BellaBeat Case Study Analysis

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Business Task

To unlock new growth Opportunities by using smart device data to gain insights into usage pattern and design marketing strategy around it.

Bellabeat, a high-tech manufacturer of health-focused products for women. Bellabeat is a successful small company, but they have the potential to become a larger player in the global smart device market. Urška Sršen, cofounder and Chief Creative Officer of Bellabeat, believes that analyzing smart device fitness data could help unlock new growth opportunities for the company. We have been asked to focus on one of Bellabeat's products and analyze smart device data to gain insight into how consumers are using their smart devices. The insights discovered will then help guide marketing strategy for the company. we will be presenting our analysis to the Bellabeat executive team along with our high-level recommendations for Bellabeat's marketing strategy.

Information about Data

In this analysis we will be using the data from FitBit Fitness Tracker Data (CC0: Public Domain, dataset made available through Mobius)

- This Kaggle data set contains personal fitness tracker from thirty fitbit users.
- These Fitbit users consented to the submission of personal tracker data, including minute-level output for physical activity, heart rate, and sleep monitoring.
- It includes information about daily activity, steps, and heart rate that can be used to explore users' habits.

Data Set Limitations

- Only 30 user data is available. The central limit theorem general rule of n≥30 applies and we can use the t test for statstic reference. However, a larger sample size is preferred for the analysis.
- Upon further investigation with n_distinct() to check for unique user Id, the set has 33 user data from daily activity, 24 from sleep and only 8 from weight. There are 3 extra users and some users did not record their data for tracking daily activity and sleep.
- For the 8 user data for weight, 5 users manually entered their weight and 3 recorded via a connected wifi device (eg: wifi scale).
- Most data is recorded from Monday to Thursday, which may not be comprehensive enough to form an accurate analysis.

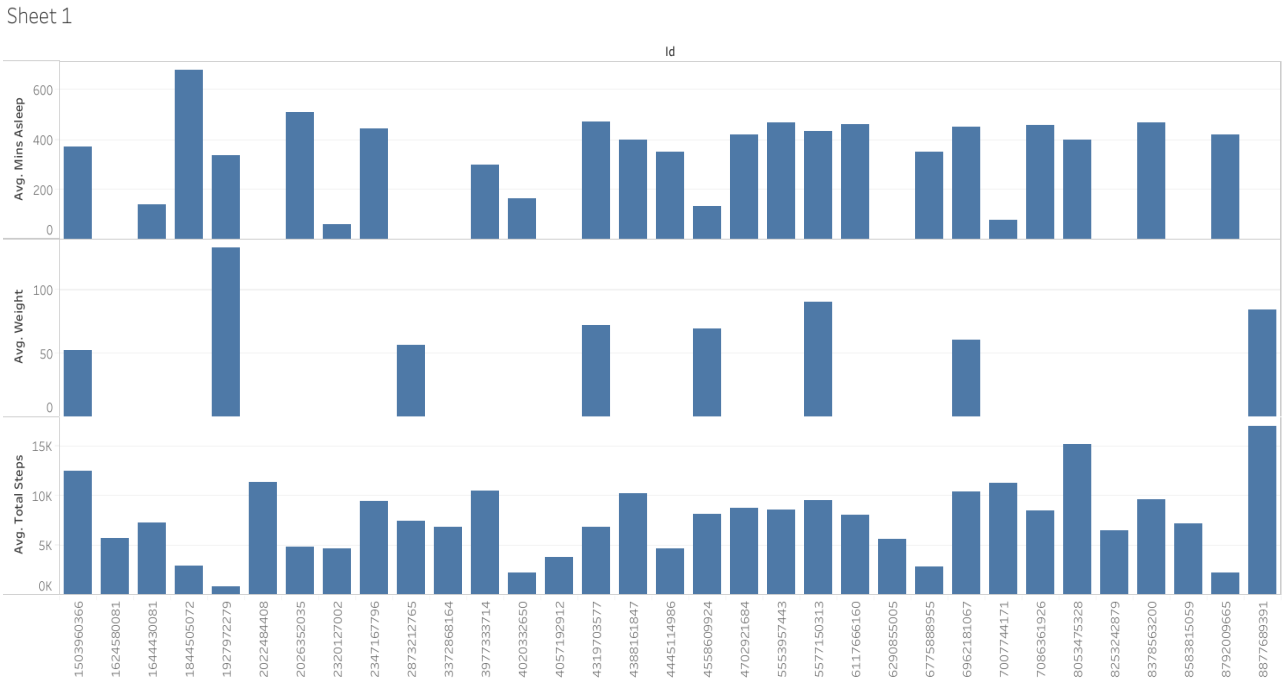
Data cleaning and manipulation process steps

- Downloaded data from site and stored it into working directory.
- Operations performed on each file are as follows:
- Check for duplicates.
- Check how many customers updated the data.
- Check if the sample size is acceptable for analysis.
- Check if the column name are as per the naming conventions and consistent across all the files.
- Check if all the dates are in one format, if not convert them into one.
- In dailyActivity_merged.csv added two columns. First is “active_minutes” which contain sum of very_active_mins, fairly_active_mins and lightly_active_mins. Second is days_of_week which contain the day of week on which the activity has been carried out.
- Hide unnecessary columns.

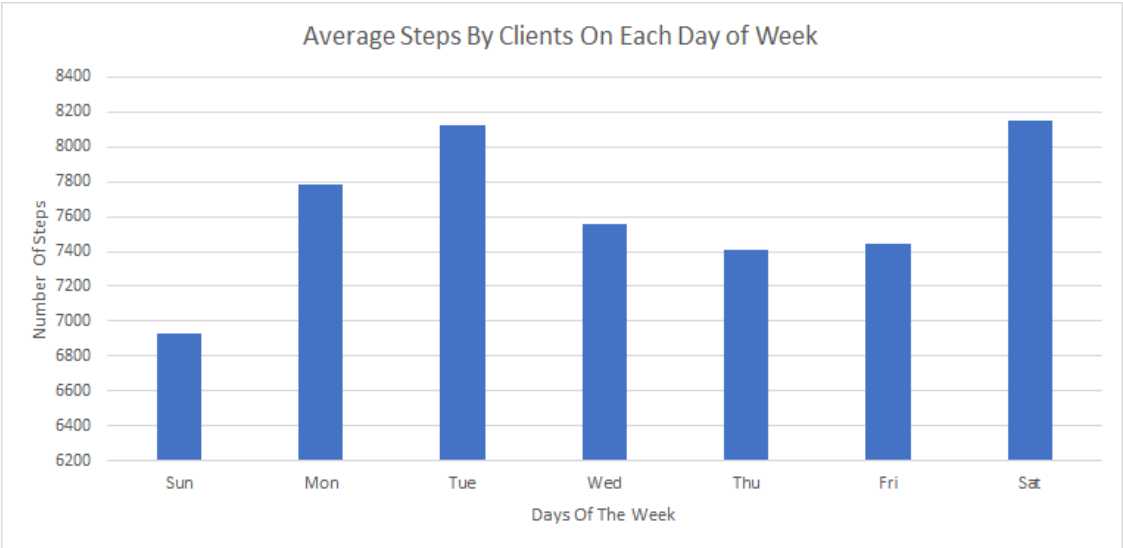
Summary of analysis

Post preliminary analysis following things has be observed:

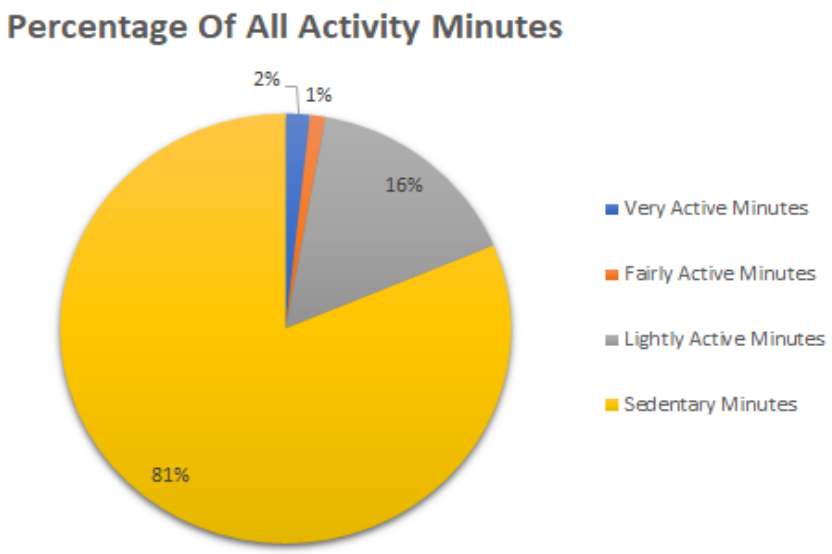
- Upon checking for unique user Id, the set has 33 user data from daily activity, 24 from sleep and only 8 from weight. There are 3 extra users and some users did not record their data for tracking daily activity and sleep.



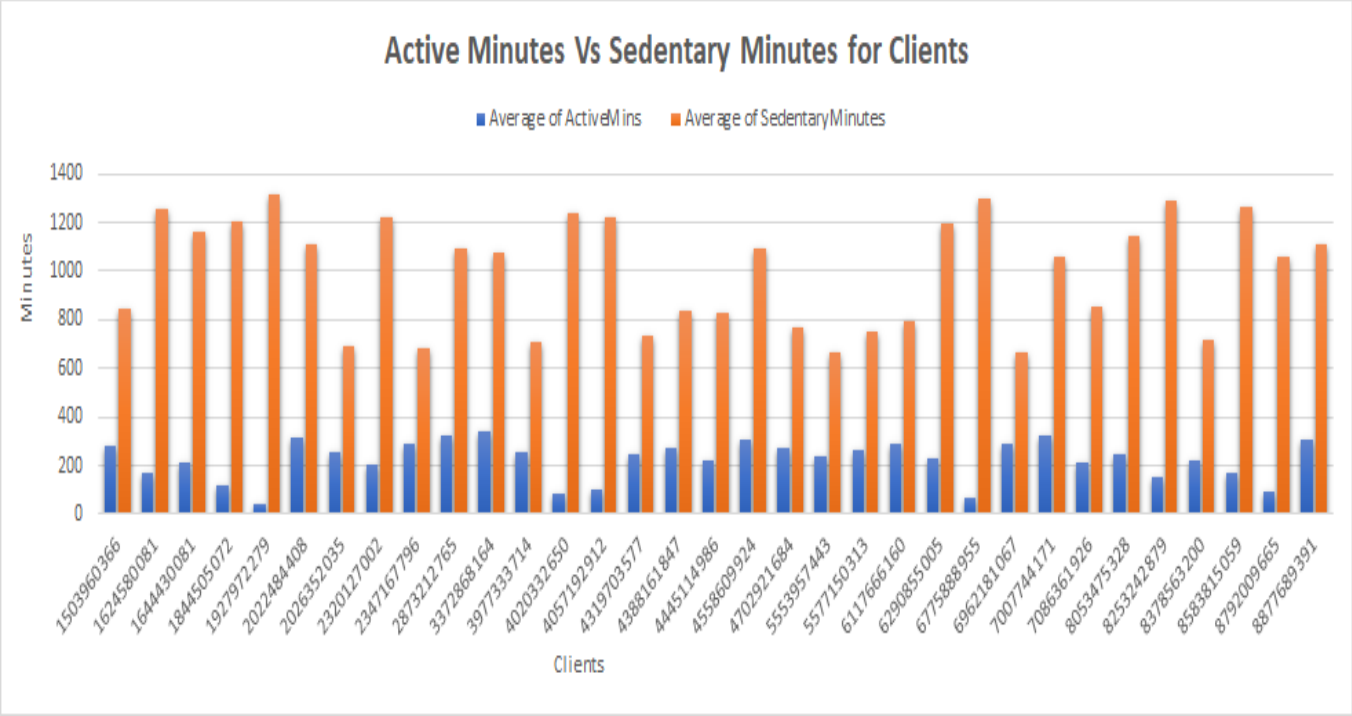
- From daily activity of users it is found that they tends to take more steps on Tuesdays and Saturdays.



- In entire day users time spent being sedentary is around 81% and being active is around 19%.



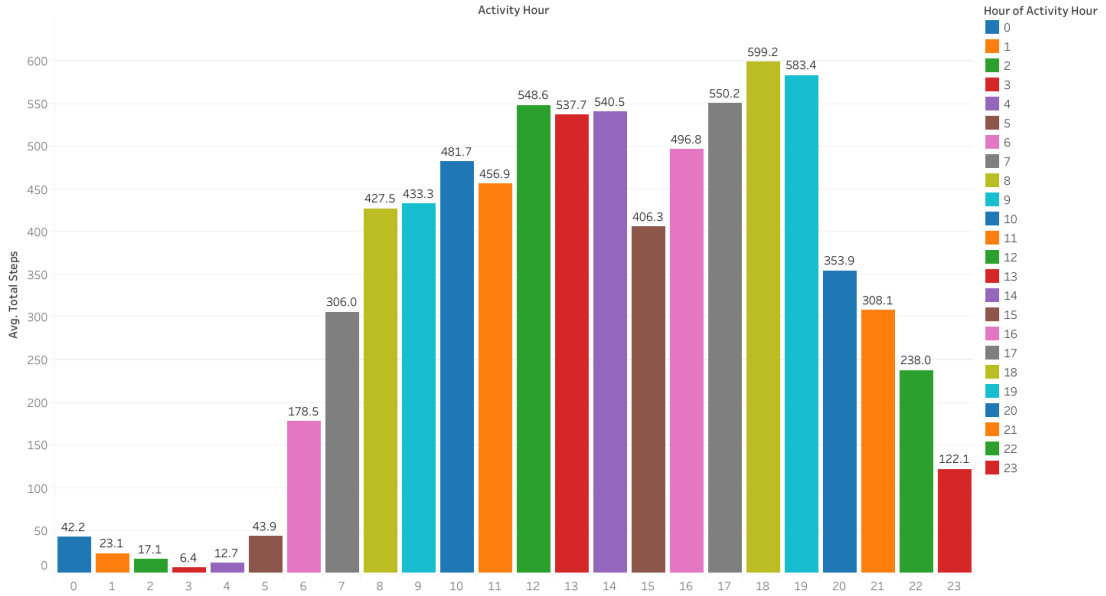
- All the users spent most of their time from daily activity in sedentary minute.



The American Heart Association and World Health Organization recommend at least 150 minutes of moderate-intensity activity or 75 minutes of vigorous activity, or a combination of both, each week. That means it needs an daily goal of 21.4 minutes of FairlyActiveMinutes or 10.7 minutes of VeryActiveMinutes.

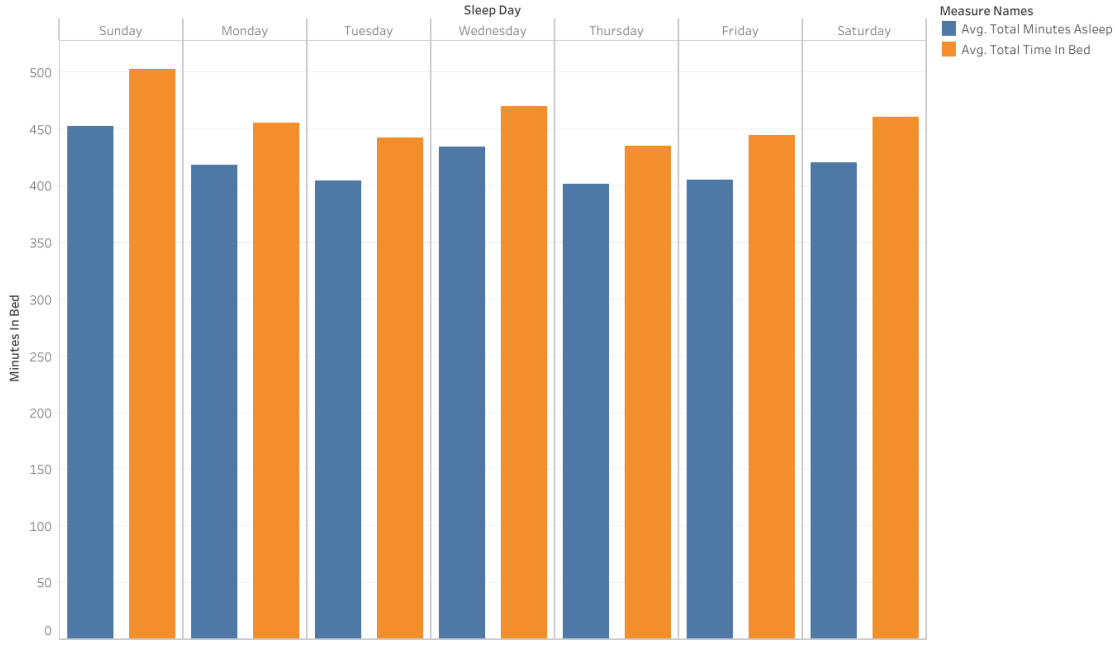
- Users take more steps around 12PM till 2PM and 5PM till 7PM during entire day.

Average Total Steps During Entire 24Hours



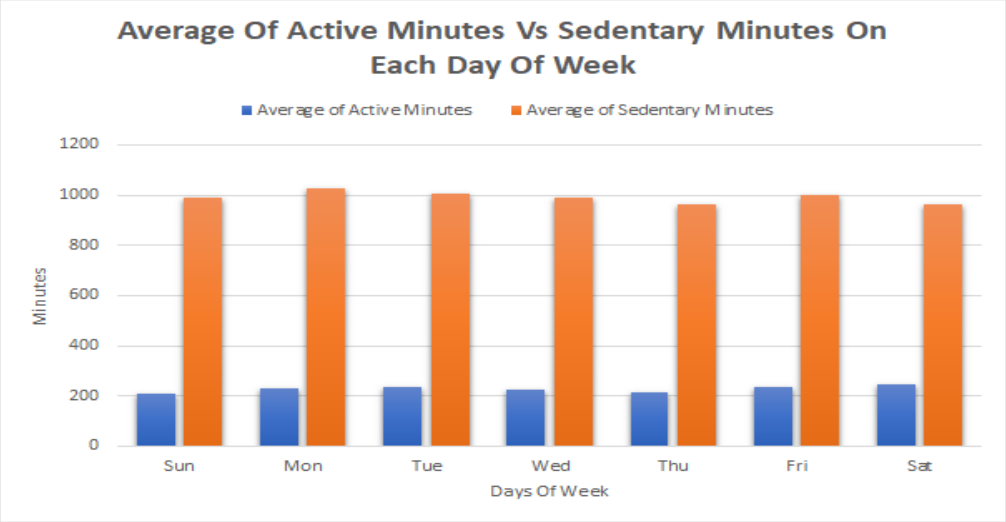
- User spend more time in bed awake than being asleep.

Comparison Between Average Minutes in Bed and Average Minutes Asleep



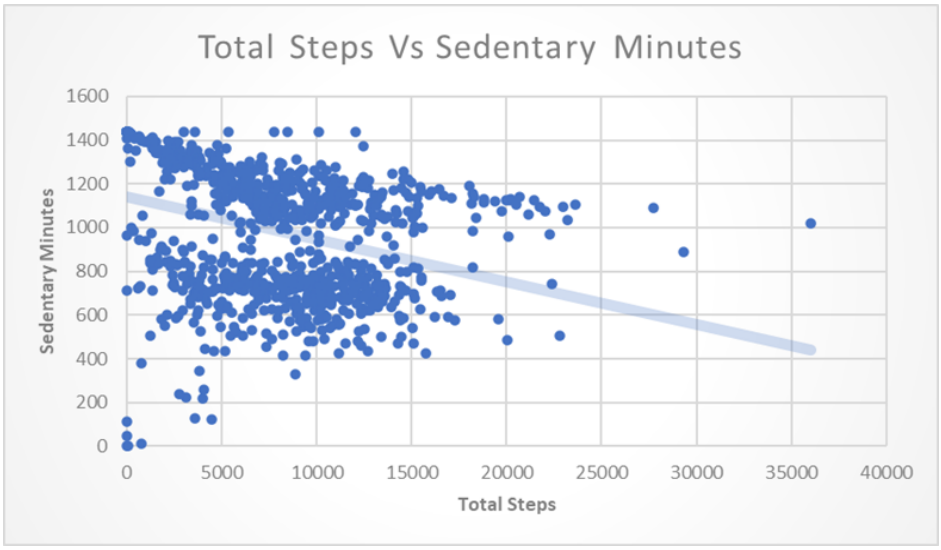
Supporting Visualization and Key Findings

1) Users spend most of their daily activity in Sedentary Minutes.



From above graph is it evident that users have alot of sedentary minutes which can be converted into active minutes to meet the recommended active minutes set up by The American Heart Association and World Health Organization.

2) As Total Steps increases Sedentary minutes decreases while when Sedentary minutes increases Total Steps decreases.



Hence Total Steps and Sedentary Minutes are inversely proportional to each other. Which means users need to take more steps to get active and minimize health risks.

Recommendations based on Analysis

Obtain more data for an accurate analysis, encouraging users to use a wifi-connected scale instead of manual weight entries.

Educational healthy style campaign encourages users to have short active exercises during the week, longer during the weekends, especially on Sunday where we see the lowest steps and most sedentary minutes.

Educational healthy style campaign can pair with a point-award incentive system. Users completing the whole week's exercise will receive Bellabeat points on products/memberships.

The product, such as Leaf wellness tracker, can beat or vibrate after a prolonged period of sedentary minutes, signaling the user it's time to get active! Similarly, it can also remind the user it's time to sleep after sensing a prolonged awake time in bed.