Bellabeat Case Study

Summary of Business Task:

Analyze non-Bellabeat smart device usage data, and apply insights to Bellabeat consumers. Select one Bellabeat device and make suggestions for a marketing strategy for that device. For this case study, I choose the classic Bellabeat fitness and health tracker Leaf.

Description of All Data Sources Used:

The data set for this case study is the FitBit Fitness Tracker Data, made available through Mobius on Kaggle. The data is public domain, and it was collected through a survey via Amazon Mechanical Turk where thirty-five FitBit users submitted their FitBit tracker data from 3/12/2016 to 5/12/2016. The data set contains information about each user's daily activity, calories burned, sleep, etc.

Summary of Cleaning and Manipulation of Data:

The FitBit tracker dataset is separated into two datasets, one for the dates 3/12/2016 - 4/11/2016 and the other for 4/12/2016 - 5/12/2016. Each of these datasets contain multiple files, but the files that I focus on and clean for this case study are the ones that contain data about the participants' daily activity and sleep. For each file, I check if there are any missing values, remove any duplicate rows, make sure that all values in a given column are of the same and correct data type, and filter the data so that data is within the correct range of dates.

Summary of Analysis:

In my analysis, I gather some basic summary statistics about the number of participants and their daily activity and sleep. For the dates 3/12/2016 - 4/11/2016, there are 35 participants who share their daily activity data, and there are 23 participants who share their sleep data. For the dates 4/12/2016 - 5/12/2016, there are 33 participants who share their daily activity data, and there are 24 participants who share their sleep data. The summary statistics indicate that the participants are fairly active with the average number of steps for the 3/12/2016 - 4/11/2016 group and the 4/12/2016 - 5/12/2016 group being 6811.78 and 7637.91, respectively. The summary statistics also show that the participants are possibly not getting enough sleep with the average hours asleep for the 3/12/2016 - 4/11/2016 group and the 4/12/2016 - 5/12/2016 group being 6.66 and 6.99, respectively. I also explore the relationships between different variables in the data sets, and I find that there are correlations between active minutes and sedentary minutes, total steps and calories burned, hours asleep and hours in bed, and sedentary hours and hours asleep.

Summary Statistics: Daily Activity

3.12.16 – 4.11.16

statistic	value
num_participants	35.00000
avg_steps	6811.77829
avg_sedentary_hours	17.05585
avg_calories	2275.71363
avg_active_hours	3.47679

Summary Statistics: Daily Activity

4.12.16 – 5.12.16

statistic	value
num_participants	33.000000
avg_steps	7637.910638
avg_sedentary_hours	16.520177
avg_calories	2303.609574
avg_active_hours	3.792376

Summary Statistics: Daily Sleep

3.12.16 – 4.11.16

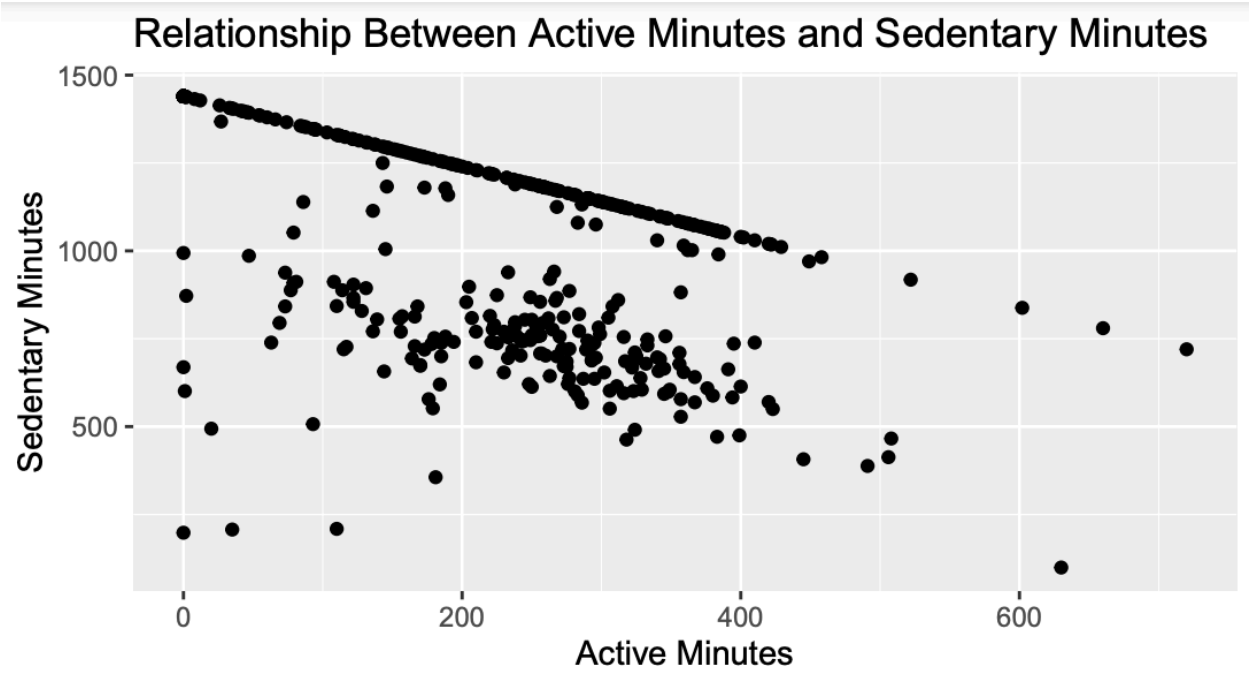
statistic	value
num_participants	23.000
avg_hours_asleep	6.657

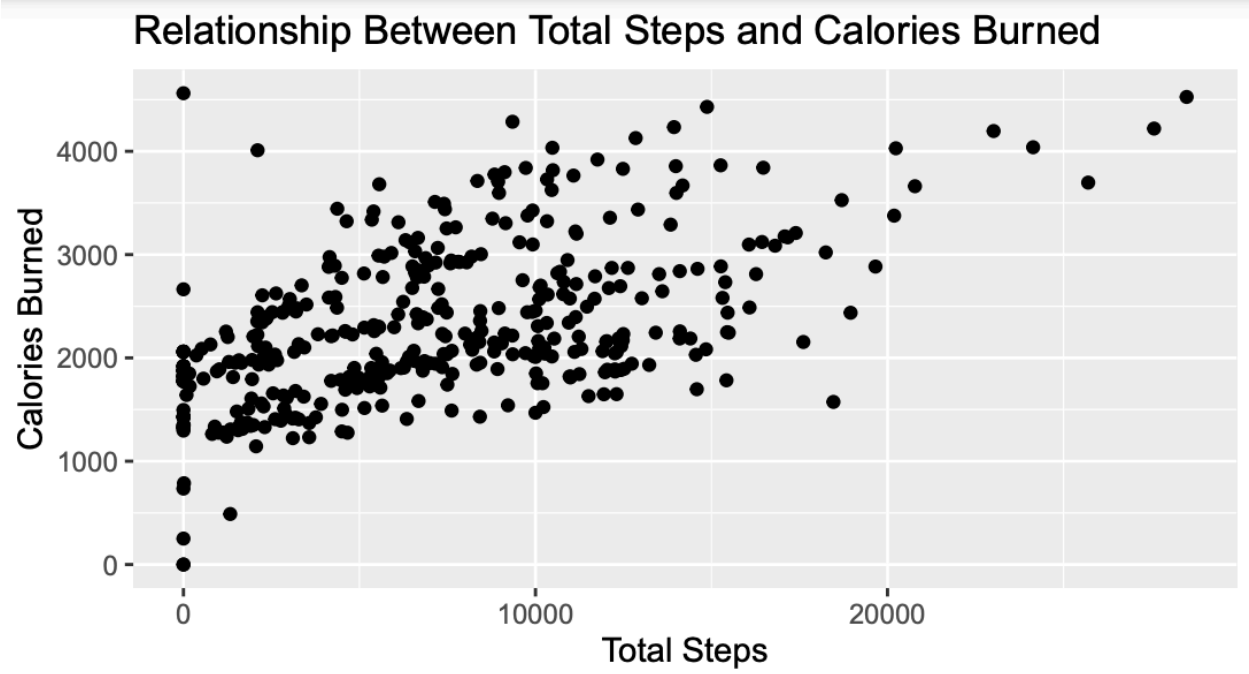
Summary Statistics: Daily Sleep

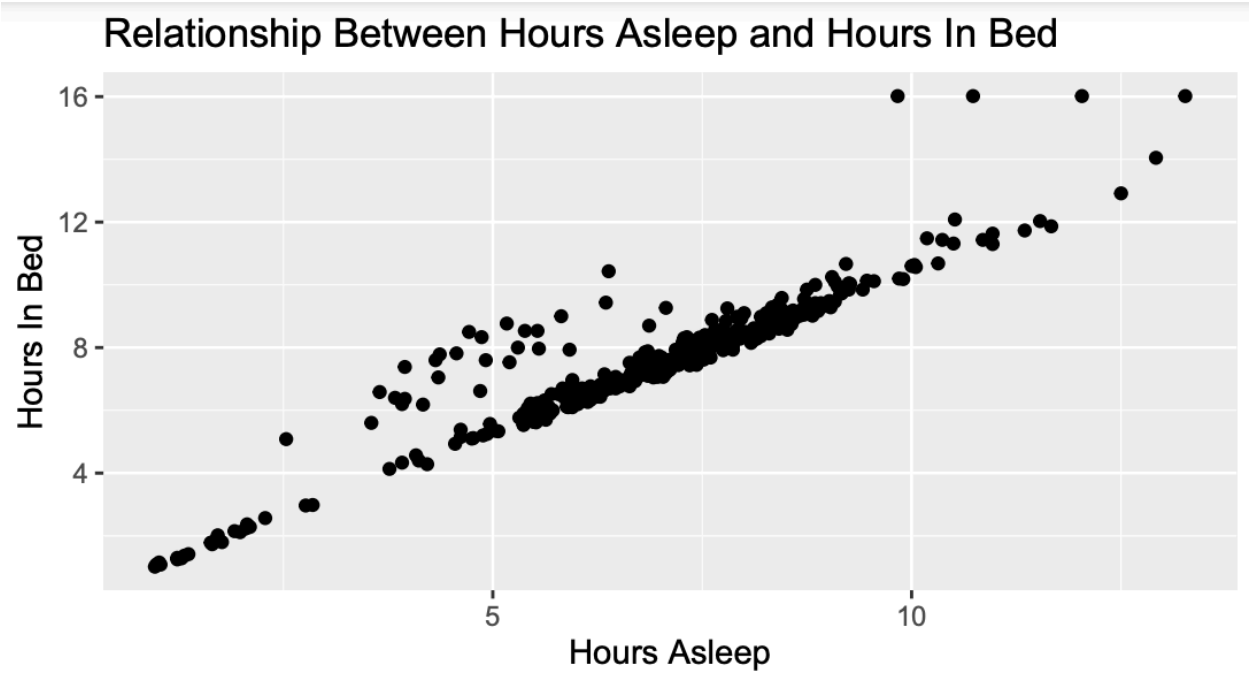
4.12.16 – 5.12.16

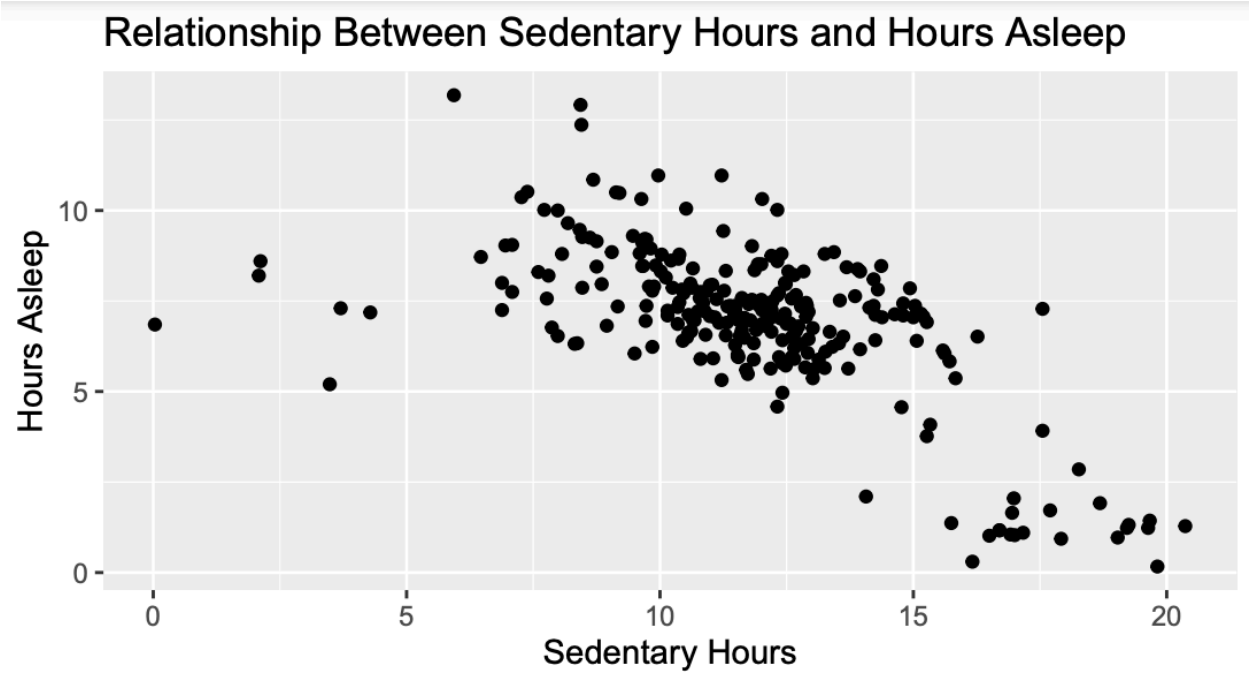
statistic	value
num_participants	24.000000
avg_hours_asleep	6.986220
avg_hours_in_bed	7.641382

Supporting Visualizations and Key Findings:






Relationship Between Hours Asleep and Hours In Bed
Hours In Bed
16
12
8
4
5
10
Hours Asleep


Relationship Between Sedentary Hours and Hours Asleep
Hours Asleep
10
5
0
0
5
10
15
20
Sedentary Hours

Insights and Recommendations:

Looking at the scatter plot that illustrates the relationship between total active minutes and sedentary minutes, there is a general trend that as total active minutes increase sedentary minutes decrease. For people who live a sedentary lifestyle, such as office workers for example, and want to be more active, highlight the Bellabeat Leaf's activity-tracking feature and let them know that the Leaf can help them start tracking the amount of time that they are active, hopefully motivating them to gradually increase their daily activity levels. For people who already have an active lifestyle, emphasize that the Leaf can track their active minutes so that they can maintain their current activity levels, and for those who want to be even more active, emphasize that the Leaf can help document their progress so that they can make sure that they are improving over time.

Looking at the scatter plot that illustrates the relationship between total steps and calories burned, there is a general trend that suggests that as the number of total steps increases the number of calories burned also increases. For people who want to change the number of calories that they burn, such as people who want to change their weight, highlight that the Leaf can help them track not only the number of steps that they take but also the number of calories that they burn so that they know how to adjust their caloric expenditure.

Looking at the scatter plot that illustrates the relationship between hours asleep and hours in bed, there is a general trend that suggests that as the number of hours asleep increases the number of hours in bed also increases. However, there are several points above the general trend line, which means that there were times where some participants were getting less sleep than expected for their time in bed. This suggests that there are factors that could disrupt a participant's sleep such as scrolling through social media. For people who scroll through social media in bed before going to sleep, run ads on their social media feed about how the Leaf can help them track their sleep, and ultimately reduce the time that they spend on their phones in bed.

Looking at the scatter plot that illustrates the relationship between sedentary hours and hours asleep, there is a general trend that suggests that as the number of sedentary hours increases the number of hours asleep decreases. One possible reason for this correlation is work. The longer into the night that people work, or study if they are students, the less that they sleep. For people who work or study late into the night, highlight that the Leaf can help track how much time they spend being sedentary and how much time they spend sleeping so that they make sure to not only take breaks from sitting but to prioritize sleep.