

Bellabeat products:

- **Bellabeat App:** Provides user health data related to activity, sleep, stress, menstrual cycle, and mindfulness habits. Connects to their line of smart products
- **Leaf:** wellness tracker that can be worn as a bracelet, necklace, or clip. Connects to the app to track activity, sleep, and stress.
- **Time: a smartwatch to track activity, sleep, and stress**
- **Spring:** A smart water bottle to track hydration levels
- **Bellabeat membership:** Membership program that gives users 24/7 access to fully personalized guidance on nutrition, activity, sleep, health and beauty, and mindfulness

Bellabeat Marketing/Sales Strategy

- Products available through growing amounts of online retailers and Bellabeat's website
- Traditional advertising media: radio, out-of-home billboards. print, and television
- Heavier focus and investment in digital marketing:
 - Google Search,
 - Facebook and Instagram pages,
 - active twitter engagement.
 - Youtube ads
 - Ads through Google Display Network to support marketing campaigns around key dates

Questions:

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

Report deliverable components:

1. A clear summary of the business task
2. A description of all data sources used
3. Documentation of any cleaning or manipulation of data
4. A summary of your analysis
5. Supporting visualizations and key findings
6. Your top high-level content recommendations based on your analysis

Ask

Guideline:

- **What is the problem you are trying to solve?**

Focusing on Bellabeat's Time smartwatch; how can the company increase its smartwatch marketing strategy to increase consumer reach, competitiveness, and sales?

- **How can your insights drive business decisions?**

Insights from the data analysis can provide a view into how the smartwatch is primarily being used.

Gain an understanding of the primary target base; whether there is any room for expansion or downscaling (more specific targets).

How well is Bellabeat's Time performing against competitors (Apple Watch, Samsung watch, Fitbit)

Key tasks:

- Identify the business task
- Consider key stakeholders

Deliverable:

- A clear statement of the business task

Prepare

Guideline:

- **Where is your data stored?**

Google Drive

- **How is the data organized? Is it in a long or wide format?**

A majority of the data is organized by the date-time variable. The dataset is wide or long depending on the timeframe that the data is organized; a data table organized by minute is longer (narrow) than by the hour, which is wider

- **Are there issues with bias or credibility in this data?**

A bias was discovered after the analysis was conducted. The data collect information on a rather short time period, this would skew the data away from meaningful discoveries about user's usage to track weight. Biologically, a person's weight and health does not change significantly in a month, it would be hard to tell from the data if user's intentions are to improve health/weight conditions.

- **Does the data ROCCC (reliable, original, comprehensive, current, cited)?**

The data does follow ROCCC.

- **How are you addressing licensing, privacy, security, and accessibility?**

The data is publicly available data provided by fitbit, obtained from Kaggle. The data is under CC0: Public Domain license.

- **How did you verify the data's integrity?**

The data's integrity was verified through Google Big Query's SQL functions. The raw datasets were imported, reviewed, cleaned, and saved into new datasets as to not damage the original source.

- **How does it help you answer your question?**

The data provides a lot of fitness and health information on fitbit users, a major competitor of Bellabeat. Generally, user behavior will not differ when using different products, thus we can use the data to identify patterns in user behavior.

- **Are there any problems with the data?**

Many of the datasets have problems with timestamp formatting when uploading to BigQuery. This was discovered while in the process of uploading. For future improvement, perform preliminary data cleaning on a copy of the CSV itself.

Key tasks:

- Download data and store it appropriately
- Identify how it's organized
- Sort and filter the data
- Determine the credibility of the data

Deliverable:

- A description of all data sources used

Process

Guideline:

- **What tools are you choosing and why?**

The tools chosen are BigQuery for SQL manipulation and Tableau for visualization

- **Have you ensured your data's integrity?**

- **What steps have you taken to ensure that your data is clean?**

- Change, format, and separate date-time
- Conduct exploratory analysis to view information

- **How can you verify that your data is clean and ready to analyze?**

- Verification was performed through manual checking between BigQuery and Excel, as well as performing elementary queries

- **Have you documented your cleaning process so you can review and share those results?**

Key tasks:

- Check the data for errors
- Choose your tools
- Transform the data
- Document the cleaning process

Deliverable:

- Documentation of any cleaning or manipulation of data

Analyze

Daily Activity:

Summarize average daily activity distance and minutes by day of week

Sleep:

Avg sleep and bed time by day of week:

<u>Day</u>	<u>avg_time_asleep</u>	<u>avg_time_in_bed</u>
Monday	394.0	430.0
Tuesday	410.0	449.0
Wednesday	421.0	461.0
Thursday	385.0	418.0
Friday	395.0	431.0
Saturday	414.0	456.0
Sunday	458.0	500.0

In tableau, display pie chart for daily activity - minute breakdown

Need to write sql to group such as:

Datetime | Activity_Level Minutes

..... | very_active
..... | Lightly Active

Guideline:

- **How should you organize your data to perform analysis on it?**

The datasets were organized and aggregate into 5 major categories:

- Daily activity
- Sleep records

- Activity on an hourly time scale
- Activity on a minute timescale
- Weight
- **Has your data been properly formatted?**
As the data was imported from CSV into BigQuery, all timestamps were converted from a STRING format into BigQuery DATETIME format
- **What surprises did you discover in the data?**
A majority of the data logs were imputed when users were at rest. This is inferred by the number of logs when user steps equated to zero
- **What trends or relationships did you find in the data?**
- **How will these insights help answer your business questions?**
These insights will help Bellabeat understand which situations a smart watch is primarily being used

Key tasks:

- Aggregate your data so it's useful and accessible
- Organize and format your data
- Perform calculations
- Identify trends and relationships

Deliverable:

- A summary of your analysis

Share

Guideline:

- **Were you able to answer the business questions?**
Yes, given the limitations of the data
- **What story does your data tell?**
Fitbit usage preferences
- **How do your findings relate to your original question?**
The findings will help answer what direction the marketing team of Bellabeat should head to increase its customer base.
- **Who is your audience? What is the best way to communicate with them?**
The audience will be the marketing team and senior leadership. Communication involving direct results and trends will be the most useful
- **Can data visualization help you share your findings?**
yes
- **Is your presentation accessible to your audience?**
yes

Key tasks:

1. Determine the best way to share your findings.
2. Create effective data visualizations.
3. Present your findings.
4. Ensure your work is accessible.

Act

Guideline:

- **What is your final conclusion based on your analysis?**
Sleep and fitness activity are the most prominent usage
- **How could your team and business apply your insights?**
Decide on direction for marketing campaigns
- **What next steps would you or your stakeholders take based on your findings?**
Create marketing campaigns and focus operations on the Bellabeat Time product to increase customers
- **Is there additional data you could use to expand on your findings?**
Datasets from other smartwatch companies

Key tasks:

- Create your portfolio.
- Add your case study.
- Practice presenting your case study to a friend or family member.