

## Google Data Analytic Capstone Case Study

# Data Analysis on Consumers' Trend in Wellness Products

Jiqiong (Janet) Tang

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## Intro

First, I'd like to thank Coursera for the wonderful courses, and I completed the case study with the guidance. Also, I'd like to add the reference link where I got my datasets to do the analysis.

To briefly introduce the case, I'm supposed to be the **entry-level data analyst at Bellabeat**, a high-tech manufacturer of health-focused products for women. I 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, which could help guide marketing strategies.

## Ask: Business Tasks

An analysis of Bellabeat's available consumer data would reveal more opportunities for growth. The marketing analytics team would like high-level recommendations for marketing strategies based on the analysis of consumers' current smart device usage and trends.

Given the facts, the business task is answering the followed questions:

- What are some trends in smart device usage?
- How could these trends apply to Bellabeat customers?
- How could these trends help influence Bellabeat marketing strategy

As the data analyst, I defined my task as **analyzing the user pattern of smart devices** and gaining insights into **oriented marketing strategies**.

# Prepare & Process: Collect, Sort and Format Datasets

The data is a public Kaggle dataset from Fitbit Fitness Tracker Data (CC0: Public Domain, dataset made available through Mobius), which contains thirty Fitbit users' personal tracker data, including minute-level output for physical activity, heart rate, and sleep monitoring.

For this analysis, I am going to focus on the daily and hourly rather than minute-level timeframe to generate the high-level users' habits. Among all features, physical activities including distance, intensity and calories, and sleep data related to length and quality are my priority to do my analysis.

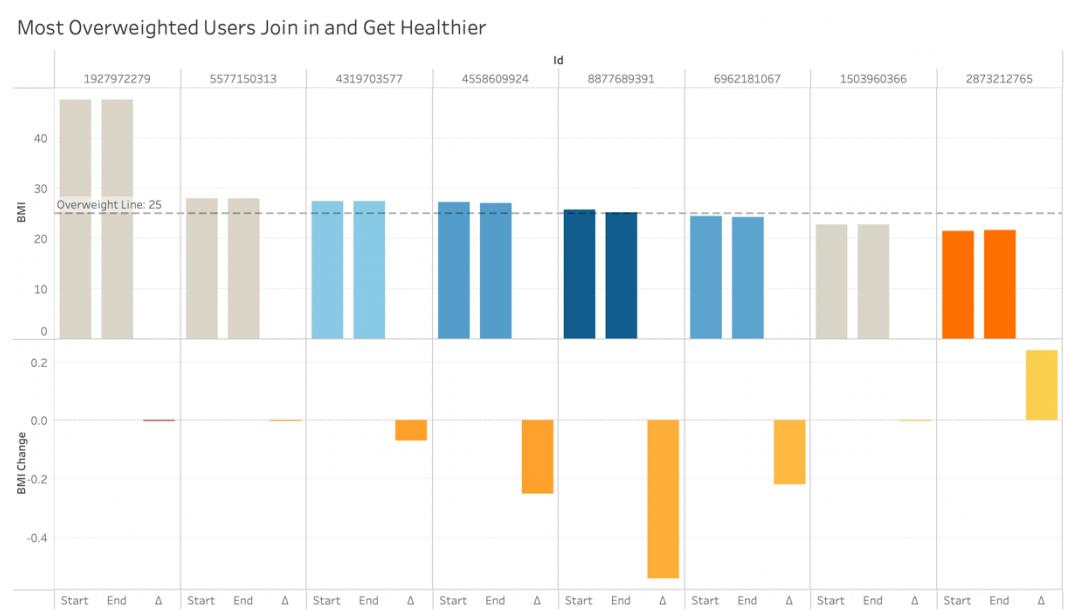
There are totally 18 tables, among which I'll keep the relevant tables and merge some tables. Also, I'll transform the data type to do further analysis efficiently.

'Weight log Info', 'Daily Activity Merged', 'Hourly Activity Merged', 'Sleep Day Merged', 'Minute Sleep Merged' are five tables that I'll use to code on and do analysis.

The codes of MySQL are attached in another executive file and the visualizations through Tableau are inserted in the report.

## Analyze: Find the Trend and Relationship

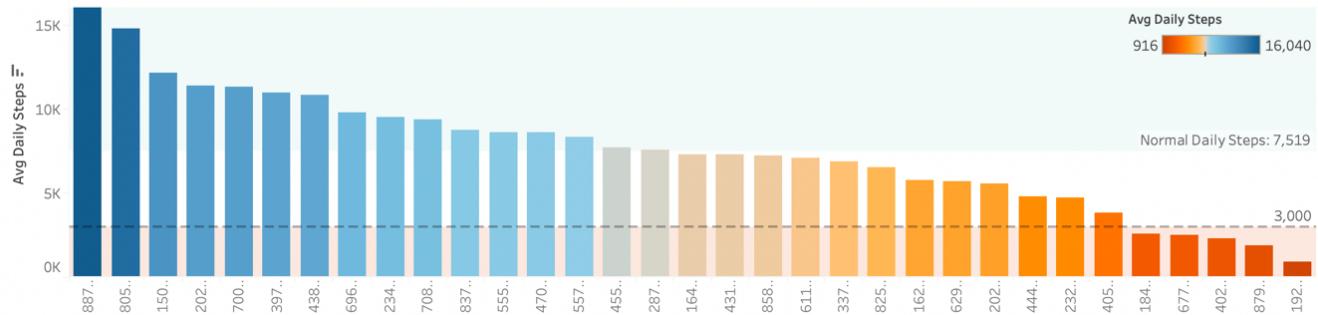
Looking at the whole datasets, the data totally contains 33 users and 31 tracking days.



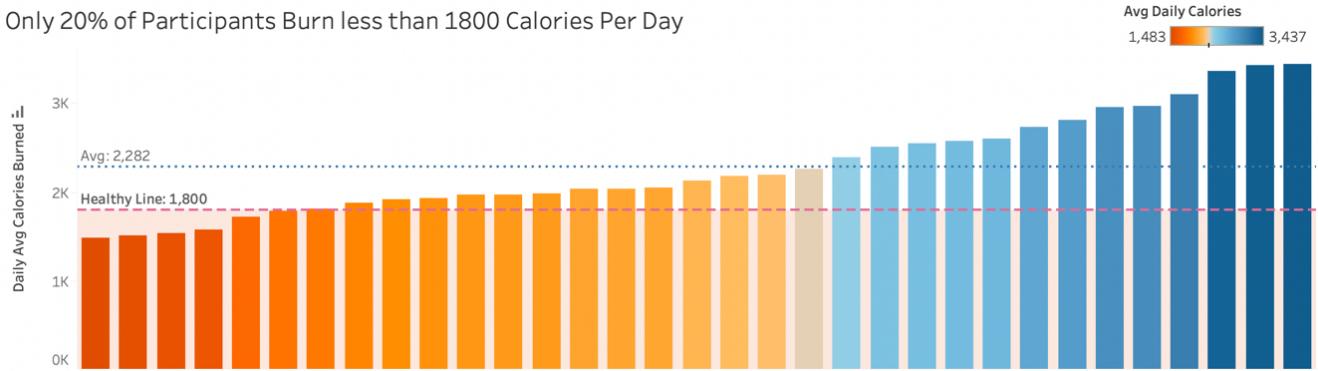
In terms of the weight information, as shown in the picture, there are 8 records with an average BMI over 27, which represents overweighted, and most users lose their weights within one month.

Next, I focus on the daily activities to analyze the trend of workout and relationships between steps, intensity or distance and calories relating to weight.

Half of Participants Walk over 7000 Steps Per Day



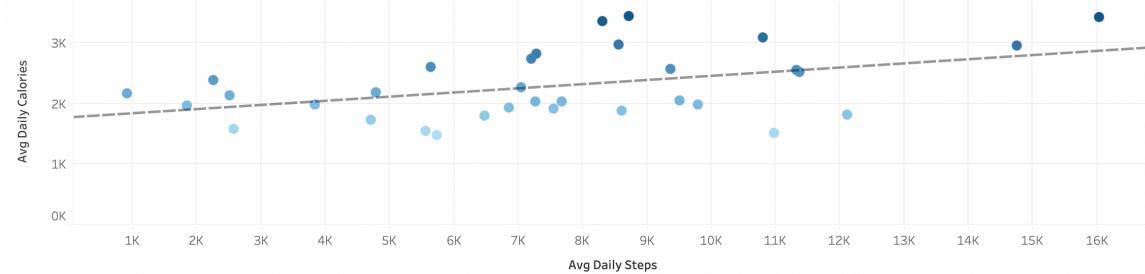
Only 20% of Participants Burn less than 1800 Calories Per Day



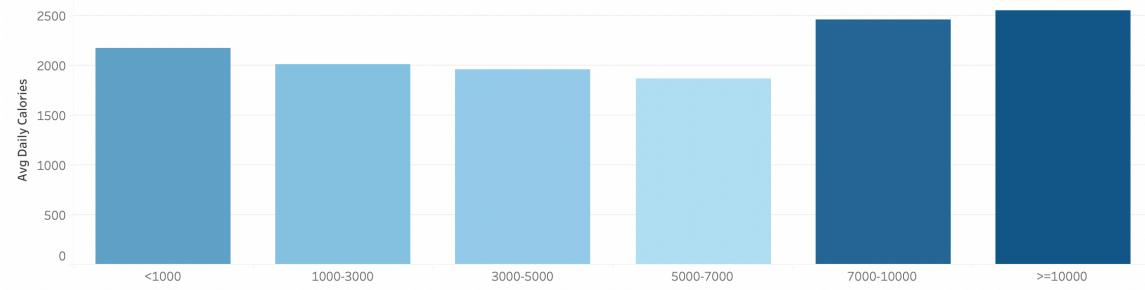
Most users walk over 7000 daily steps while a small percentage of users walk under 3000 steps per day. Also, 18 users walk every day, and 5 users seldom walk within one tracking month. Most users consume over 1800 calories per day above the healthy line.

It seems that users take care of their weight and keep healthy workout habits. So, I'd like to analyze the impactors influencing the calories burned, in another word, weight lost.

### More Steps Consume More Calories

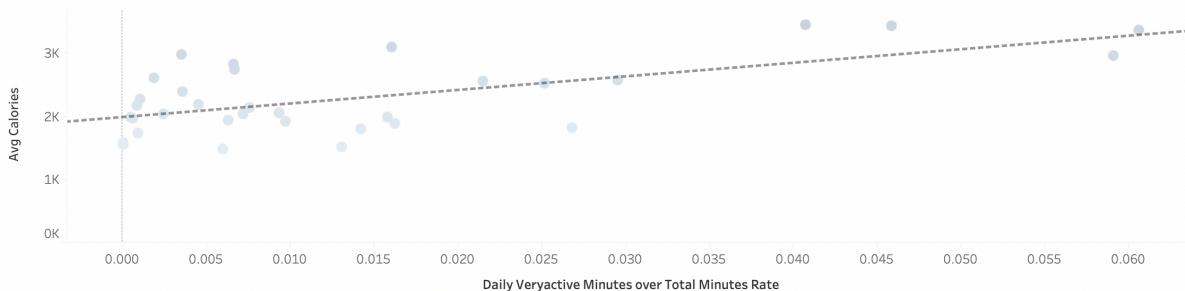


Avgsteps Level

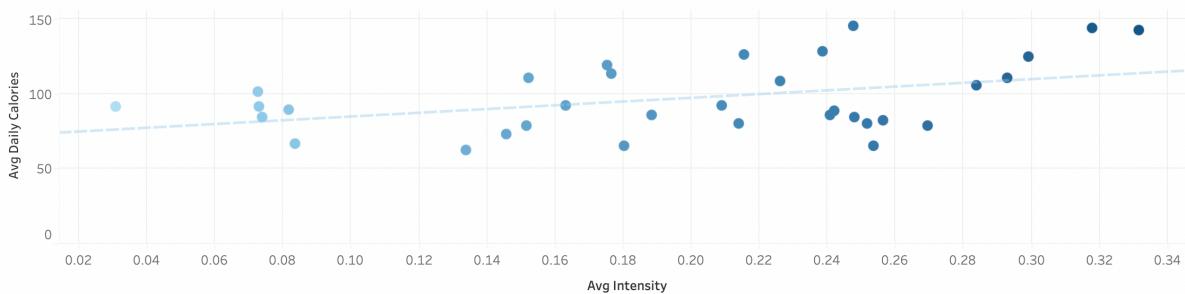


Looking at the average daily steps and average daily calories of 33 users, there is a positive relationship between physical steps and calories, but it is interesting that the users who walk less than 1000 steps per day consume higher calories than those who walk 1000-7000 steps. One reasonable explanation may be that the speed rather than the total steps impacts more on the calories burned.

### Positive Relationship between Daily VeryActive Minutes Rate and Calories



### Positive Relationship between Intensity and Calories Burned



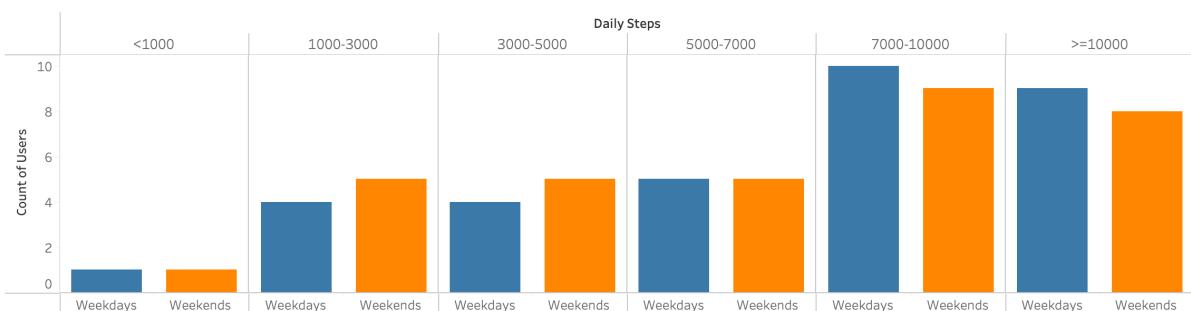
I am also interested in the relationships between intensity and calories to see whether users focusing on high-level activities consume more calories. On average, the more average intensity, the more average daily calories burned. Here comes the point for marketing that **generating intensive and powerful exercise plans** benefits overweighted users to lose weight.

In terms of the date into weekdays/weekends and into hours, I obtain some findings about the timeslot of users on smart devices.

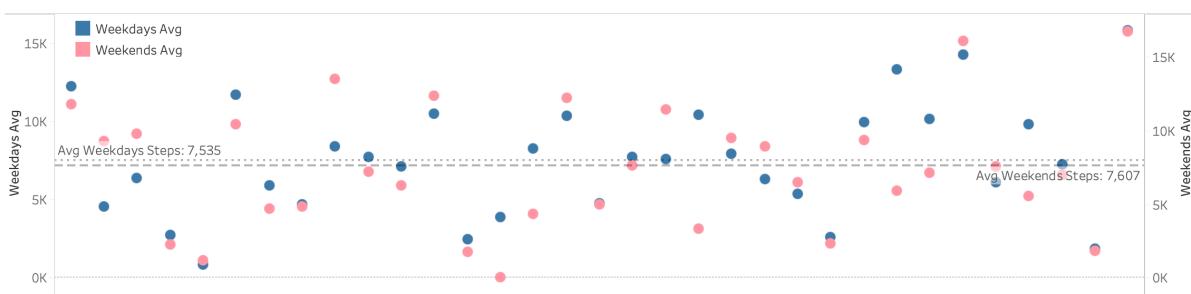
Most Users Walk in the Afternoon between 10AM and 7PM



Most Users Walk More on Weekdays than Weekends



Each User's Avg Daily Steps

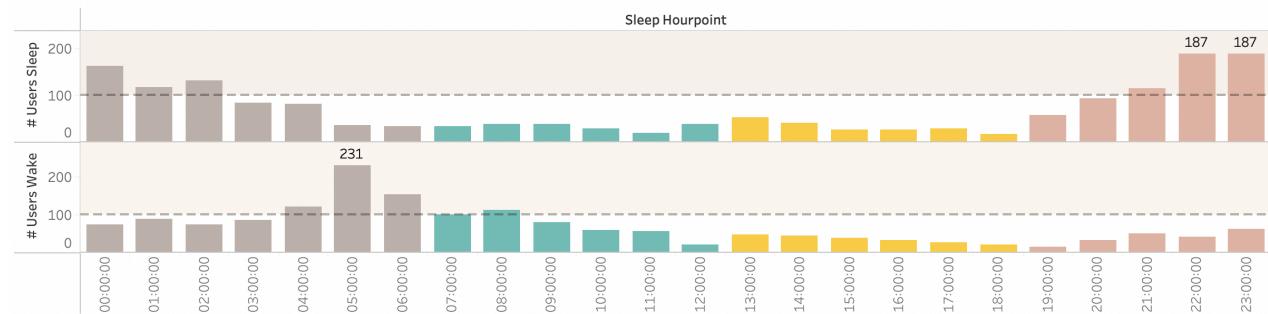


In terms of hourly data, on average, users walk more in the afternoon and morning, especially between 5-7pm which is the off-duty time. Also, to divide the daily data into weekdays and weekends, it is interesting that most users walk more on weekdays than weekends. The reasons could be that most users walk to workplace, or they consider weekends as breaks.

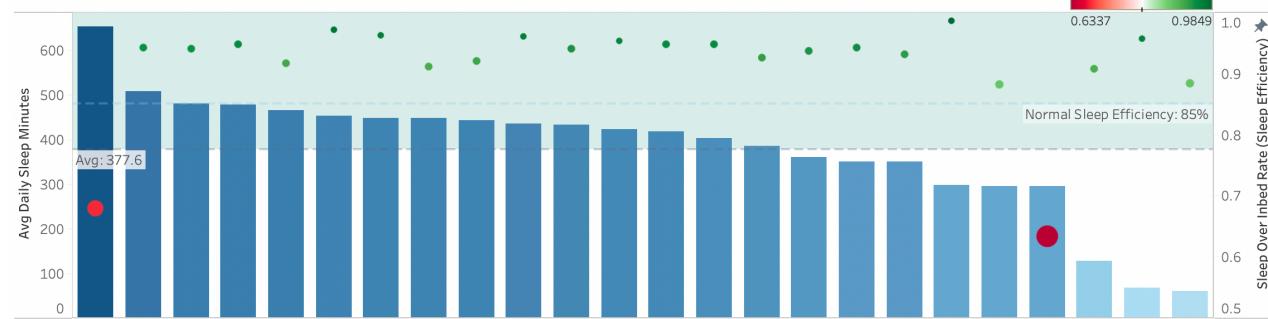
Given the facts, the idea to **push some notifications during weekdays afternoon** could enhance the product performance.

Next, to analyze the sleep habits and quality of 33 users.

Most Frequently Sleep at 22PM-12AM and Wake up at 5AM



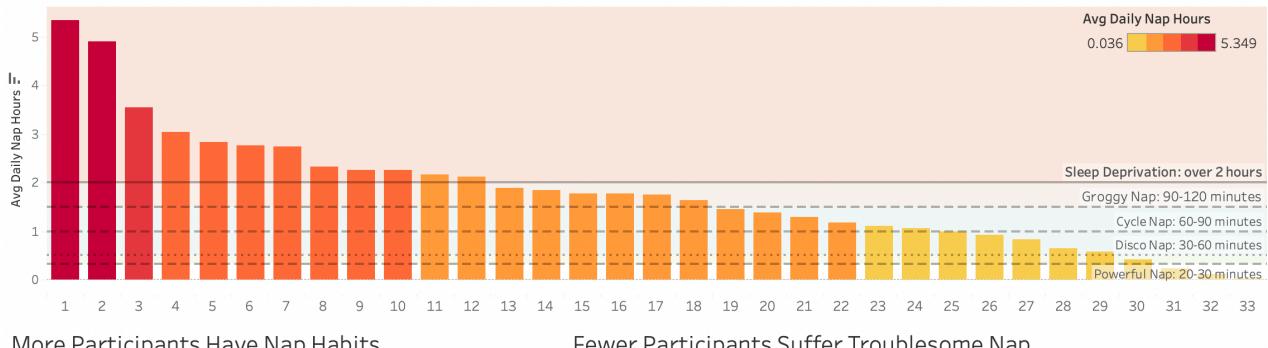
Most Users Sleep over 6 Hours Per Day with High Sleep Efficiency



Most users sleep over 6 hours per day and frequently sleep at 22pm and wake up at 5am.

According to the physical studies, the ratio of asleep minutes over in-bed minutes represents the sleep efficiency, of which 85% means the normal line. 90% users experience sleeps with high sleep efficiency except for 2 outliers. The one who sleeps over 10 hours suffers insomnia or bad sleeps.

Half Participants Suffer Troublesome Nap



More Participants Have Nap Habits



In terms of the nap habit, over the tracking month, more users have a nap within the daytime, but half users sleep for over 2 hours which could lead to the insomnia overnight.

Given the facts, it seems that **providing more insights about sleep habits such as nap length, sleep point** is a good way to improve the users' satisfactions.

## Share: Conclusions

I've found some interesting insights from the datasets, and I'll translate into target marketing strategies for new customers and products:

- The clear relationship between intensity and calories burned leads to the first point: monitor the intensity of activities or create intensive and powerful exercise plans to guide or help users to lose weight
- The clear trend that more users care about sleep efficiency and suffer insomnia indicates the second point: provide more insights, recommendations, and guidance of sleep habits such as nap length or sleep point
- The last point comes from the hourly data analysis of users' physical activities: push more notifications during weekdays afternoon to touch more users and increase the activities.

**Thanks for reading!**