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:**

Day avg\_time\_asleep avg\_time\_in\_bed

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.