Ask

Business Task

Analyze FitBit Fitness Tracker data to understand how consumers use their smart devices and create marketing strategies for Bellabeat products based on the trends determined.

Stakeholders

- Urška Sršen: Bellabeat's cofounder and Chief Creative Officer
- Sando Mur: Mathematician, Bellabeat's cofounder and key member of the Bellabeat executive team
- Bellabeat marketing analytics team: group of data analysts working to guide Bellabeat's marketing strategy.

Prepare

Dataset Information

The dataset used for this case study is the FitBit Fitness Tracker Data (CC0: Public Domain). This was stored in Kaggle and made available from Mobius. The data has 18 CSV documents.

The dataset includes data from 33 FitBit users who consented to the submission of personal tracker data. The data collected is between the dates of 4/12/16-5/12/16. I decided to focus on the daily and hourly data mentioned in the table below.

Sheets	Data (Columns)	Dates
DailyActivity (33 users)	Activity Date, Total Steps, Total Distance, Tracker Distance, Logged activities, Distance/Minutes of Activity by Level, Calories	4/12/16- 5/12/16
HourlyCalories (33 users)	Date, Hour, Calories	4/12/16-5/12/16
HourlySteps (33 users)	Date, Hour, Total Steps	4/12/16-5/12/16
SleepDay (24 users)	Date, Total Sleep Recorded, Total Minutes Asleep, Total Time in Bed	4/12/16-5/12/16

Dataset Limitations

After viewing the data, there are a few limitations which may affect the analysis and conclusions. Firstly, the sample size is small as data was collected from only 33 users. This can cause an inaccurate representation of the overall population. Also, the data was collected back in 2016. This may not reflect current conditions possibly leading to inaccurate conclusions. Lastly, the time frame for data collection was short as it was only for 31 days. Daily activity and sleep may vary each month, season etc so 31 days would not be able to reflect that. A longer time frame would allow a more comprehensive analysis of changes and trends.

Process

Documentation of the Cleaning/Manipulation of Data Using Excel:

- Used the “Remove Duplicates” tool to eliminate duplicate entries from each of the excel sheets. In sleepDay_merged, 3 duplicates were found and removed.
- Another tool used to clean the data was the formatting of dates. To ensure we have a consistent date format, the format MM/DD/YYYY was followed. To ensure we have a consistent time format, we used military time.
- Separated date and hour under Activity Date and placed hours under new column; Activity Hour (hourlySteps_merged & hourlycalories_merged).
- Created another column under each sheet to show the day of the week for each observation (column titled DayoftheWeek).
- “Trim whitespace” was also used to remove extra spaces in a text string. After using this tool, no extra spaces were found in the data. Therefore, no cells needed trimming.

Analyze & Share

Tracking/Device Usage Observations

Daily Activity

- 21/33- 63.6% of participants tracked their activity everyday
- The most observations of daily activity is on Tuesday while the least is on Monday. Friday-Monday has the least observations while the middle of the week (Tuesday-Thursday) has the most observations.

Sleep

- 3/24- 12.5% of participants tracked their sleep everyday
- 12/24- 50% of participants tracked their sleep for less than 20 days

Daily Average Observations

Daily Activity

- Based on the data, the average number of steps is 7638, average distance is 5.49 km and average calories is 2304.
- The day with the highest average total steps and distance is Saturday with 8153 steps and 5.85 km, respectively, while the lowest is on Sunday with an average of 6933 steps and 5.03 km.
- The day with the highest average calories is Tuesday with 2356 calories while the lowest is Thursday with 2200 calories.

Sleep

- The day with the highest average minutes asleep is Sunday with 453 minutes while the lowest is Thursday with 401 minutes.
- The day with the highest average time in bed is Sunday with 504 minutes while the lowest is Thursday with 435 minutes.

Hourly Average Observations

- The hour with the lowest average calories and steps is 03:00:00 with 67.5 calories and 6.4 steps and the hour with the highest average calories and steps is 18:00:00 with 123.5 calories and 599.2 steps.

Act

Bellabeat Marketing Strategies/Recommendations

- After noticing a significant difference between the days with the highest and lowest average steps, I'd recommend Bellabeat allow users to set alerts throughout the day/week to ensure expectations are fulfilled (e.g. if 6000 steps aren't complete by 6pm, send alert)
- Start a rewards program based on device usage and daily activity so users can get deals and discounts on the Bellabeat membership or other Bellabeat products.
- Allow users to keep track of friends data to help one another stay motivated.

- Allow users to set daily goals and receive notifications/awards once accomplished.
- After analyzing the data, I noticed users were less likely to track their sleep compared to their daily activity. On average, users were also not receiving the recommended 7 hours of sleep. I would allow users to set a daily reminder in the evening to keep their watch on to track sleep. I would also emphasize the importance of receiving the recommended amount as sleep is correlated to physical and mental wellbeing.
- Send daily fitness/motivational quotes to users to encourage daily activity and push users to stay focused on their goals.