

Bellabeat Case Study

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The Problem

Ask...

- ▶ Do we need a **fully functional** leaf?
 - ▶ Is there a market for it?
 - ▶ If so, what is the behavior of that specific user base?
 - ▶ We currently don't have such a product. *Leaf Urban* comes close by combining “fashion with function” but we need a product that can withstand the wear and tear that comes from particularly strenuous activities

Data Limitations

- ▶ Not all data collected had full user Id participation
 - ▶ Was some of it not collected for certain users?
 - ▶ Did certain users choose not to provide it?
 - ▶ Was it simply not *measured* by certain users?
 - ▶ There is some credibility to this argument. From the Kaggle website:
*“Variation between output represents use of different types of Fitbit trackers and **individual tracking behaviors / preferences.**”*

Other Data Limitations

- ▶ We don't know **gender**, age, health conditions, etc.
 - ▶ Obviously, gender-level specificity would've been particularly useful
- ▶ There are thirty users but 33 session IDs (so some users may have used more than one session ID)

Background Info

Leaf

- ▶ **Leaf** tracks *activity*, *stress* and *sleep*
 - ▶ Imported relevant data available, in this case data on **activity** and **sleep**.
 - ▶ Daily & hourly activity data was more comprehensive than sleep data
 - ▶ Had full user ID participation in each
 - ▶ Sleep data did not (had far fewer users) - *data limitations*
 - ▶ So narrowed focus to **daily** and **hourly** activity data

“Very Active” : A Definition (CDC)

- ▶ Before we can proceed. . .
 - ▶ What defines “very active?”
 - ▶ CDC divides activity levels into four parts:
 - ▶ **Vigorous-Intensity** - running/jogging, swimming laps, basketball, etc.
 - ▶ **Moderate-Intensity** - Fast walking, riding a bike on level ground, etc.
 - ▶ **Light-Intensity** - leisurely walking, light household chores
 - ▶ **Sedentary**
- ▶ Interestingly enough, the daily activity dataset is also divided into “**Very Active**”, “**Fairly Active**”, “**Lightly Active**” and “**Sedentary**” minutes.

“But what is Intensity. . . ?”

- ▶ **Intensity** refers to how much work is being performed or the magnitude of the effort required to perform an activity or exercise (CDC).
- ▶ CDC measures intensity in two ways:
 - ▶ **Absolute Intensity** is the amount of energy expended during the activity, *without* considering a person's cardiorespiratory fitness. It is measured in METs (Metabolic Equivalent of Task).
 - ▶ 1.6 to 2.9 METs for light activity
 - ▶ 3 to 5.9 METs for moderate activity
 - ▶ 6 METs or higher for vigorous activity
 - ▶ **Relative Intensity** uses a person's level of cardiorespiratory fitness to assess level of effort (measured on a scale of 0-10)

The Data Story

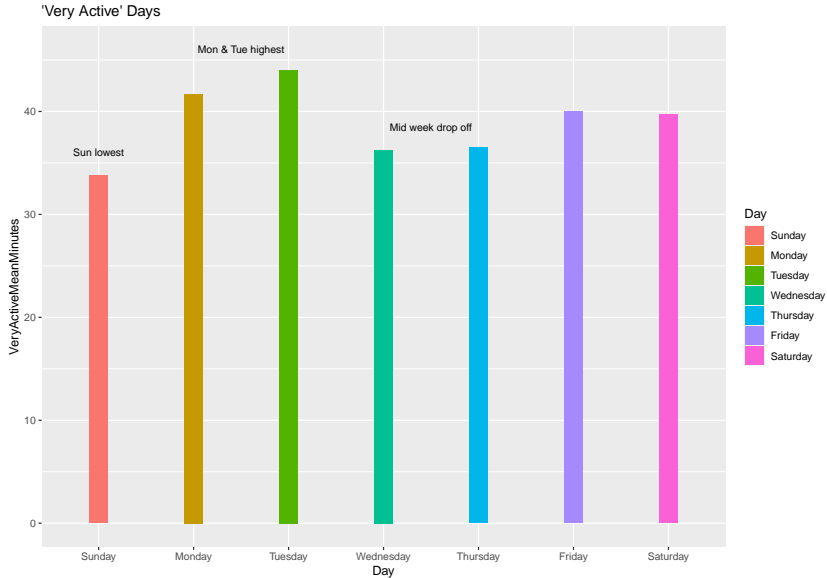
Getting to know the Datasets...

- ▶ **Daily Activity** data is measured in *minutes*.
- ▶ **Hourly** data is measured by *intensity*. But not in either way defined by CDC.
- ▶ So how to reconcile the two? And ensure the most accurate results out of the data? IMPORTANT TO NOTE: *Intensity* and *minutes* are two different metrics. The most intense users need not be the ones with the most “very active” minutes on average
- ▶ Have to *establish* that relationship.

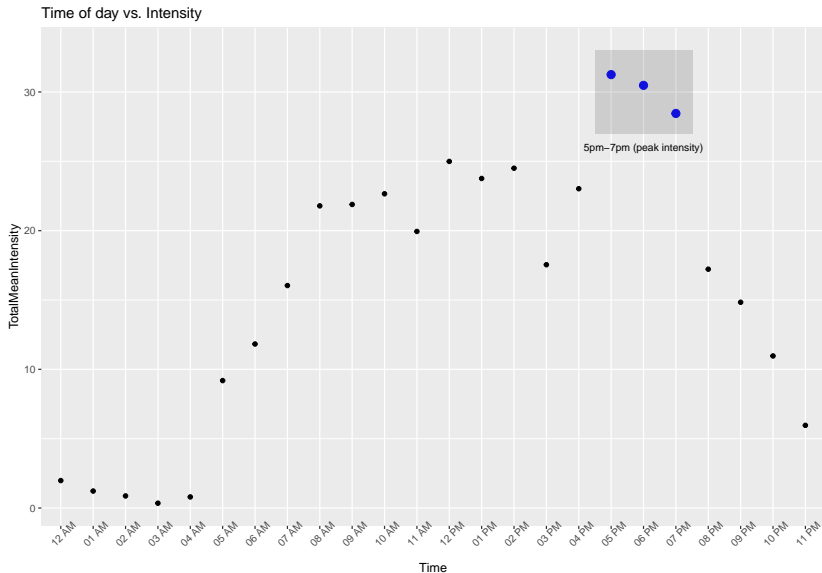
Intensity vs. “Very Active”

- ▶ CDC recommends at least **75 to 150 minutes** of “Vigorous-Intensity” exercise per week
- ▶ So I selected user IDs that averaged at least **11** very active minutes per day (17/33 user IDs). But I had to be sure... are the most “very active” users and most “intense” users the same?
- ▶ I then proceeded to select the top 17 user IDs with the highest average *intensities* and cross-referenced them with the first group. Got a near perfect match (15/17 user IDs).
- ▶ So these **15** user IDs will be the basis of this analysis going forward. I extracted daily and hourly data for this particular subset of users to better understand their habits. And here's what I found...

Daily Activity Breakdown - "Very Active" users



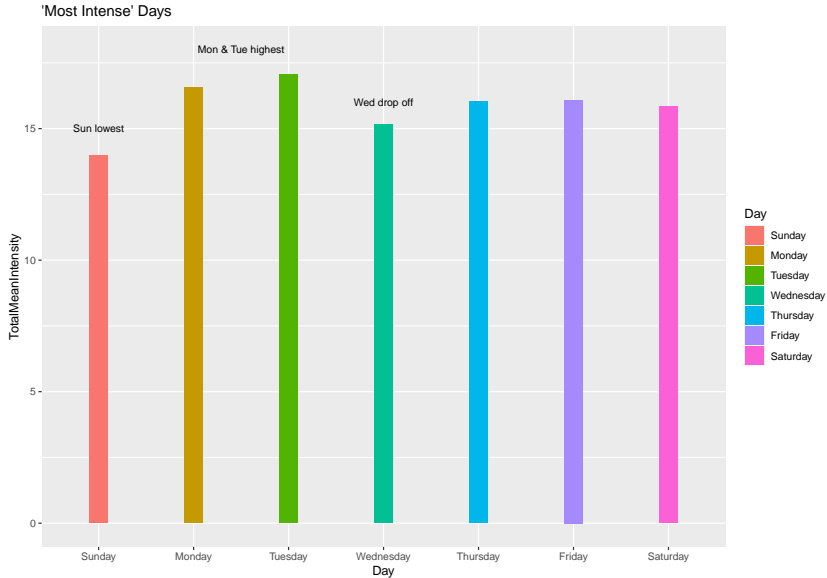
Hourly Activity Breakdown - “Very Active” users



But I asked myself. . .

- ▶ Hourly data is also organized by **days**, so. . .
- ▶ Are the *very active* days for these “very active” users also their most *intense*?
 - ▶ This would, once again, help establish “very active = intensity” relationship for this analysis

Turns out, yes. . . there is a consistency!



Conclusions & Recommendations

Key Takeaways

- ▶ **15/33** user IDs formed the “very active, very intense” group - that’s a sizeable chunk (nearly half)
 - ▶ There’s a market for the product - this is about *expansion*
- ▶ **Monday** and **Tuesday** were their most vigorously active days
- ▶ **Wednesday** and **Sunday** were the least
- ▶ The hours of **5pm - 7pm** were the most intense (or where intensity peaked)

Recommendations - “*Leaf Sport*”

- ▶ *Leaf Sport* - Possible new product name
- ▶ Slogans ending in “. . . with Leaf Sport.”
 - ▶ “Start the week right” - based on **Mon** and **Tue**
 - ▶ “Hump day slump? Get through it” - based on **Wed**
 - ▶ “End your day strong” - based on **5pm** - **7pm**
- ▶ **Saturday** had a moderate amount of intense activity so. . .
 - ▶ “For those weekend warriors. . .”

Further recommendations

- ▶ Website and other advertising channels must have more visual examples of vigorous - preferably outdoor - exercise involving the new product
- ▶ List of possible activities:
 - ▶ Basketball
 - ▶ Running
 - ▶ Fast Biking
 - ▶ Swimming Laps
 - ▶ Hiking uphill or w/ heavy backpack
 - ▶ Singles Tennis
- ▶ Simone Biles and Lindsey Vonn - possible celebrity endorsements?
 - ▶ They fit both the “very active” objective of this analysis and the overall wellness mission of the company (Simone Biles is a leader on mental health)

Sources

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