How can a wellness company play it smart?

This is my capstone project for the Google Data Analytics Professional Case Study

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1. Summary of The Business Task

Analyze smart device usage data in order to gain insight into how consumers use non-Bellabeat smart devices.

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

2. Description of All Data Sources Used

Data Used:

FitBit Fitness Tracker Data (CC0: Public Domain, dataset made available through Mobius):

Data Description:

The data set contains personal fitness tracker from thirty fitbit users. Thirty eligible 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.

Limitations of the Data

1. Small dataset, only 30 participants, unlikely to represent the population.
2. Data only collected over 2 months (early spring) so seasonal variety in activity cannot be observed.
3. Weight tracking data was only available for two participants that had tracked their weight for at least one month.
4. Data was collected by a 3rd party in a survey so results cannot be verified.

3. Documentation of Any Cleaning or Manipulation Of Data

I started with 4 datasets, dailySteps, dailyIntensities, sleepDay and weightLoginfo.

Spreadsheet(Excel) Cleaning:

5. Removed zero or nulls from all tables- Device not worn
6. Removed Sedentary minutes < 218 from dailyIntensities as there was a gap present in the data below this number.
7. Removed step counts < 400 from dailySteps as there was a gap present in the data below this number.
8. Removed sleep time less than 120 minutes from sleepDay and added column for percent time asleep (TotalMinutesAsleep / TotalTimeInBed)
9. Removed "Fat" column from weightLogInfo since it had only contained 2 entries.
10. Removed users with <4 entries in weightLogInfo.
11. Formatted date field in all tables to be month/day/year format.

SQL Queries:

```
-- Calulate Average Steps per day for all Users
SELECT Distinct ActivityDay, AVG(StepTotal) over (PARTITION by ActivityDay) as
StepAvg
FROM `inspiring-wares-328021.BellaBeat.Steps2`
order by ActivityDay

--Combine Workout Activity Table with SleepDay Table
SELECT Workout.VeryActiveMinutes, Sleep.PercentTimeAlseep
FROM `inspiring-wares-328021.BellaBeat.Workout_Intensity` Workout
Left Join `inspiring-wares-328021.BellaBeat.Sleep2` Sleep
On Workout.Id = Sleep.Id
and Workout.ActivityDay = Sleep.SleepDay

--Calculate Average weight per user over time
SELECT  Id,  Date, WeightPounds,AVG(WeightPounds) over (PARTITION BY Id ORDER
BY Date) as WeightAvg
FROM `inspiring-wares-328021.BellaBeat.Weight`
ORDER BY 1, 2

--Find Count of Manually entered vs Automatically entered Weight Measurement
SELECT count(Case when IsManualReport = True Then 1 end) as Manual, count(Case
when IsManualReport = False Then 1 end) as Auto
FROM `inspiring-wares-328021.BellaBeat.Weight`
Result
Manual  Auto
35      25
```

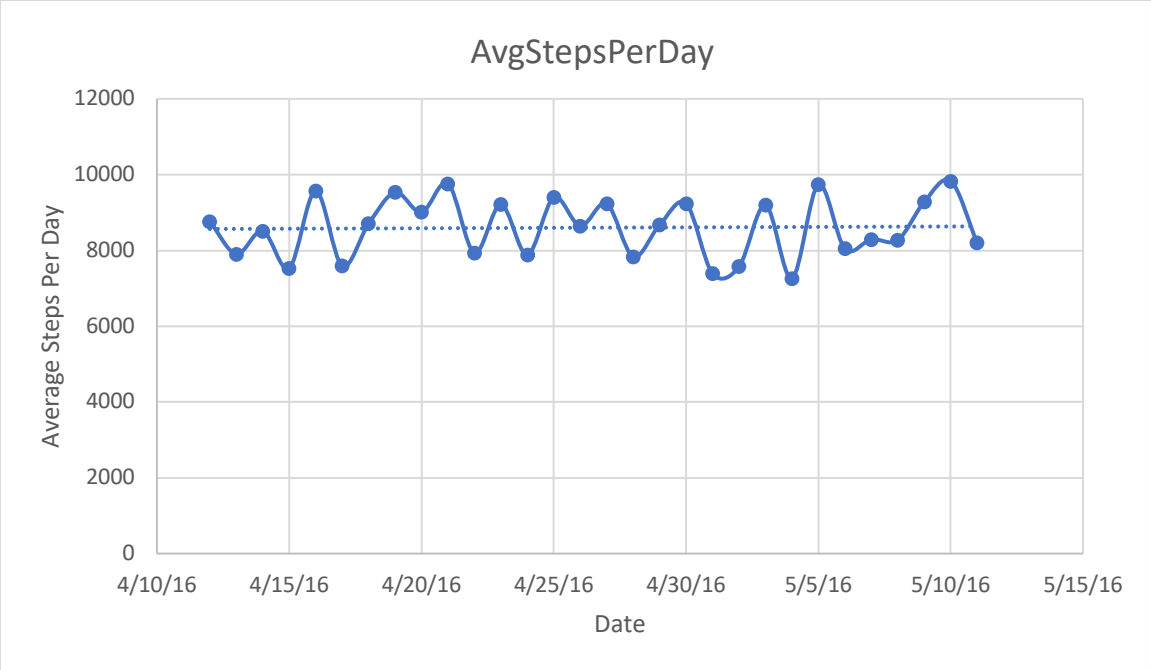
4. Analysis Summary

- Calculated aggregated average steps for all users to determine if participants were increasing their daily step count as a result if wearing a tracking device.
- Compared very active minutes per day to sleep quality, as measure by percent time asleep when in bed

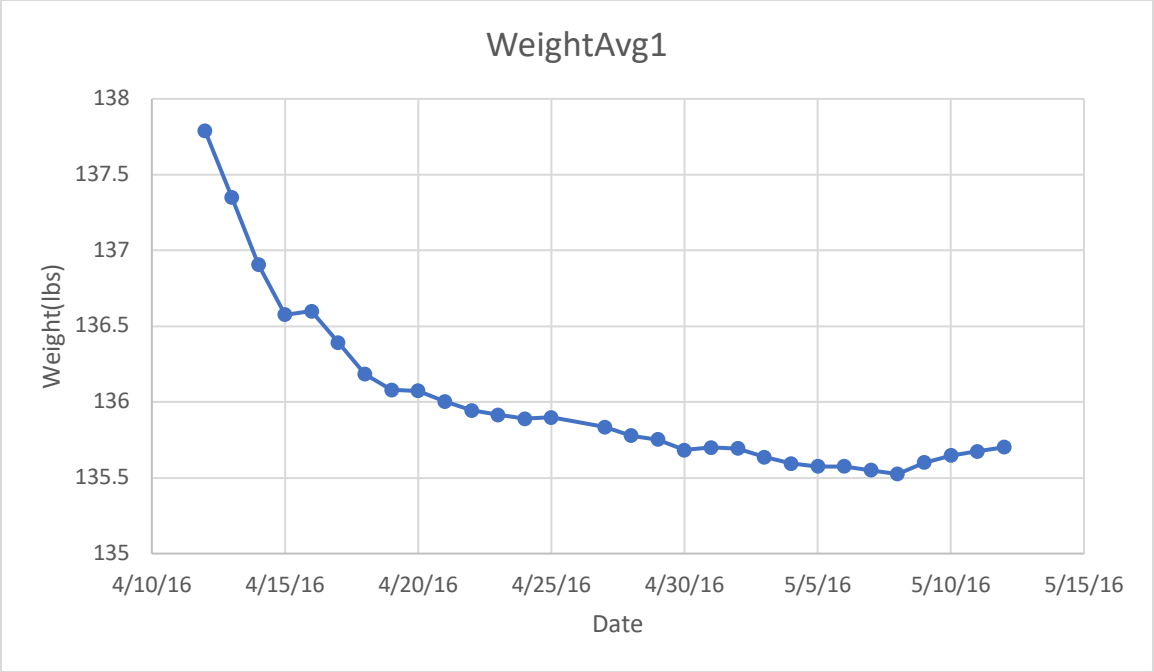
- Followed weight over time for the two participants that recorded data for at least one month.
- Evaluated how the participants were recoding their weight, automatically vs manual input.

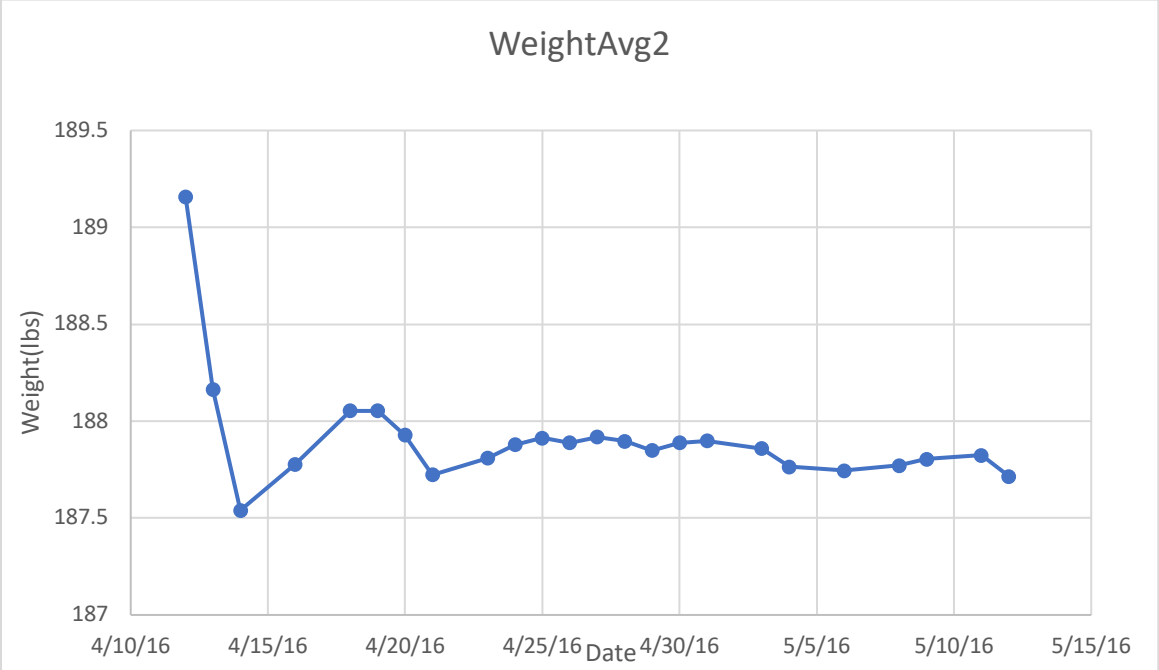
5. Visualizations and Key Findings

Charts Exported from Microsoft Excel.

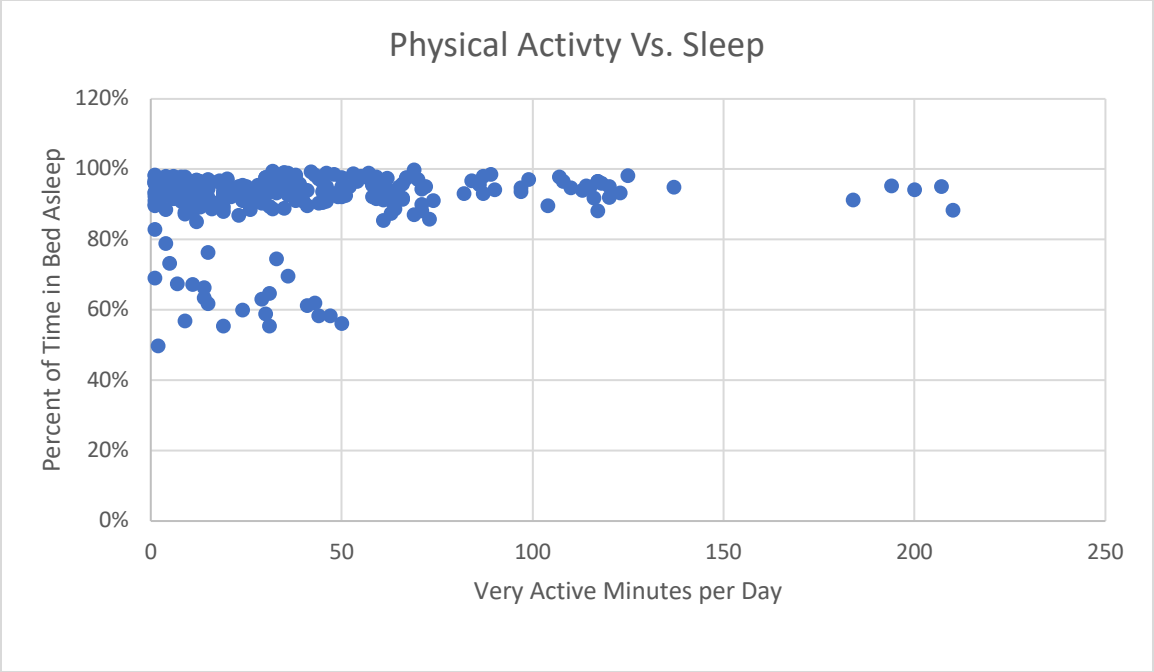


I discovered that the users did not show an increase in daily average steps while wearing their fitness device over record period and as shown by the trendline in the above graph.





The two participants that tracked their weight for at least one month did show an initial loss of 1.5 pounds in the first week, but their weight loss was not significant over the rest of the month. Generally, 1 to 1.5 pound weight loss per week is deemed safe.



I did discover that there is an apparent drop off in sleep quality as measured by percent time asleep when a person has less than 50 minutes of very active time per day. This relationship would warrant further study to verify this association.

6. Top High-Level Content Recommendations Based on My Analysis

1. What are some trends in smart device usage?

    - User do not appear to increase their daily steps as they wear their fitness device.
    - Few users used their device or service to record / track their weight
    - Weight trackers inputted their data 35 times manually and 25 times automatically.

2. How could these trends apply to Bellabeat customers?

    - Although Bellabeat primally markets to females and the sex of the participants in the datasets is not known the usage of fitness trackers for recording steps, weight, activity, and sleep can be assumed to represent the practices of Bellabeats product users.

3. How could these trends help influence Bellabeat marketing strategy?

    - Bellabeat can highlight how their Leaf and Time products integrate with the Bellabeat app to make tracking activity, sleep and stress very intuitive and easy.
    - Bellabeat may consider adding a digital scale to their product line that will automatically send weight log data to the Bellabeat app.

- Bellabeat can promote their subscription membership to help users of their products to become more active, sleep better, achieve a healthy weight and to maintain proper hydration by highlighting how other fitness trackers do not appear to show these tangible results as shown by this analysis.