Bellabeat Data Analysis Project

Case Study 2: How Can a Wellness Technology Company Play It Sma?

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Project overview:

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Introduction:

Bellabeat is a wellness technology company focused on women's health. This analysis explores user behavior using Fitbit data to identify trends in activity, sleep, and device usage. Insights aim to support Bellabeat's marketing strategy with data-driven decisions for growth.

Target audience: marketing stakeholders, product analysts, and business strategists within Bellabeat and similar health-tech startups.
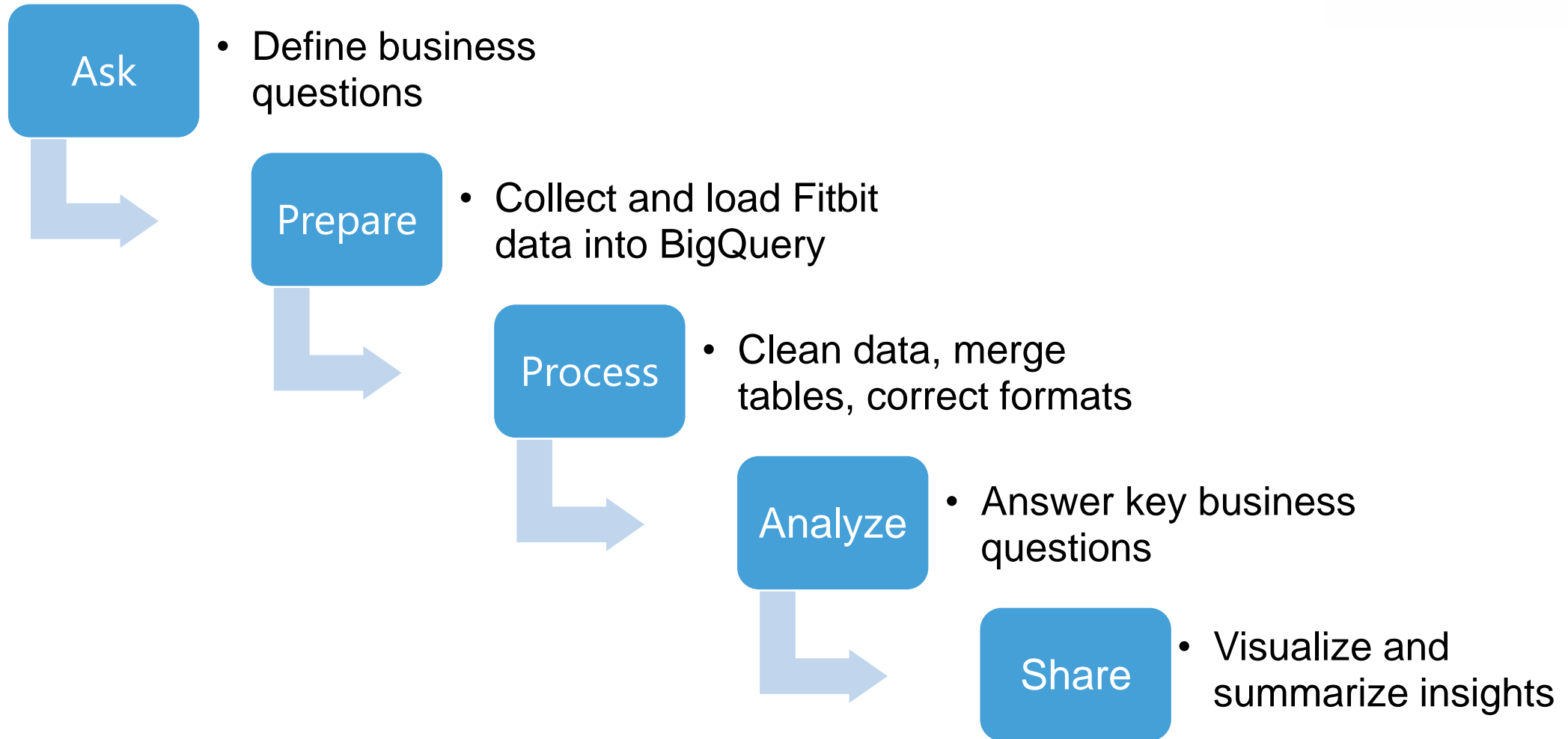
Project overview:

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Objectives:
- ✓ Analyze user behavior using smart devices.
- ✓ Identify trends in physical activity and sleep habits.
- ✓ Provide high-level strategic recommendations for Bellabeat's marketing team.
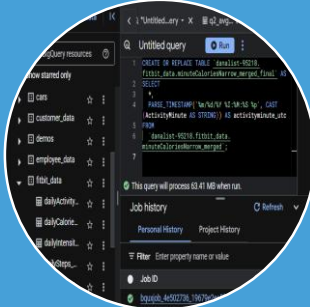
Data source:
- ✓ Dataset: Fitbit Device Usage Data
- ✓ Time Periods: March–May 2016
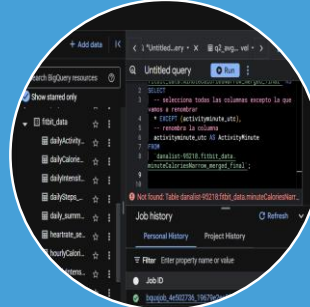- ✓ Type of Data: Daily activity, sleep logs, calories, steps, heart rate.

Data Analysis Process:

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Ask
- Define business questions

Prepare
- Collect and load Fitbit data into BigQuery

Process
- Clean data, merge tables, correct formats

Analyze
- Answer key business questions

Share
- Visualize and summarize insights
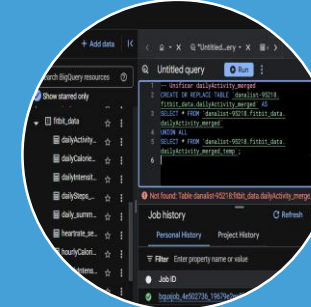
Data Cleaning Highlights:

Managed over 2.4 million records

Corrected inconsistent date formats (AM/PM to 24h)

Removed duplicates, nulls, and outliers

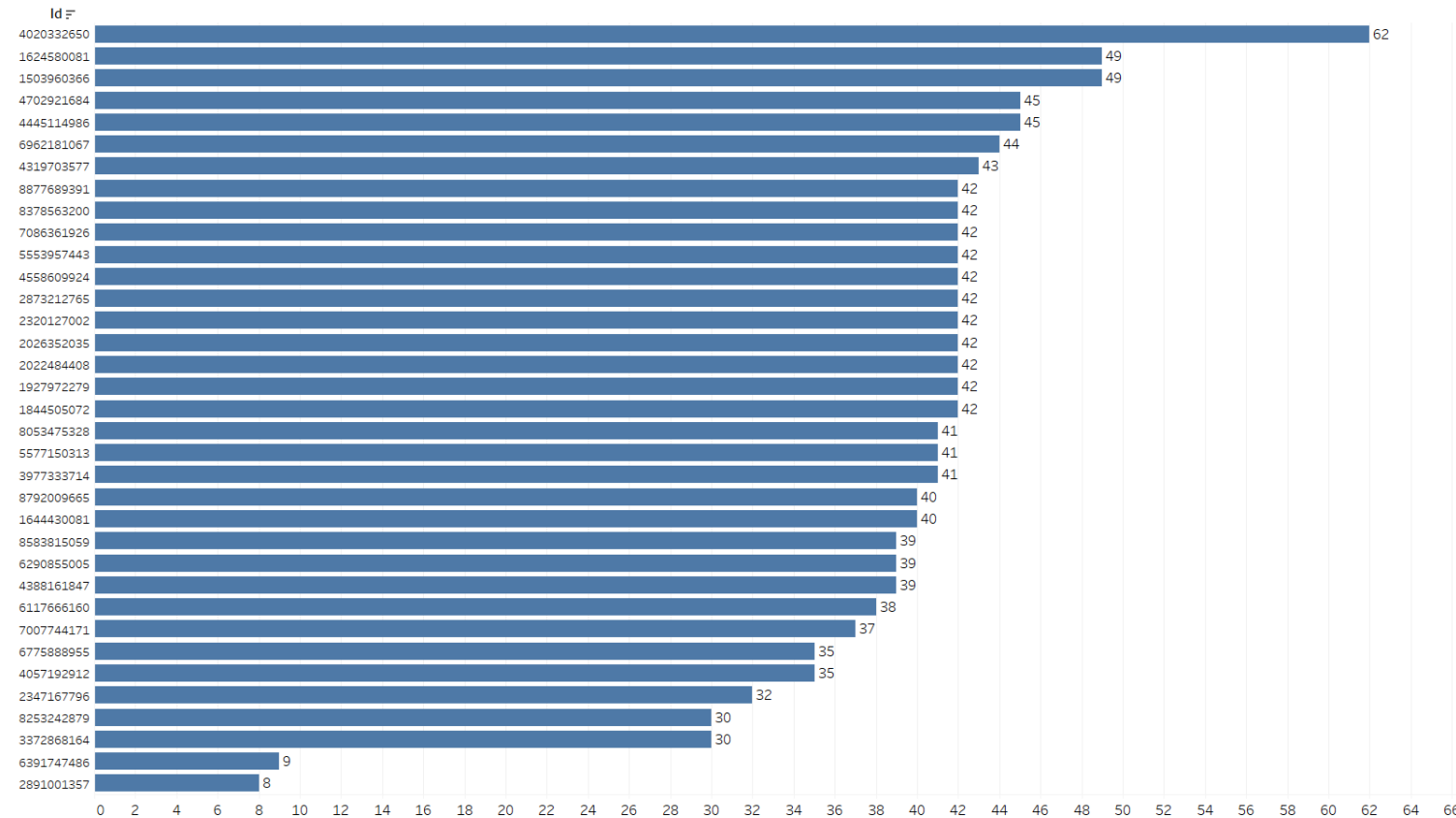Unified data across two periods (March–April and April–May)

Smart Device Usage Frequency:

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Metrics: daily steps, active minutes, logging frequency, days of use

- How many unique days a user **logged activity**
- **First** and **last** log day per user
- Identify whether users used their device **every day or sporadically**

Frequency of device use per user

Id

Id	Value
4020332650	62
1624580081	49
1503960366	49
4702921684	45
4445114986	45
6962181067	44
4319703577	43
8877689391	42
8378563200	42
7086361926	42
5553957443	42
4558609924	42
2873212765	42
2320127002	42
2026352035	42
2022484408	42
1927972279	42
1844505072	42
8053475328	41
5577150313	41
3977333714	41
8792009665	40
1644430081	40
8583815059	39
6290855005	39
4388161847	39
6117666160	38
7007744171	37
6775888955	35
4057192912	35
2347167796	32
8253242879	30
3372868164	30
6391747486	9
2891001357	8

Daily Physical Activity Levels:

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Metrics: daily steps, active minutes, logging frequency, days of use

- How many unique days a user **logged activity**
- First and last **log day per user**
- Identify whether users used their device **every day or sporadically**

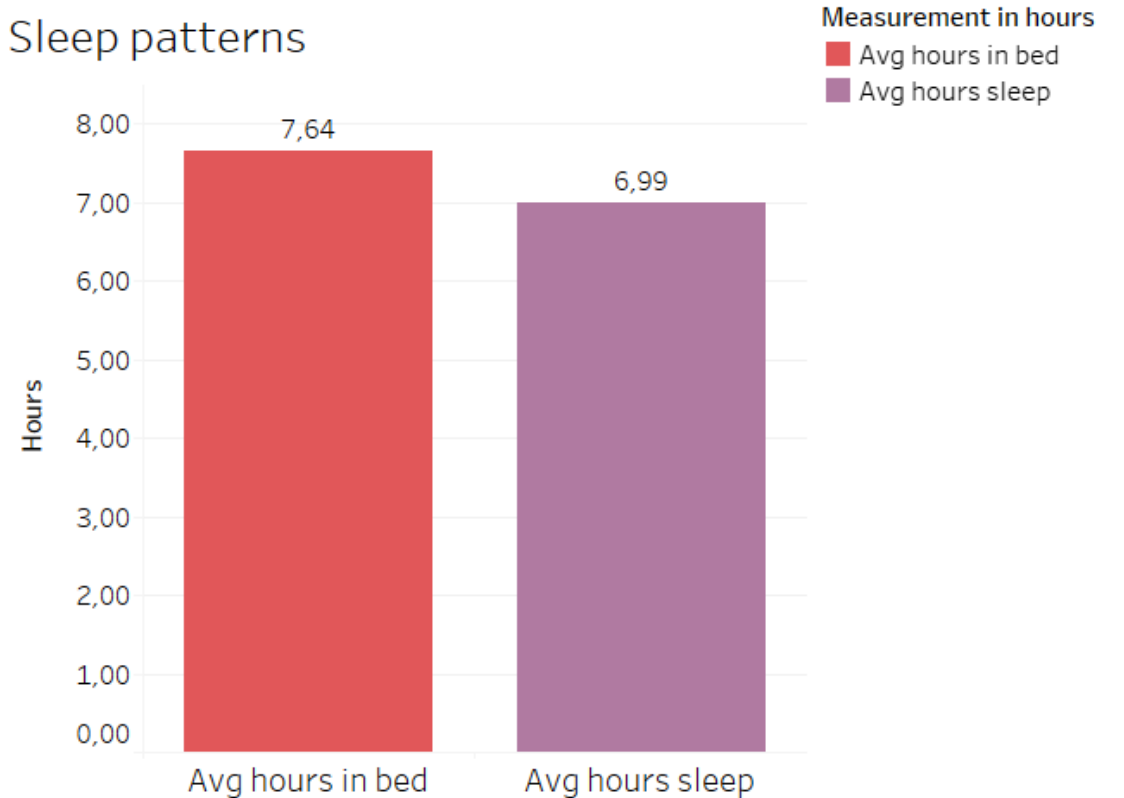### Average minutes per day by type of physical activity
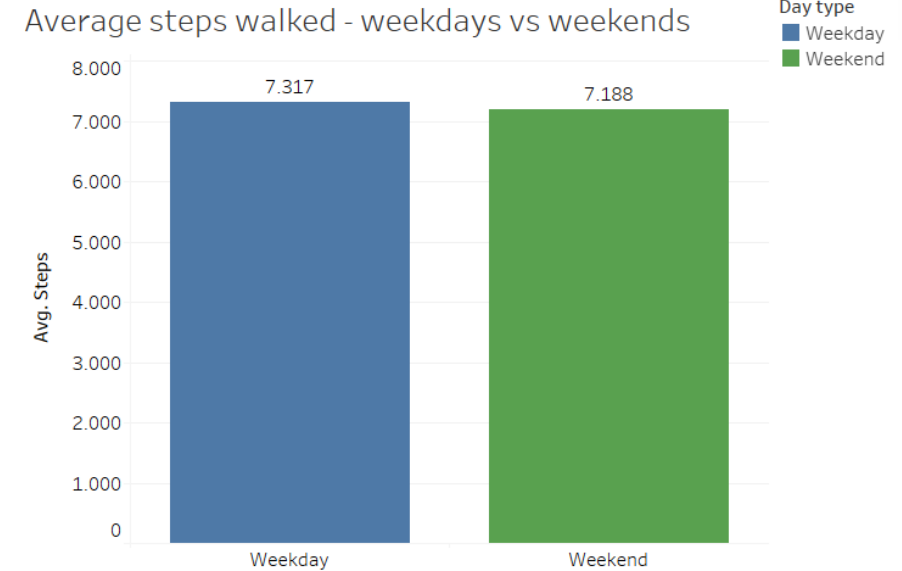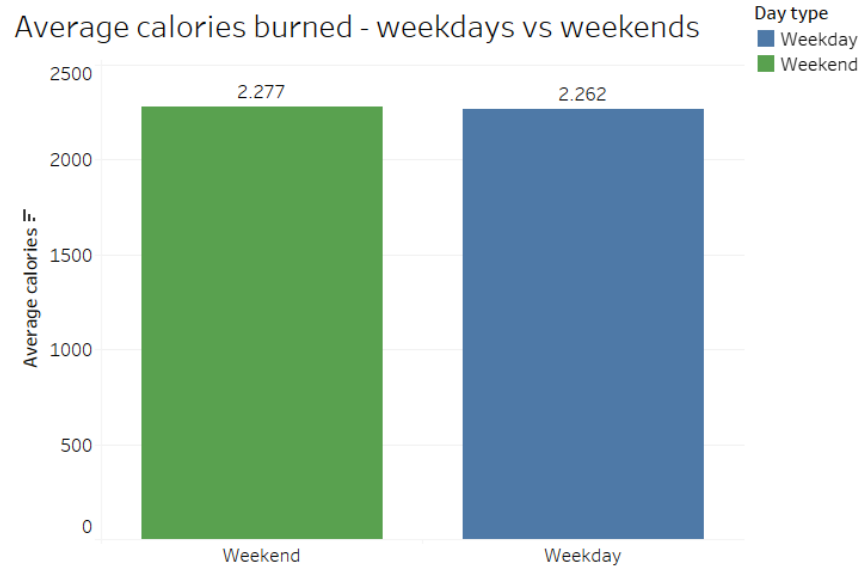
Sleep Habits:

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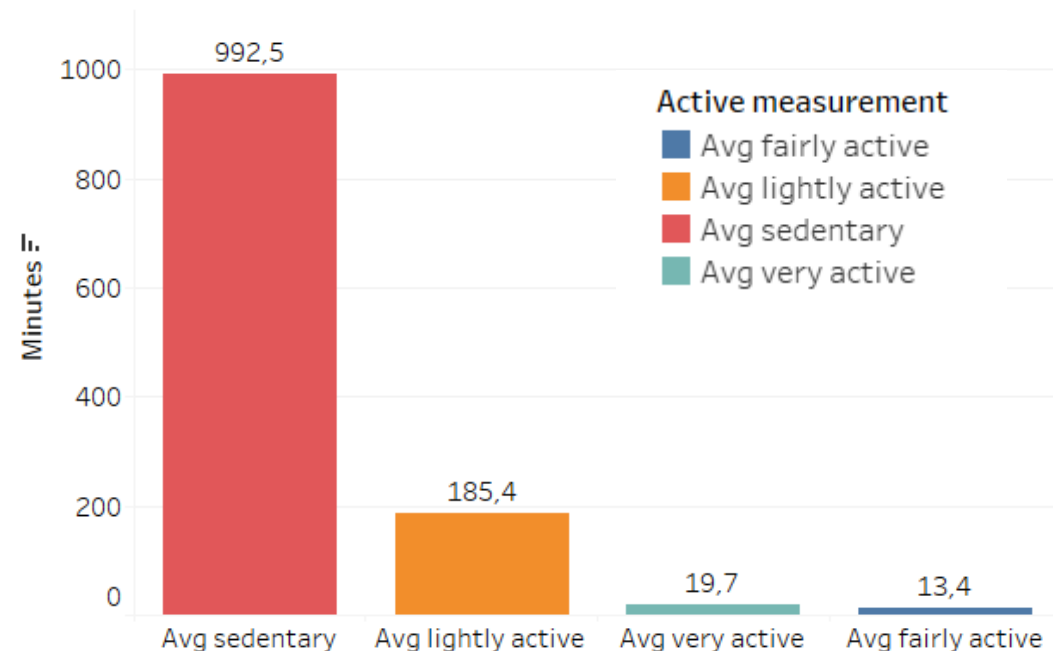
Metrics: Total minutes in bed, total minutes asleep

- Comparison of average hours **asleep** vs hours **in bed**.
- Allows us to detect if people have **interrupted sleep** or if they are **well rested.**

Sleep patterns

Measurement in hours
- Avg hours in bed
- Avg hours sleep

Weekday vs Weekend Activity:

- Comparison of **calories burned** and steps taken between **weekdays** and **weekends**.
- Identifies **behavioral differences** by day type.

Key findings & recommendations: bellabeat

Many users do not use the device every day

✓ *Recommendation*: Promote daily motivational notifications, goal reminders or gamification to encourage constant use.

Moderate and light activity dominates over intense activity

✓ *Recommendation*: Create campaigns that celebrate "small daily achievements," such as cumulative steps, rather than just hard workouts.

Average sleep less than 7 hours

✓ *Recommendation*: Incentivize the use of sleep monitoring features with weekly challenges and healthy sleep reminders.

Higher motion on weekdays than weekends

✓ *Recommendation*: Send trigger alerts or motion challenges on weekends when activity drops.

Users who regularly take naps

✓ *Recommendation*: Promote the use of nap tracking and short rest functions as part of a comprehensive wellness routine.

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Thank you

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GitHub Repository:
https://github.com/edgarjgalvis