Bellabeat Data Analysis Case Study

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Background

Urška Sršen and Sando Mur founded Bellabeat, a high-tech company that manufactures health-focused smart products. Sršen used her background as an artist to develop beautifully designed technology that informs and inspires women around the world. Collecting data on activity, sleep, stress, and reproductive health has allowed Bellabeat to empower women with knowledge about their own health and habits. Since it was founded in 2013, Bellabeat has grown rapidly and quickly positioned itself as a tech-driven wellness company for women.

By 2016, Bellabeat had opened offices around the world and launched multiple products. Bellabeat products became available through a growing number of online retailers in addition to their own e-commerce channel on their website.

Sršen knows that an analysis of Bellabeat's available consumer data would reveal more opportunities for growth. She has asked the marketing analytics team to focus on a Bellabeat product and analyze smart device usage data in order to gain insight into how people are already using their smart devices. Then, using this information, she would like high-level recommendations for how these trends can inform Bellabeat marketing strategy.

Aim

My primary aim in this case study was to identify customer trends while using non-bellabeat products, this would allow me to provide tailored information for Sršen which would then be translated into meaningful,data-driven business decisions.

The main aspects that would be taken into consideration are marketing strategy and product development recommendations based on the customer trends.
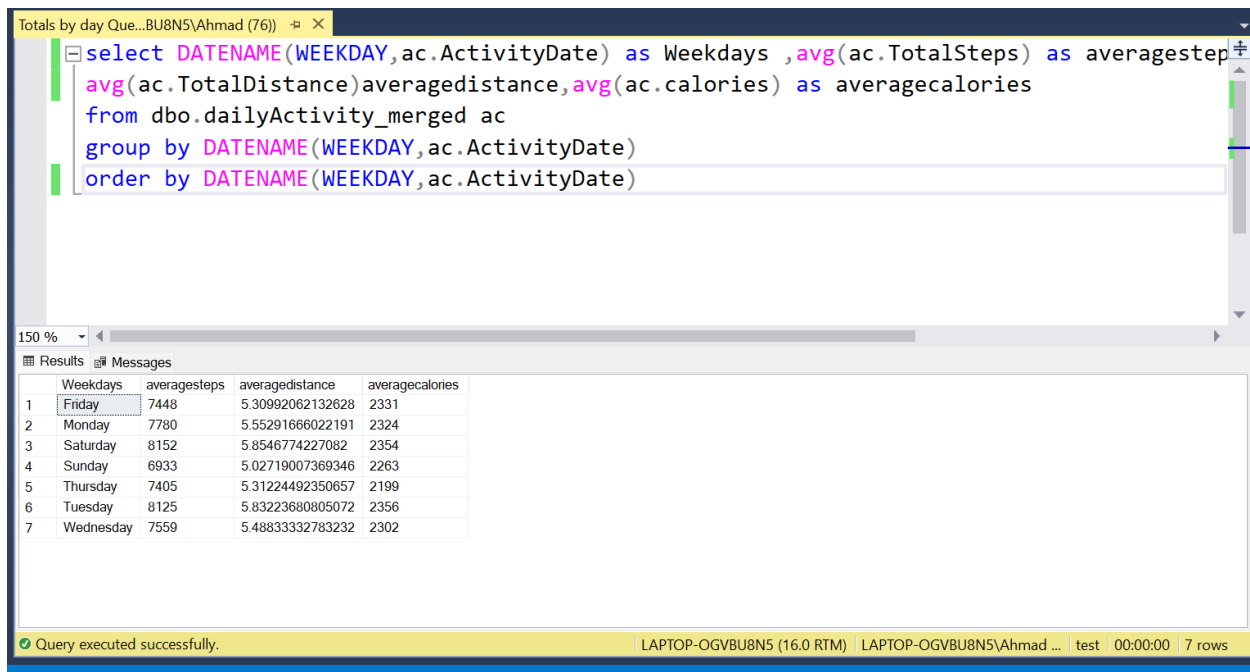
Data Cleaning

I was provided with a public fitbit tracker dataset which included personal fitness data from thirty fitbit users. I then viewed the dataset in excel to quickly skim the data keeping an eye out for any anomalies or errors in data entry and i found none of the sort.

Dataset: (https://www.kaggle.com/datasets/arashnic/fitbit)

Processing

The dataset that I was provided with had everything I needed however I wanted to calculate averages and group them by weekday in order to compare activity rates and calories burnt in different days and especially see the difference between weekends and working days. I used SQL Server to gather the processed data that i needed using this query

```sql
select DATENAME(WEEKDAY,ac.ActivityDate) as Weekdays ,avg(ac.TotalSteps) as averagestep
avg(ac.TotalDistance)averagedistance,avg(ac.calories) as averagecalories
from dbo.dailyActivity_merged ac
group by DATENAME(WEEKDAY,ac.ActivityDate)
order by DATENAME(WEEKDAY,ac.ActivityDate)
```

Results | Messages

	Weekdays	averagesteps	averagedistance	averagecalories
1	Friday	7448	5.30992062132628	2331
2	Monday	7780	5.55291666022191	2324
3	Saturday	8152	5.8546774227082	2354
4	Sunday	6933	5.02719007369346	2263
5	Thursday	7405	5.31224492350657	2199
6	Tuesday	8125	5.83223680805072	2356
7	Wednesday	7559	5.48833332783232	2302

Query executed successfully. | LAPTOP-OGVBU8N5 (16.0 RTM) | LAPTOP-OGVBU8N5\Ahmad ... | test | 00:00:00 | 7 rows

Analysis

In this Phase I then transitioned to R studio in order to analyze the dataset and create some visualizations. The main aspects that I focused on were the weekday analysis using averages, and correlations between activity rates and calories burnt throughout the day. This would give Bellabeat some insights on the average activity rates and customer trends and they could translate this into business decisions in regards to their products' development and marketing strategy.


Average Steps Per Weekday

Data Collected In 2016
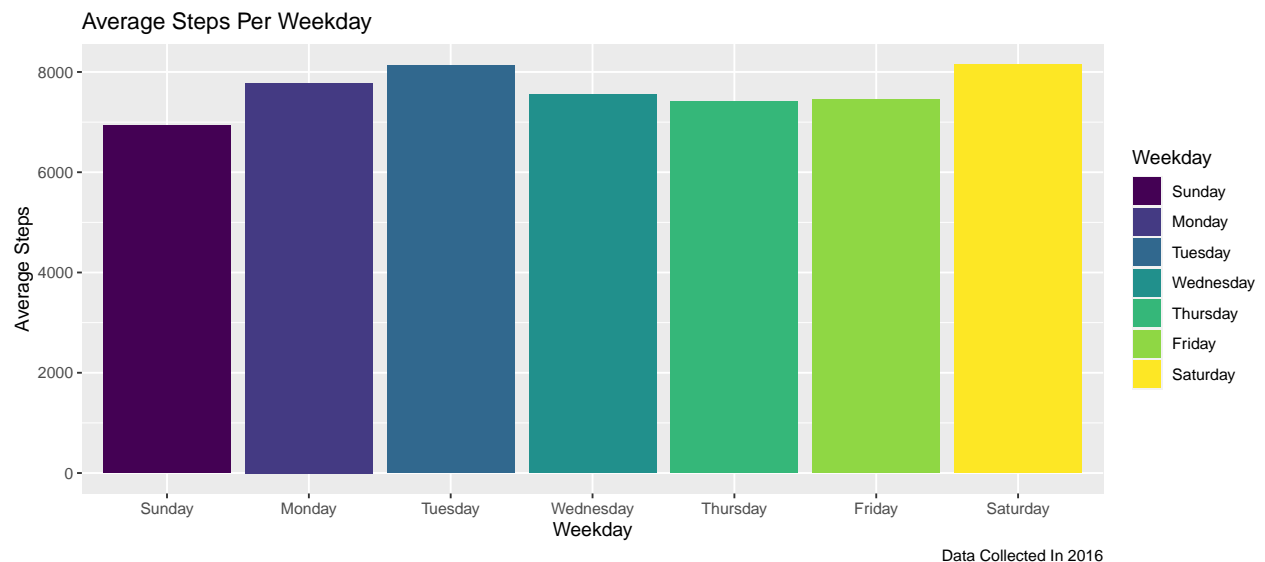
Key insights:

-Highest average steps were on weekends in general and on saturday specifically with 8152 steps

Average Calories Burnt Per Weekday

Data Collected In 2016
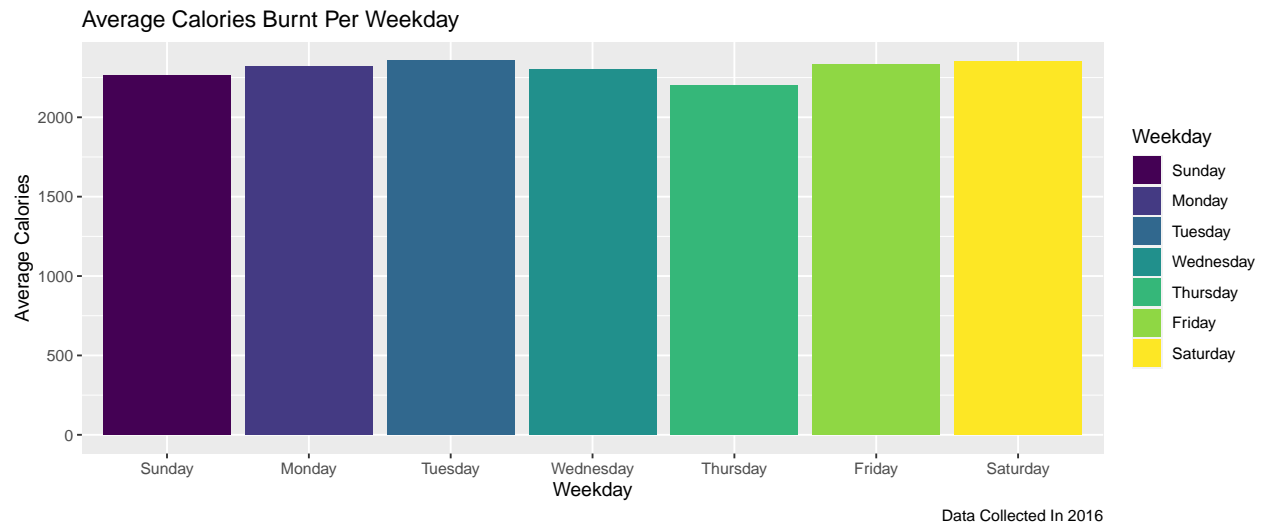
Key insights:

-Highest average calories burnt was greater in weekends in general compared to weekdays and highest average calories burnt were on saturday with 2354 calories


Correlation Between Steps and Calories

Data Collected In 2016
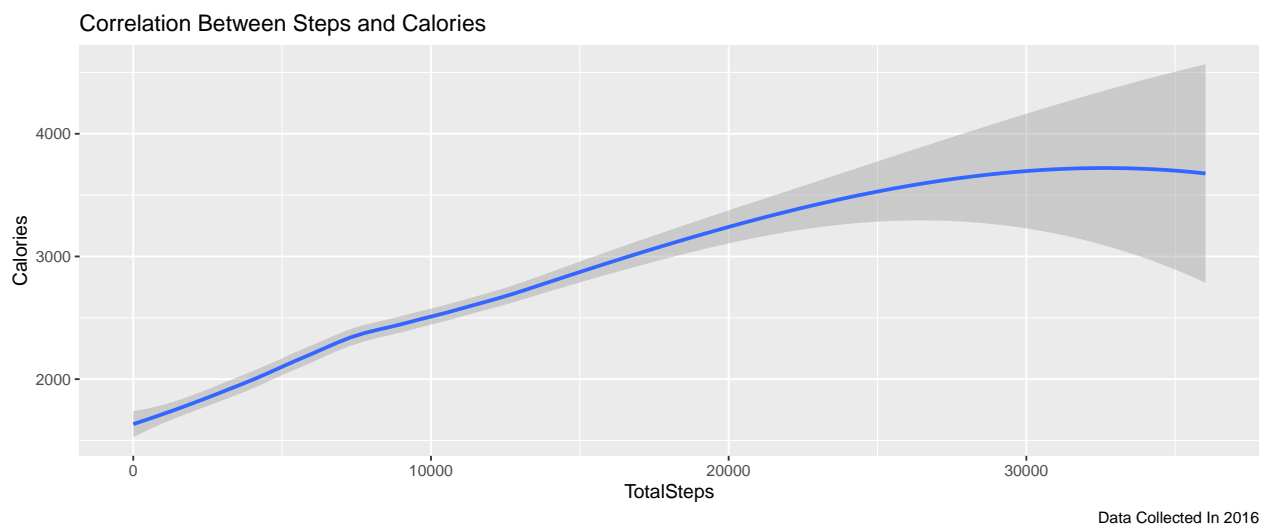
Key insights:

-The higher the total steps taken the more calories were burnt

Correlations between activity rates and calories burnt

activity was seperated into 4 columns in this dataset Very Active Minutes, Fairly Active Minutes, Slightly Active Minutes, and
Sedentary Minutes. My focus was to see what difference does a higher Very Active Minutes have on calories burnt as well as sedentary minutes

Correlation Between Very Active Minutes and Calories Burnt

Data Collected In 2016
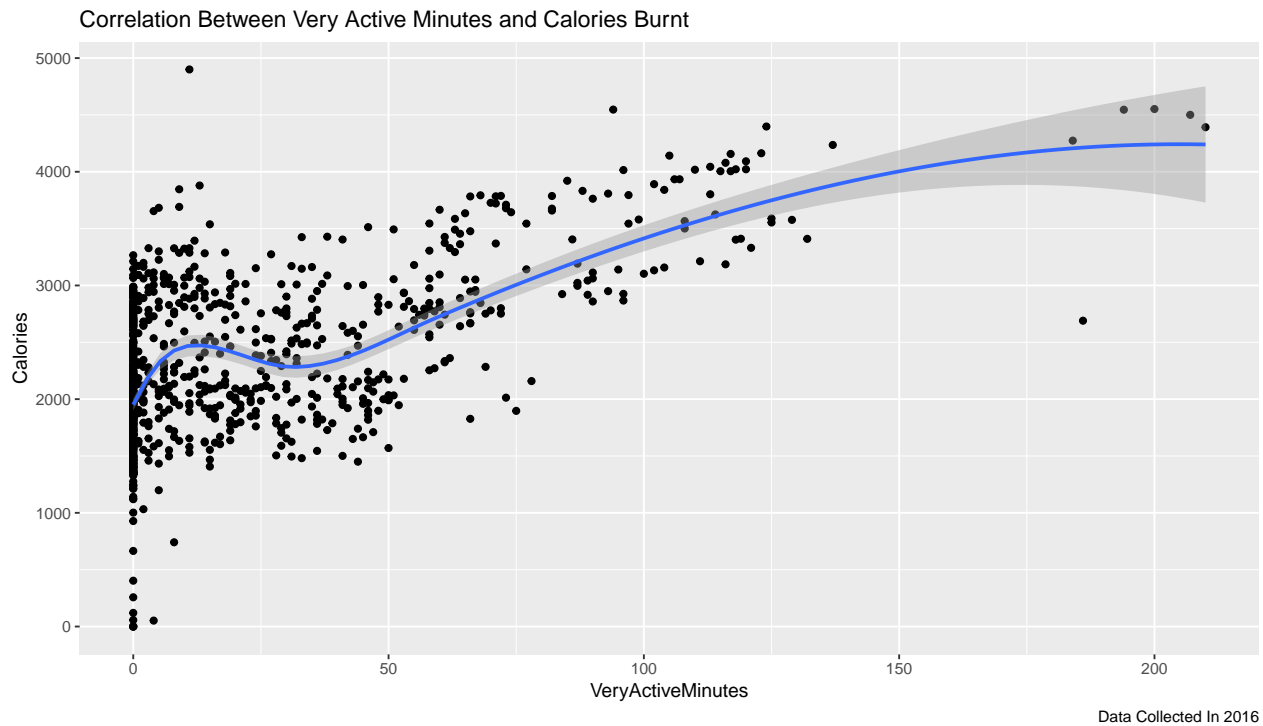
Key Insights:

-When there was more "Very Active Minutes" more calories were burnt (Positive Correlation)

Correlation Sedentary Minutes and Calories Burnt

Data Collected In 2016
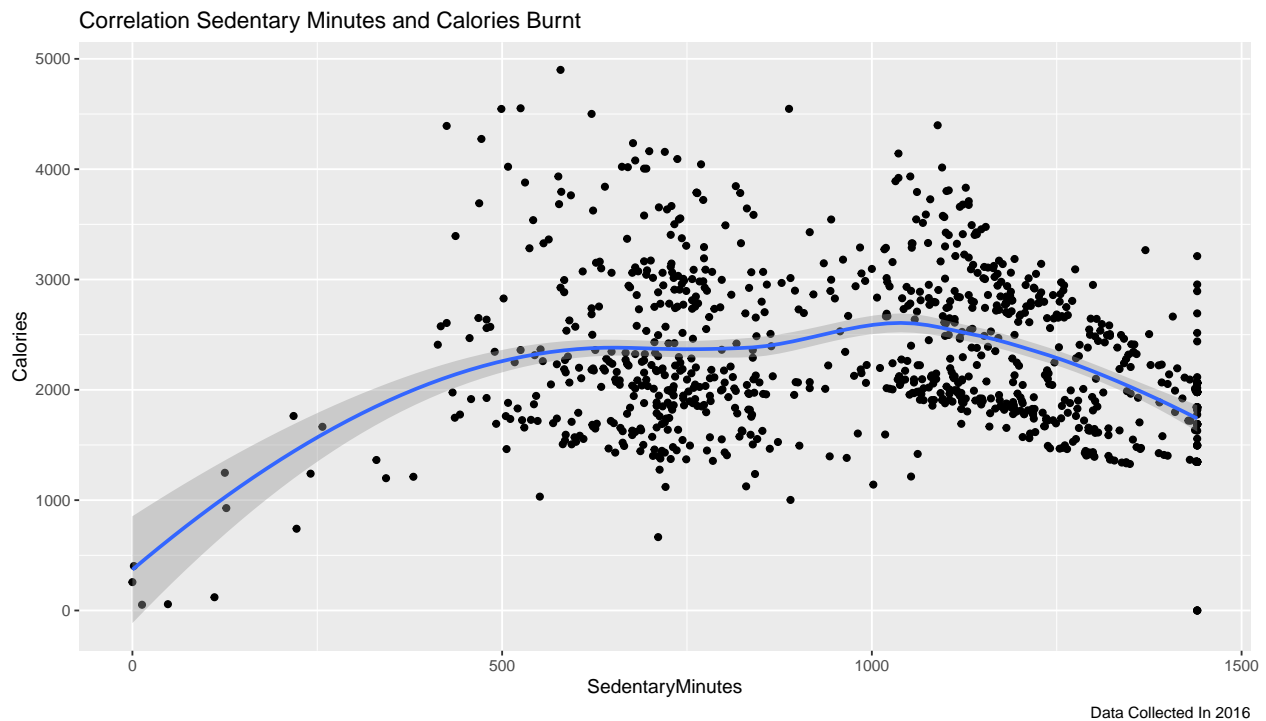
key Insights:

-When there was more "Sedentary Minutes" less calories were burnt (Negative Correlation)

Key Insights

The key insights that i have gained from my analysis were:

1-The 30 Users of the fitbit watch were more active during weekends rather than weekdays and burnt more calories on weekends as well

2-There is a Positive correlation between total steps taken and calories burnt

3-there is a Positive correlation between very active minutes while there was a negative correlation between sedentary minutes and calories burnt

Recommendations

My recommendations to bellabeat and Urška Sršen would be to:

1- Focus on marketing for their products on weekends as fitness users are generally more active on weekends which would make them have an incentive to purchase the fitness products

2-In their product development they should focus on notifying the users when their daily steps are low and that they should increase their steps as steps are the main factor for burning calories

3- For product development they should focus on creating fitness plans that weigh more of the weekly fitness routine on weekends as they are the time where people were most active in

4- Bellabeat products should measure their users' activity rates in a similar format to the fitbit app and notify users when activity rates are not high, as they are essential to burning calories