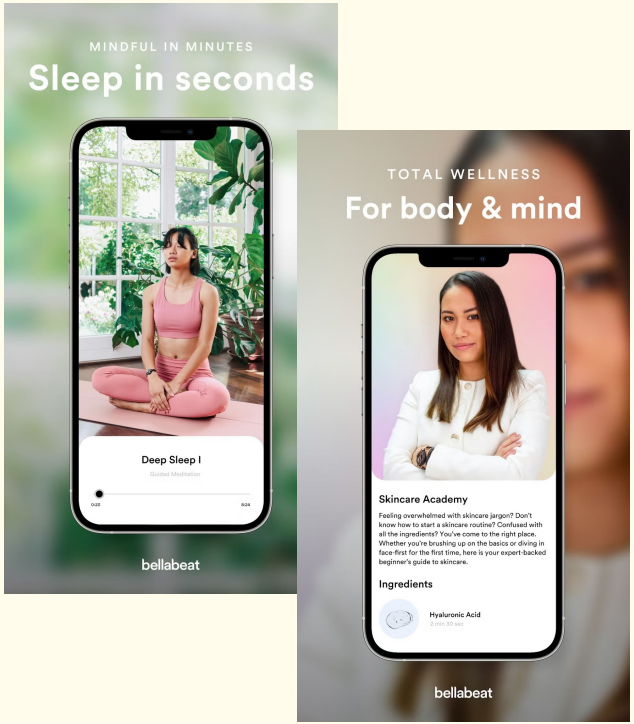
- How can consumer data reveal more opportunities for company growth?
- Focus on a Bellabeat product and analyze smart device usage data in order to gain insight into how people are already using their smart devices?
- Recommendations for how these trends can inform Bellabeat marketing strategy?

bellabeat

Our selected bellabeat product

Bellabeat app:

- Provides users with health data related to their activity, sleep, stress, menstrual cycle, and mindfulness habits.
- Helps users better understand their current habits and make healthy decisions.
- The app connects to their other line of smart wellness products.

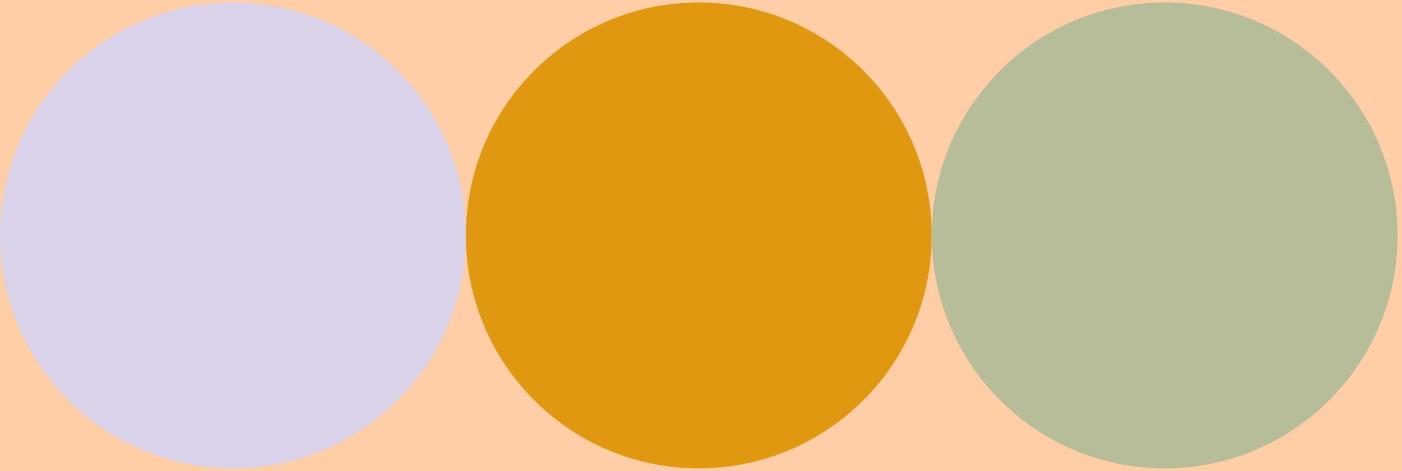


bellabeat

Selected data sources

- ***FitBit Fitness Tracker Data Kaggle***
- 29 total spreadsheets, but selected **6** datasets
- ***Timeframe***: March 12th, 2016 - May 12th, 2016
- Contains individual daily logs, from approximately different 35 users

bellabeat



Data cleaning and manipulation

bellabeat

Data cleaning and manipulation process

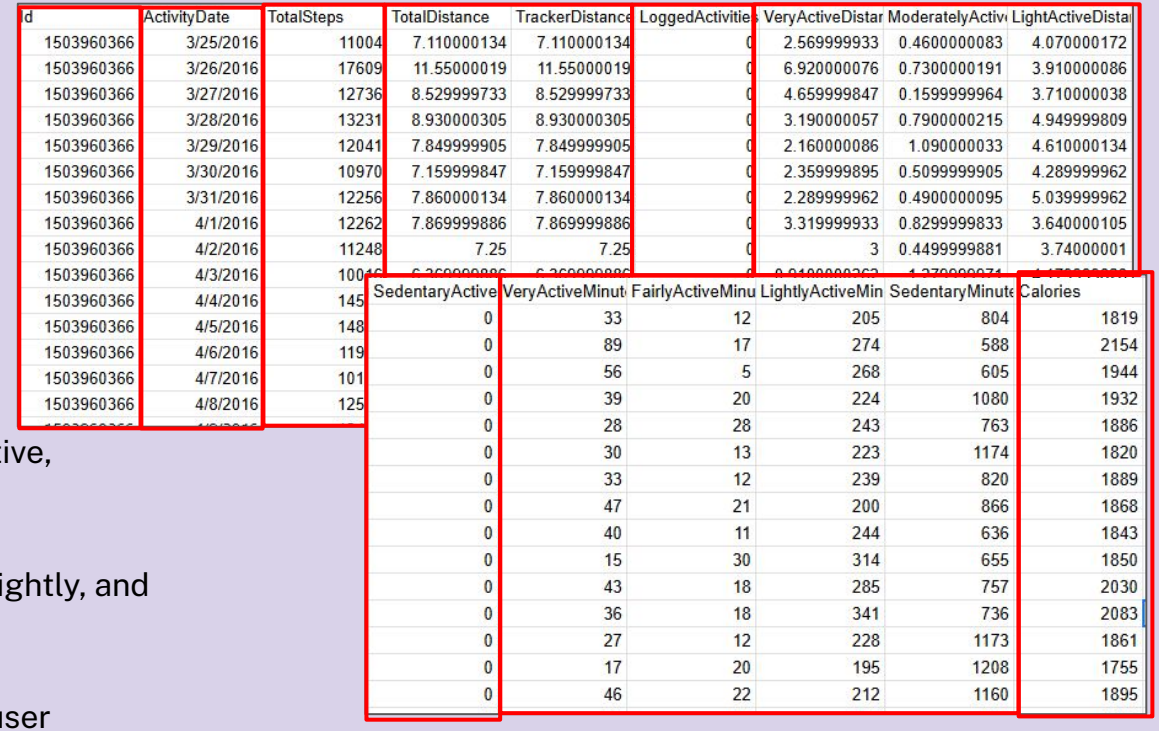
- Each group member was responsible for cleaning and manipulation one of the three datasets.
- ***Tools used:***
  - BigQuery *(attempted, but data upload was unsuccessful)*
  - Google Spreadsheets
  - SQL

bellabeat

Data cleaning and manipulation

Daily activity dataset:

- **Two datasets** based on timelines
  - March 12, 2016 - April 11, 2016
  - April 12, 2016 - May 12, 2016
- **16 total columns**
  - ***ID number*** *(11-digits)*
  - ***Date of activity***
  - ***Total daily steps***
  - ***Distances 6x*** (total, tracker, active, moderate, light, and sedentary)
  - ***Logged activities***
  - ***Activity time x4*** (active, fairly, lightly, and sedentary)
  - ***Calories***
- **1373 total rows**, daily activity log by user



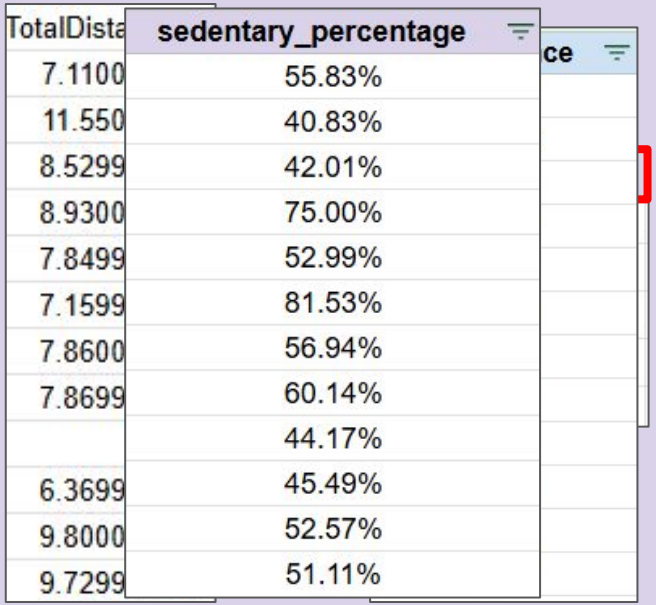
Id	ActivityDate	TotalSteps	TotalDistance	TrackerDistance	LoggedActivities	VeryActiveDistar	ModeratelyActiv	LightActiveDista	SedentaryActive	VeryActiveMinut	FairlyActiveMinu	LightlyActiveMin	SedentaryMinute	Calories
1503960366	3/25/2016	11004	7.110000134	7.110000134	0	2.569999933	0.4600000083	4.070000172	0	33	12	205	804	1819
1503960366	3/26/2016	17609	11.55000019	11.55000019	0	6.920000076	0.7300000191	3.910000086	0	89	17	274	588	2154
1503960366	3/27/2016	12736	8.529999733	8.529999733	0	4.659999847	0.1599999964	3.710000038	0	56	5	268	605	1944
1503960366	3/28/2016	13231	8.930000305	8.930000305	0	3.190000057	0.7900000215	4.949999809	0	39	20	224	1080	1932
1503960366	3/29/2016	12041	7.849999905	7.849999905	0	2.160000086	1.090000033	4.610000134	0	28	28	243	763	1886
1503960366	3/30/2016	10970	7.159999847	7.159999847	0	2.359999895	0.5099999905	4.289999962	0	30	13	223	1174	1820
1503960366	3/31/2016	12256	7.860000134	7.860000134	0	2.289999962	0.4900000095	5.039999962	0	33	12	239	820	1889
1503960366	4/1/2016	12262	7.869999886	7.869999886	0	3.319999933	0.8299999833	3.640000105	0	47	21	200	866	1868
1503960366	4/2/2016	11248	7.25	7.25	0	3	0.4499999881	3.74000001	0	40	11	244	636	1843
1503960366	4/3/2016	10040	6.369999886	6.369999886	0	0.9199999869	1.279999971	4.170000076	0	15	30	314	655	1850
1503960366	4/4/2016	145							0	43	18	285	757	2030
1503960366	4/5/2016	148							0	36	18	341	736	2083
1503960366	4/6/2016	119							0	27	12	228	1173	1861
1503960366	4/7/2016	101							0	17	20	195	1208	1755
1503960366	4/8/2016	125							0	46	22	212	1160	1895

bellabeat

Data cleaning and manipulation

Daily activity dataset:

- Merged **“3.12.2016–4.11.2016”** and **“4.12.2016–5.12.2016”** datasets
- **Color-coded columns** (original data in blue, calculations in purple)
- Applied **data filters** and **removed duplicates** from “4.12.2016.”
- **Reformatted values** (rounded decimals and percentages).
- **Added calculated columns**:
  - Activity_weekday using =TEXT()
  - Activity_category using =IF() to classify Active, Moderate, Light, and Sedentary levels by total steps ranges
  - Total_active_mins using =SUM()
  - active_percentage and sedentary_percentage using =DIVIDE(XX,1440)
  - Total_workout_mins combining active and fairly activity minutes using =SUM()
- Applied **conditional formatting** to highlight cells in red when Total_workout_mins < 60.



TotalDista	sedentary_percentage	ce
7.1100	55.83%	
11.550	40.83%	
8.5299	42.01%	
8.9300	75.00%	
7.8499	52.99%	
7.1599	81.53%	
7.8600	56.94%	
7.8699	60.14%	
	44.17%	
6.3699	45.49%	
9.8000	52.57%	
9.7299	51.11%	

Data Cleaning & Manipulation

Weight data set

37	***revised_weight_3.12***
38	*Change log weight*
39	Bolded column titles.
40	Filled column titles cells blue.
41	Rounded and displayed WeightKg, WeightPounds, and BMI to 2 decimal places using Format → Number → Number and the decimal place buttons.
42	Shade ID columns by person grey and white.
43	Hid Column E (Fat) — not needed for this case study.
44	Row 33 and 31 have been removed because their dates don't belong in this dataset.
45	
46	***revised_weight_4.12***
47	*Change log weight*
48	Bolded column titles.
49	Filled column titles cells blue.
50	Rounded and displayed WeightKg, WeightPounds, and BMI to 2 decimal places using Format → Number → Number and the decimal place buttons.
51	Shade ID columns by person grey and white.
52	Hid Column E (Fat) — not needed for this case study.
53	

Data Cleaning & Manipulation

Sleep data set

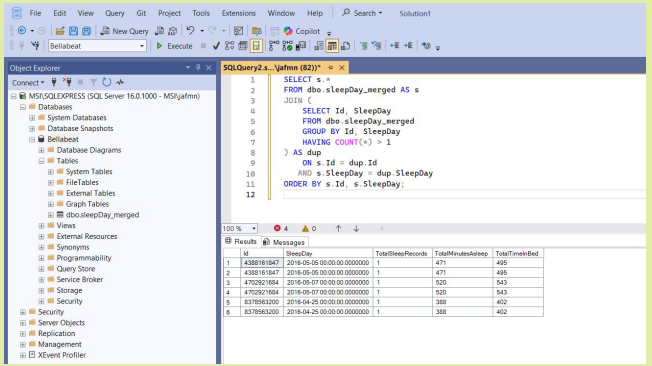
Objective:
Prepare the sleep dataset for accurate and meaningful analysis.

Steps Performed:

- Remove duplicates using SQL.
- Formatted date/time columns for consistency.
- Added Sleep Efficiency column
    - Formula: (Total Sleep Time ÷ Time in Bed) × 100

✅ Clean dataset ready for analysis.
✅ New *Sleep Efficiency* metric for deeper insights.

	A	B	C	D	E
1	Id	SleepDay	TotalSleepRecor	TotalMinutesAsle	TotalTimeInBed
2	1503960366	4/12/2016 12:00:	1	327	346
3	1503960366	4/13/2016 12:00:	2	384	407
4	1503960366	4/15/2016 12:00:	1	412	442
5	1503960366	4/16/2016 12:00:	2	340	367
6	1503960366	4/17/2016 12:00:	1	700	712
7	1503960366	4/19/2016 12:00:	1	304	320
8	1503960366	4/20/2016 12:00:	1	360	377
9	1503960366	4/21/2016 12:00:	1	325	364
10	1503960366	4/23/2016 12:00:	1	361	384
11	1503960366	4/24/2016 12:00:	1	430	449
12	1503960366	4/25/2016 12:00:	1	277	323



Id	SleepDay	SleepRecords	MinutesAsleep	TimeInBed	Sleep efficency
1503960366	4/12/2016	1	327	346	95
1503960366	4/13/2016	2	384	407	95
1503960366	4/15/2016	1	412	442	94
1503960366	4/16/2016	2	340	367	93
1503960366	4/17/2016	1	700	712	99
1503960366	4/19/2016	1	304	320	95
1503960366	4/20/2016	1	360	377	96
1503960366	4/21/2016	1	325	364	90
1503960366	4/23/2016	1	361	384	95
1503960366	4/24/2016	1	430	449	96

Data Analysis

Data analysis, visuals, and key findings

bellabeat

Data analysis and visualizations

- ***Tools used:***
  - Google sheets, for calculations
  - Tableau, for data visualizations

bellabeat

Data analysis

Q: Is there a difference in average total steps across weekdays?

Trends:

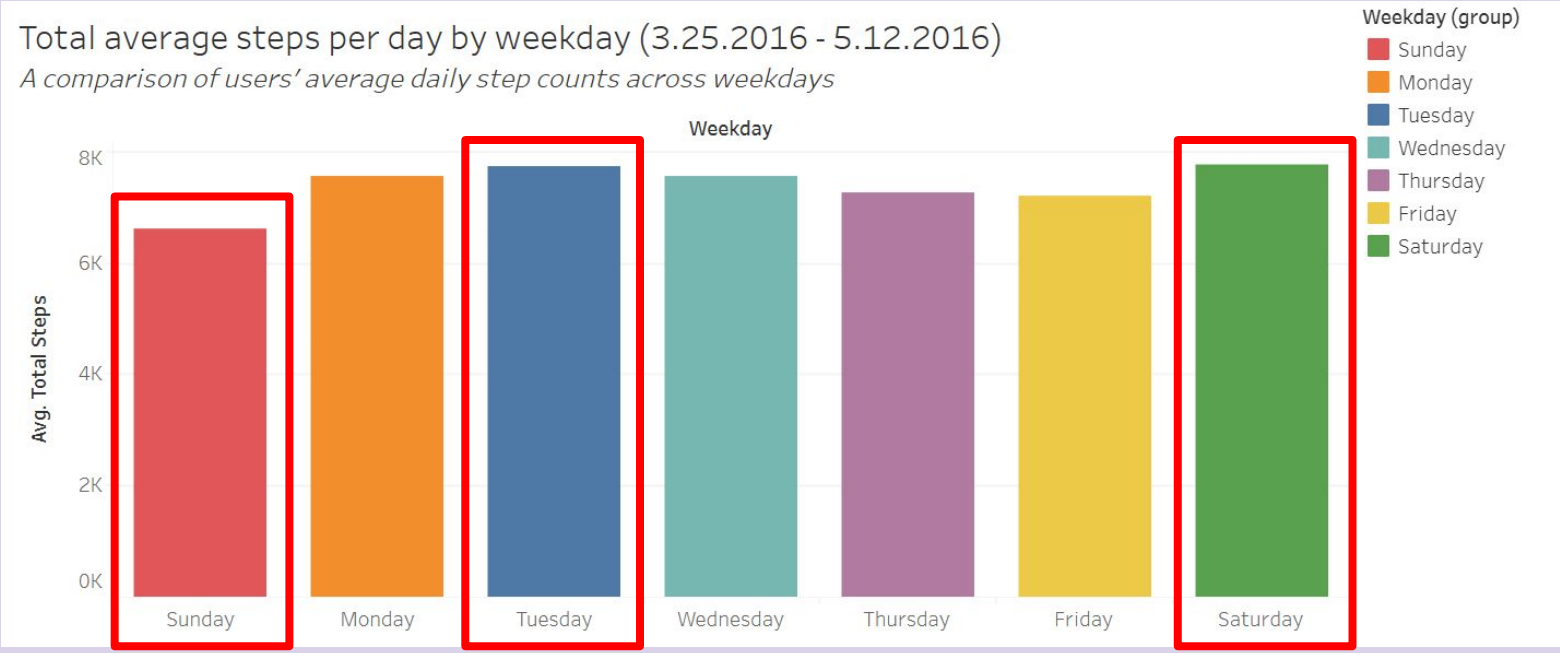
- Users average daily step count ranges between 6,600 - 7,720 steps.
  - This does ***NOT*** meet the recommended **8,000 - 10,000 steps** per day for adults
- Top **three** weekdays with **highest average steps:**
  1. ***Saturday*** - 7,725.27 steps
  2. ***Tuesday*** - 7,718.96 steps
  3. ***Wednesday*** - 7,547 steps
- Weekday with the **lowest average steps** is ***Sunday*** - 6,606.73 steps

Total average steps by weekday	
Sunday	6,606.73
Monday	7,541.32
Tuseday	7,718.96
Wednesday	7,547.58
Thursday	7,268.30
Friday	7,187.53
Saturday	7,752.27
Overall	**7,377.38**

Data analysis

Q: Is there a difference in average total steps across weekdays?

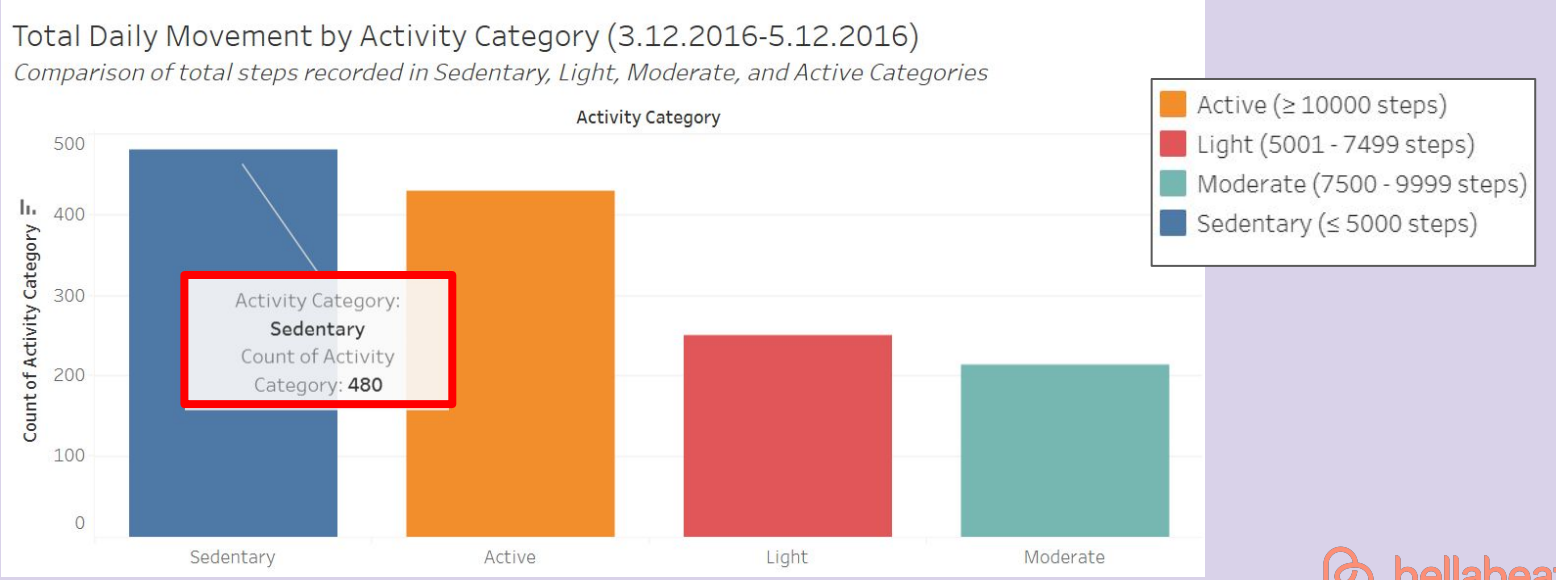
A wave like pattern throughout the week with two peaks on Tuesdays and Saturdays. Activity levels drop significantly on Sundays showing possible rest/recovery days.



Data analysis

Q: Are users spending most of their day being sedentary, lightly active, moderately active, or very active based on their total steps?

Most users spend their days either sedentary (34.96%) or active (31.25%), with fewer engaging in light or moderate activity levels.



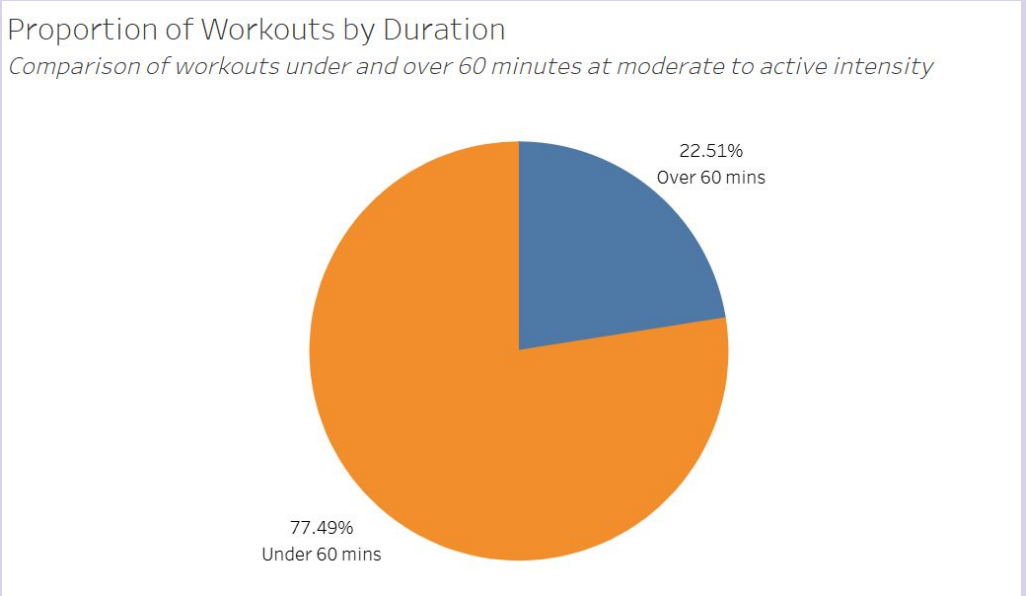
Data analysis

Q: How often do workouts (moderate to active intensity times) meet or exceed the 60-minute mark?

Number of workouts over and under 60 mins		
Over 60 mins	309	22.51%
Under 60 mins	1064	77.49%

Trends:

- 22.5% workout over 60 minutes, while the majority (77.5%) were under 60 minutes.
- Most users do not meet the recommended 60 minutes of daily exercise.



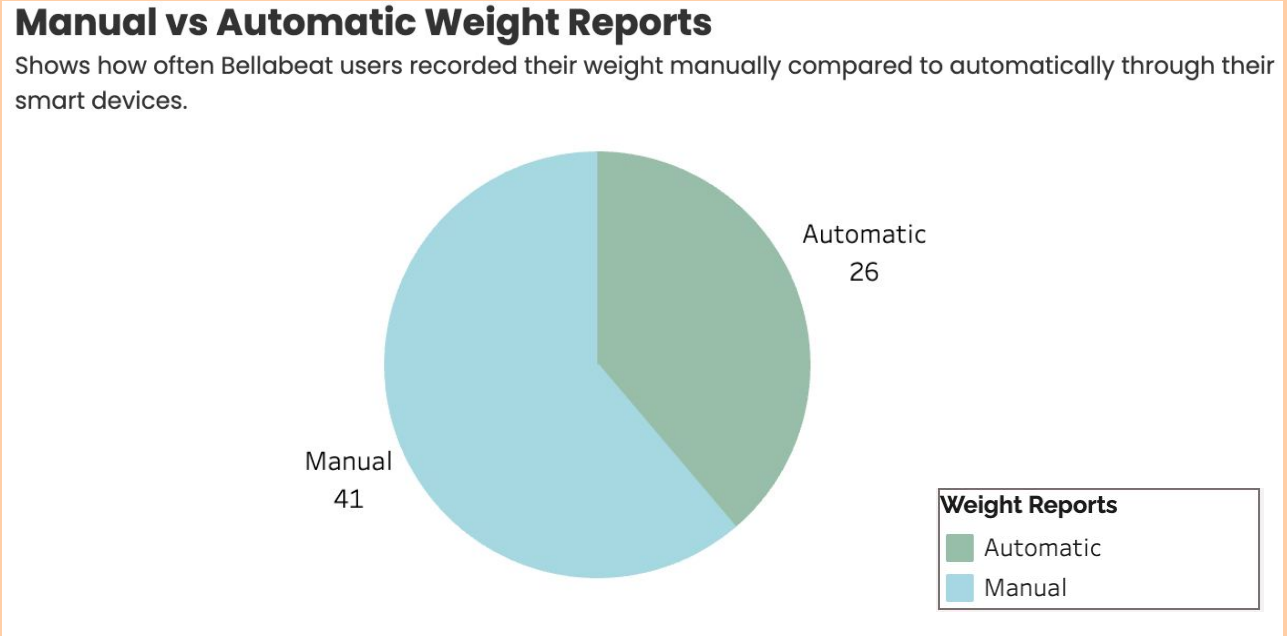
Data Analysis

Q:

What percentage of users log their weight manually compared to those who use automatic Tracking?

Trends:

- *Many users still log weight manually.*
- *Automatic device syncing is less common.*

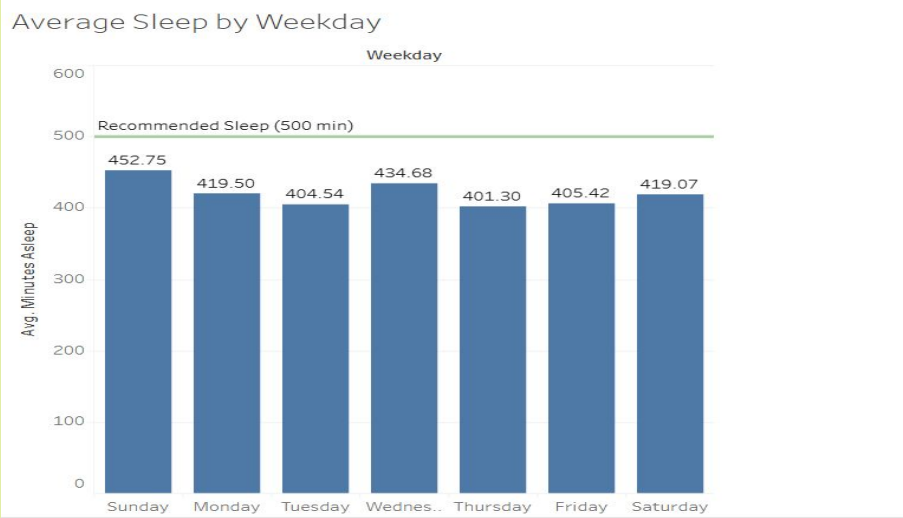


Data Analysis

Q: How does sleep duration vary across weekdays?

Trends:

- Users sleep slightly longer on weekends than on weekdays they may be catching up on rest after busy weekdays.
- Average sleep is below 500 minutes, which is less than the recommended amount,showing insufficient total rest.
- Users may not be getting enough consistent rest throughout the week ,sleep patterns are irregular.
- Even though some sleep efficiency metrics look okay, users aren’t getting enough total rest, efficiency alone doesn’t guarantee sufficient sleep.

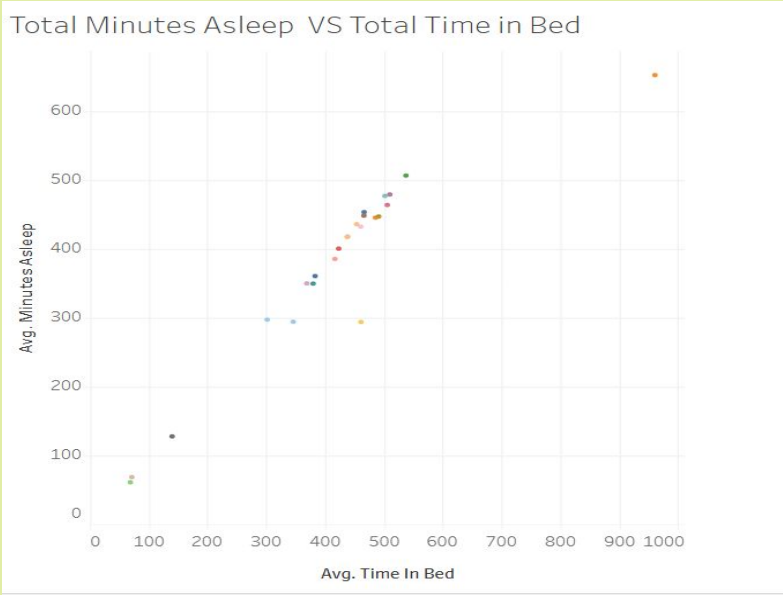


Data Analysis

Q:What's the relationship between time in bed and time asleep?

Trends:

- Users generally spend more time in bed than they actually sleep, showing a gap between time in bed and total rest.
- There's a roughly linear trend: more time in bed usually leads to more sleep, though not perfectly proportional.
- Some users have good sleep efficiency yet still don't reach the recommended total sleep time.



Key Findings

Q: How people are already using their bellabeat smart devices (bellabeat app)?

- Most users prefer tracking their weight manually.
- Most users are not highly active and live sedentary lifestyles. Many do not meet recommended physical activity standards.
- Weekly activities peak on Tuesdays and Saturdays, with Sundays being lowest day.
- Weekend sleep duration is slightly higher than weekdays, yet still below the recommended amount
- Many users spend more time in bed awake than actually sleeping, leading to lower overall rest quality.
- While most users show good sleep efficiency, their total sleep time remains below the recommended level suggesting they aren’t getting enough rest overall.

bellabeat

Limitations

- There were plenty of datasets, but only a few users, so the results may not represent all bellabeat users.
- Timeframe of data was limited to two months.
- Limited demographic information, dataset did not include age,gender or lifestyle which could affect patterns.
- Potential inconsistencies, users might have inconsistently worn devices or recorded data inaccurately,affecting reliability.

bellabeat

Recommendations

Q: How can these user trends inform Bellabeat marketing strategy? How can consumer data reveal new opportunities for Bellabeat growth?

- Bellabeat can support users' health by adding personalized reminders, bedtime alerts for better sleep and movement prompts to reduce inactivity.
- Provide weekly progress summaries for sleep, activity, and weight to keep users motivated and aware of their habits.
- Combine automatic tracking for convenience with small rewards for manual logging to engage all users.
- Introduce badges, streaks, and friendly challenges to make staying active more fun and consistent.
- Lastly, include wellness tips and recovery messages to promote balance and turn Bellabeat into a true daily wellness companion.

Takeaways

- Users are not getting enough sleep, even when time in bed seems sufficient an opportunity to improve sleep quality.
- Most users live sedentary lifestyles, with activity spikes on certain days but overall low consistency in being active.
- Tracking habits vary, with some preferring manual input and others automatic tracking, showing the need for personalized engagement.
- Targeted interventions like reminders, progress tracking, rewards, and challenges could encourage healthier sleep and activity behaviors.

bellabeat

References

1. *https://www.kaggle.com/datasets/arashnic/fitbit*
2. https://www.cdc.gov/physical-activity/php/guidelines-recommendations/index.html
3. https://www.cdc.gov/healthy-weight-growth/physical-activity/getting-started.html

bellabeat

THANK YOU!

Questions?

bellabeat