

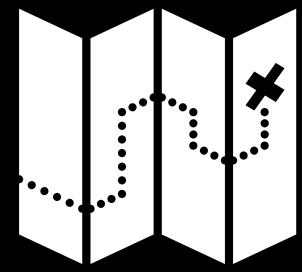
Bellabeat Case Study

A market analytic study using Fitbit tracker data

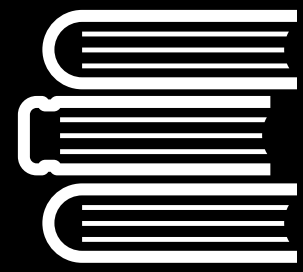
Nico Kosa - 1/12/22

Agenda

What to expect from this presentation



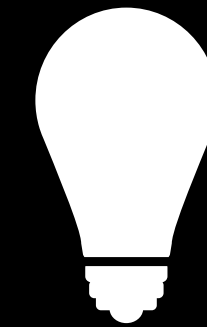
Project Overview



Data sources



Findings



Recommendations

Project Overview

Our objective here is to gain insight into how consumers use non-Bellabeat smart devices and use that insight to improve marketing strategy and unlock new growth potential opportunities for Bellabeat.

Data Source

Fitbit data set

- Sourced from [kaggle.com](https://www.kaggle.com)
- CCO Public Domain License
- Contains health data of 30 users related to their activity
- 18 files in CSV format

Data Assessment

Reliability = LOW

- data was only collected from 33 users
- About half of users have missing entries for some key measurements
- No user demographic information is included so the data may be biased
- There is only weight data for 8 users and even those users have limited entries

Data Assessment

- Originality: MEDIUM, dataset was collected from a third party source but the Kaggle post included a link to the original source, a description of the origin, and acknowledgement of the individuals who collected the data.
- Comprehensive: MEDIUM, contains a substantial amount of measurements to answer the question but is missing some entries for those measurements.
- Current: MEDIUM, study ended in May 2016 which is 6 years ago
- Cited: HIGH, data collectors and sources were documented properly

Data Assessment

Small insight on participating users

- The average step distance for women is 0.00066km and the average step distance for men is 0.00079km.¹ The average step distance in the study is 0.00072km almost halfway between the two gender averages. Thus we can deduce that **the users are a mix of men and women.**

¹ <https://ouhsc.edu/bserdac/dthompso/web/gait/knematics/stride.htm>

Data Selection

Our focus will be on averages of hourly measurements of METs, sleep time, and resting time as they relate to different Fitbit users. In addition, we will be taking a look at what times of day users tend to be most active and least active.

Data Preparation

A count Id function was used to determine missing data.

Out of 33 users

- 33 have MET data
- 33 have calorie data
- 24 have sleep data
- 8 have weight & BMI data

Data Preparation

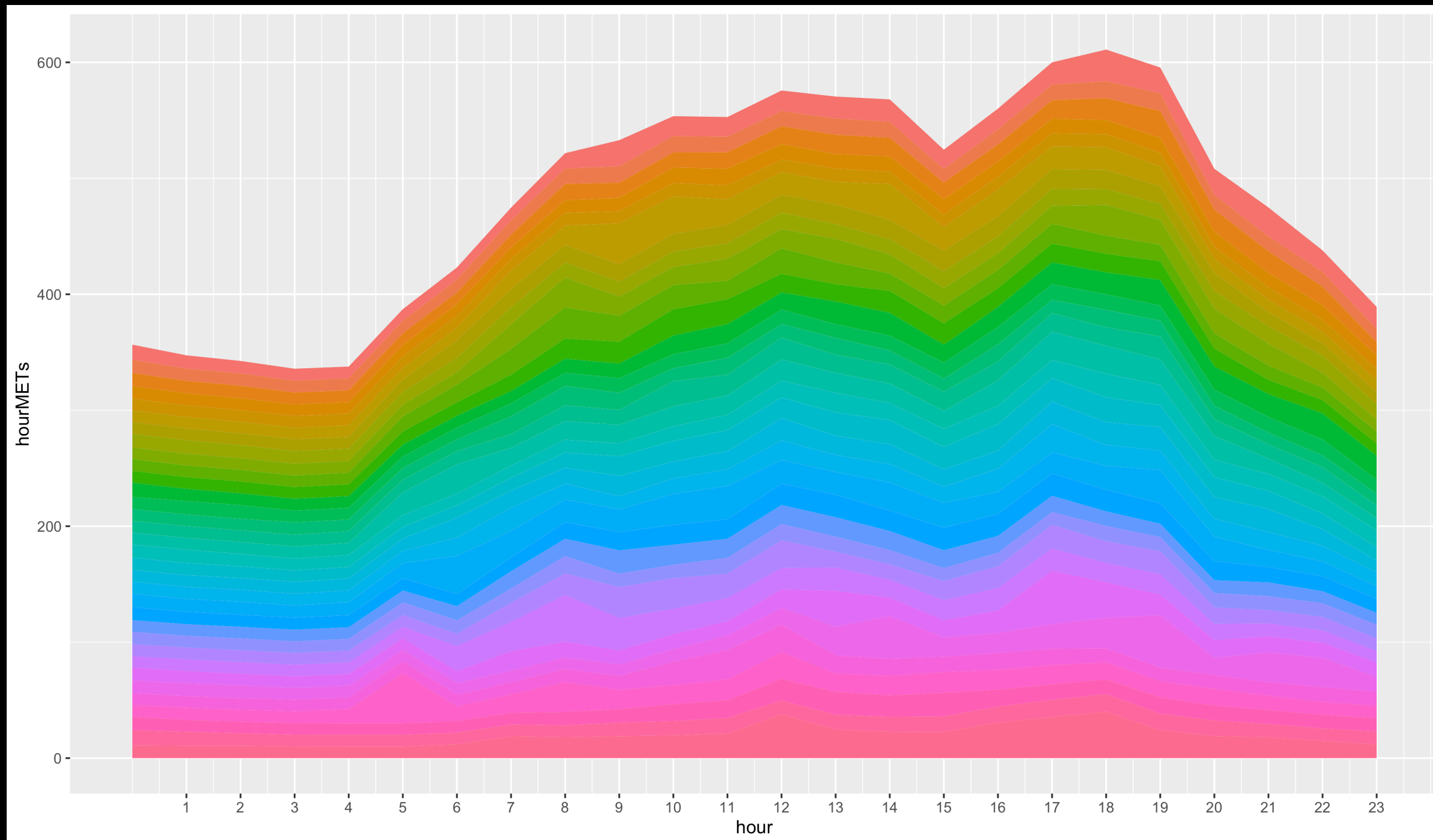
- Heartrate, METs, and Sleep data were not measured in hourly intervals so **dates and times were converted to a more universally acceptable 24 hour format** of month/day/year - hour/minute/second in order to merge the data tables.
- **Averages/means will be used** instead of sums because they provide more accurate comparisons due to the missing values.
- **METs will be used to compare user engagement and activity** as they had the strongest correlation to calories and proved to be a very accurate indicator of someone's activity level compared to their baseline.

Data Preparation

- Users will be categorized into 3 groups based on their health level. Since there are 33 users in this study, the group sizes will be equal. 11 of the least healthy users will be identified as “Less Healthy”, 11 of the users in the mid-range of the health spectrum of this study will be labeled as “Medium Healthy”, and 11 of the most healthy users will be identified as “More Healthy”. I will then use these groupings to identify user trends as they relate to the health of the users.

Findings

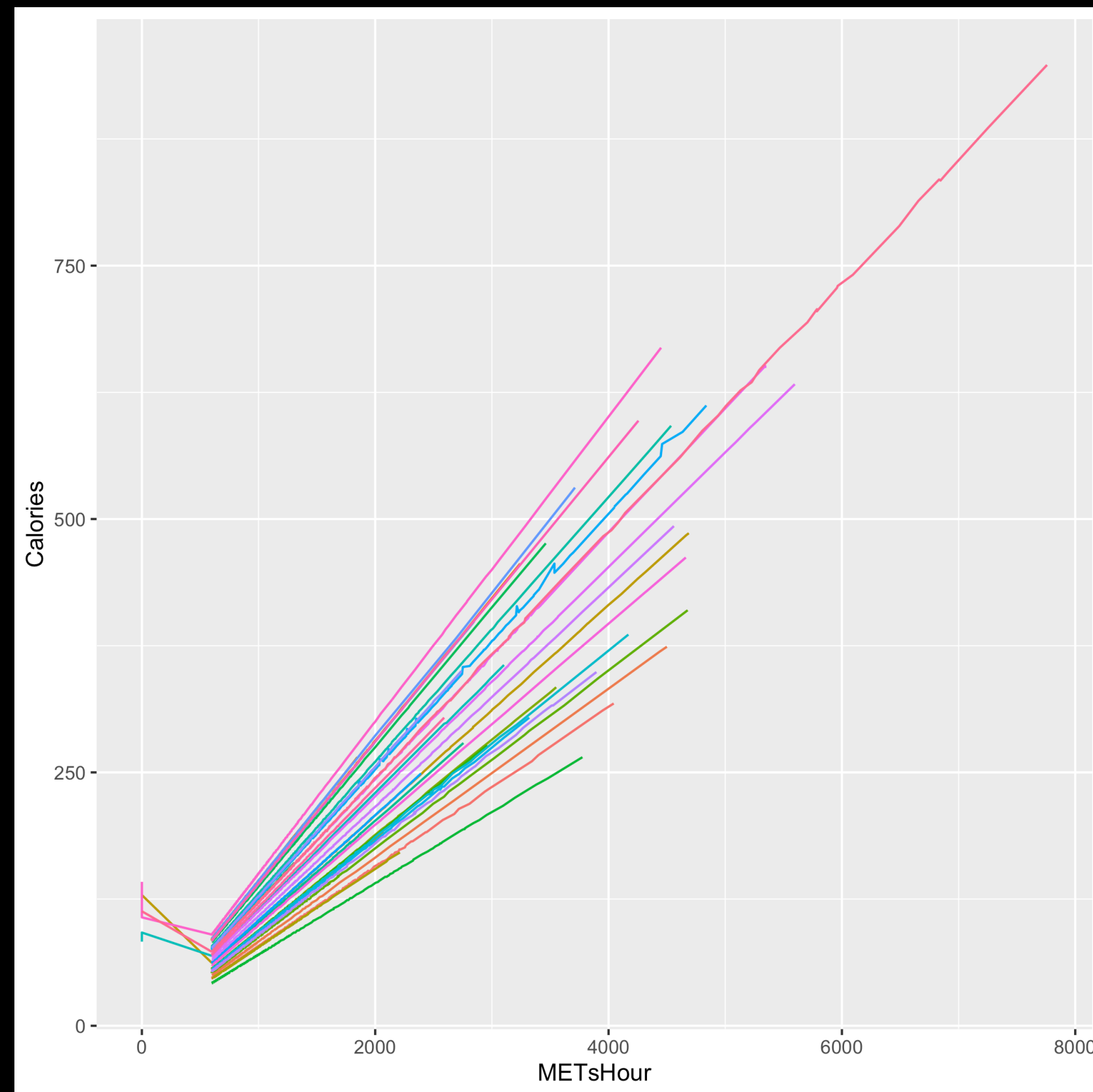
Activity Times



- Users are **generally more active** between 7am-8pm with the **most active** hours being between 5pm-7pm which comes after a little hour-long **period of reduced activity at 3pm**. Activity quickly starts falling off at 8pm.

Findings

Calories Vs. METs

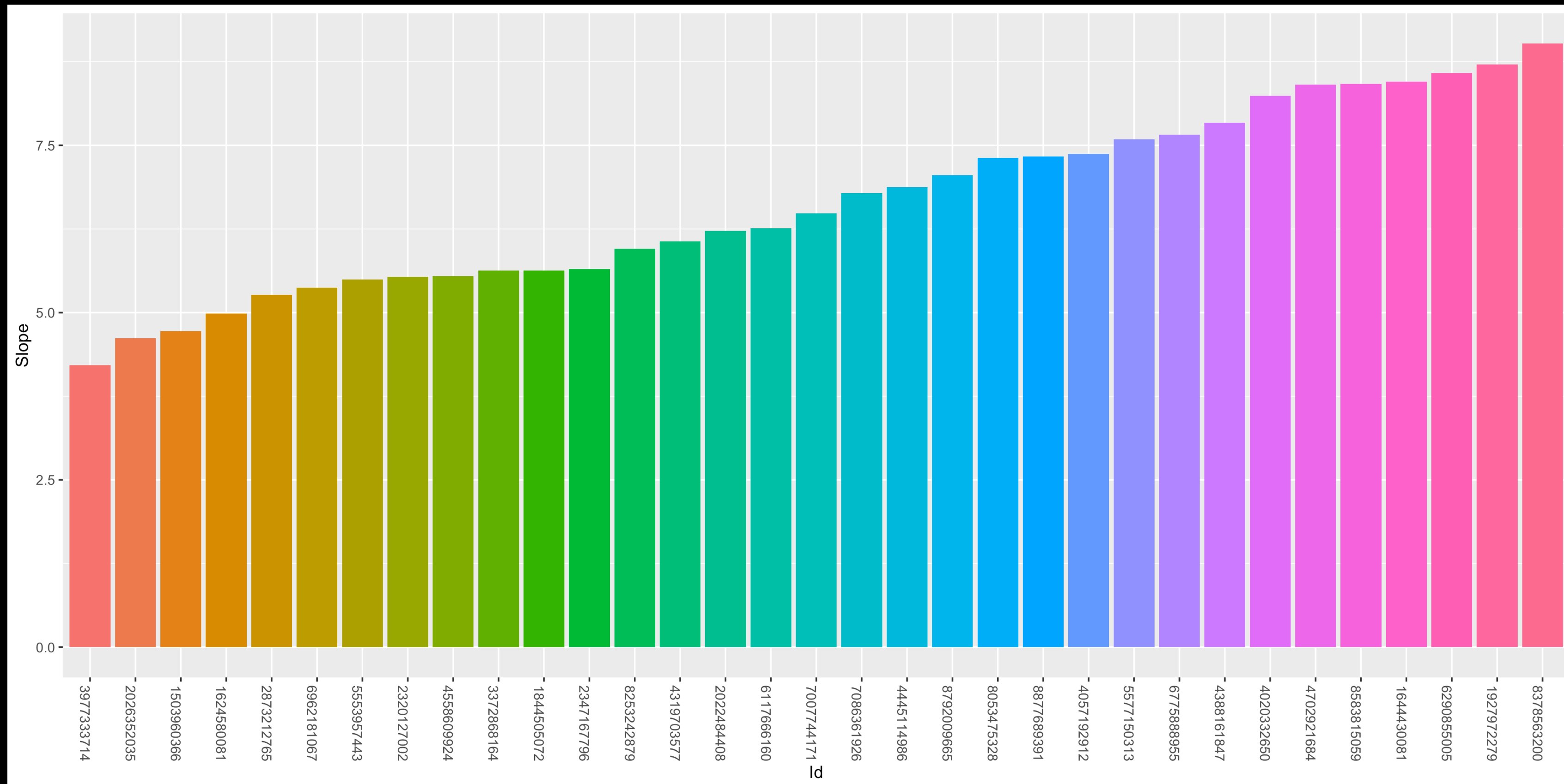


As shown in the figure very direct/positive correlation between each user's METs and their calories burnt.

We also see here that different users burn more or less calories for the same relative activity levels. We will look more at this in the next slide.

Findings

User Calories v METs Slope Measurements (Based on slopes from previous chart)



As seen in this chart with the BMI measurements of 8 users displayed below, the slope is generally steeper (larger number) for users with higher BMI. Thus we can deduce that it is a somewhat **accurate indicator of each user's BMI.**

BMI

22

21

24

27

27

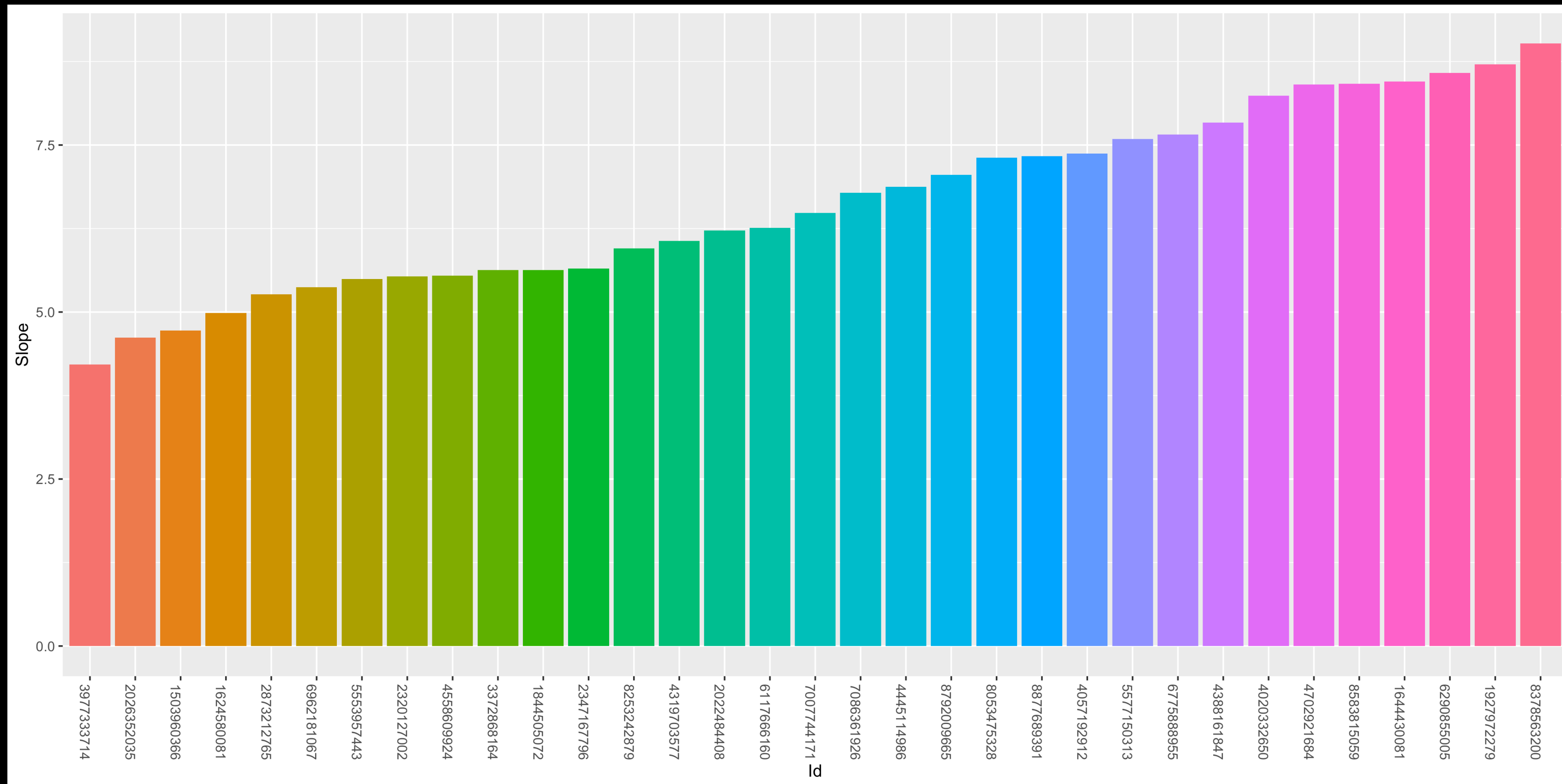
25

28

47

Findings

User Calories v METs Slope Measurements (Based on slopes from previous chart)



However, we do see some exceptions to the general trend. For example, users 8877 and 2873 have slightly lower BMIs but steeper slopes. This indicates that **calorie burn in relation to METs** is more than just an indicator for BMI and can serve as an **indicator of overall health**.

BMI

↑
22
21

↑
24
21

↑
27

↑
27

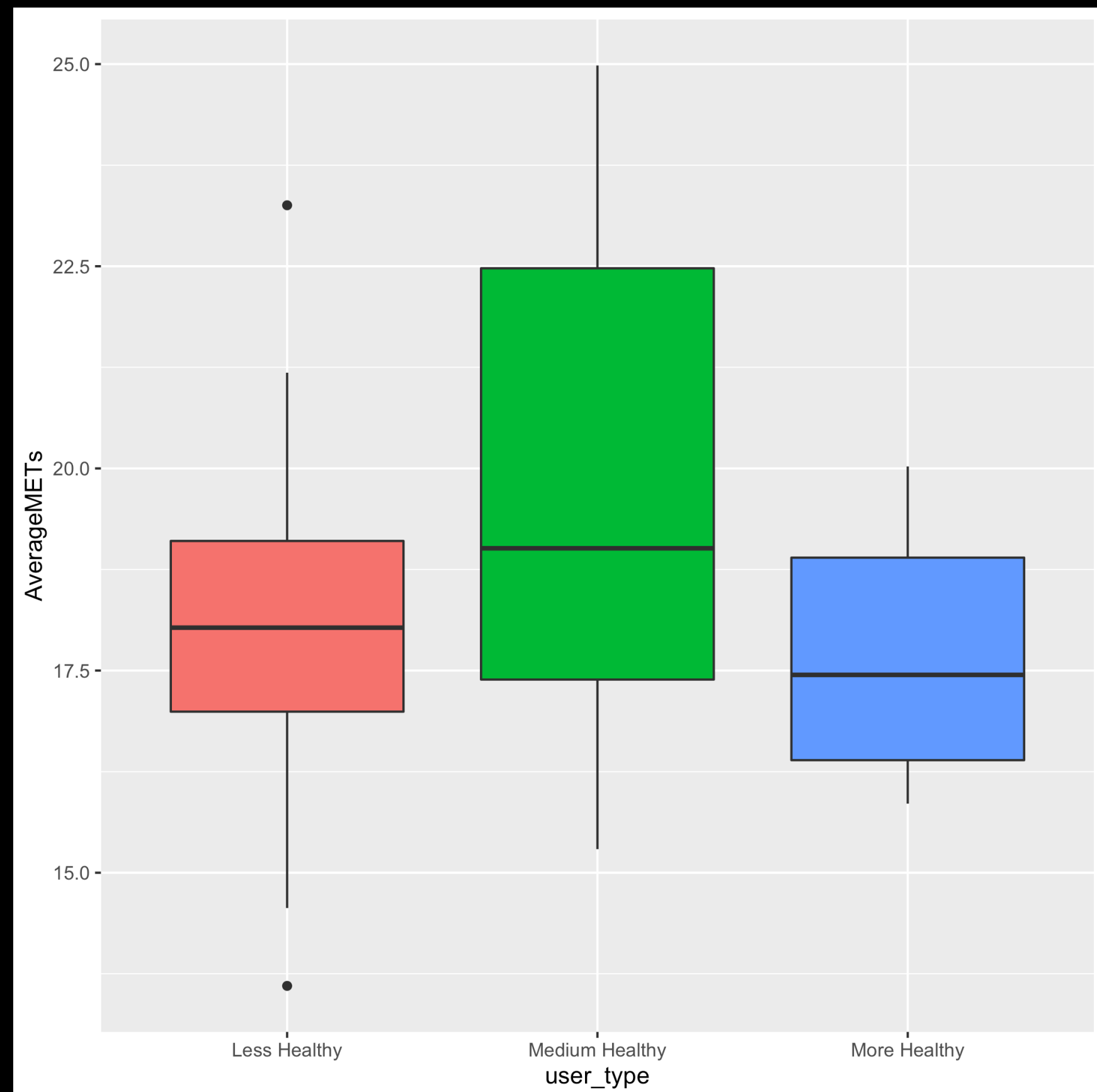
↑
25

↑
28

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47

Findings

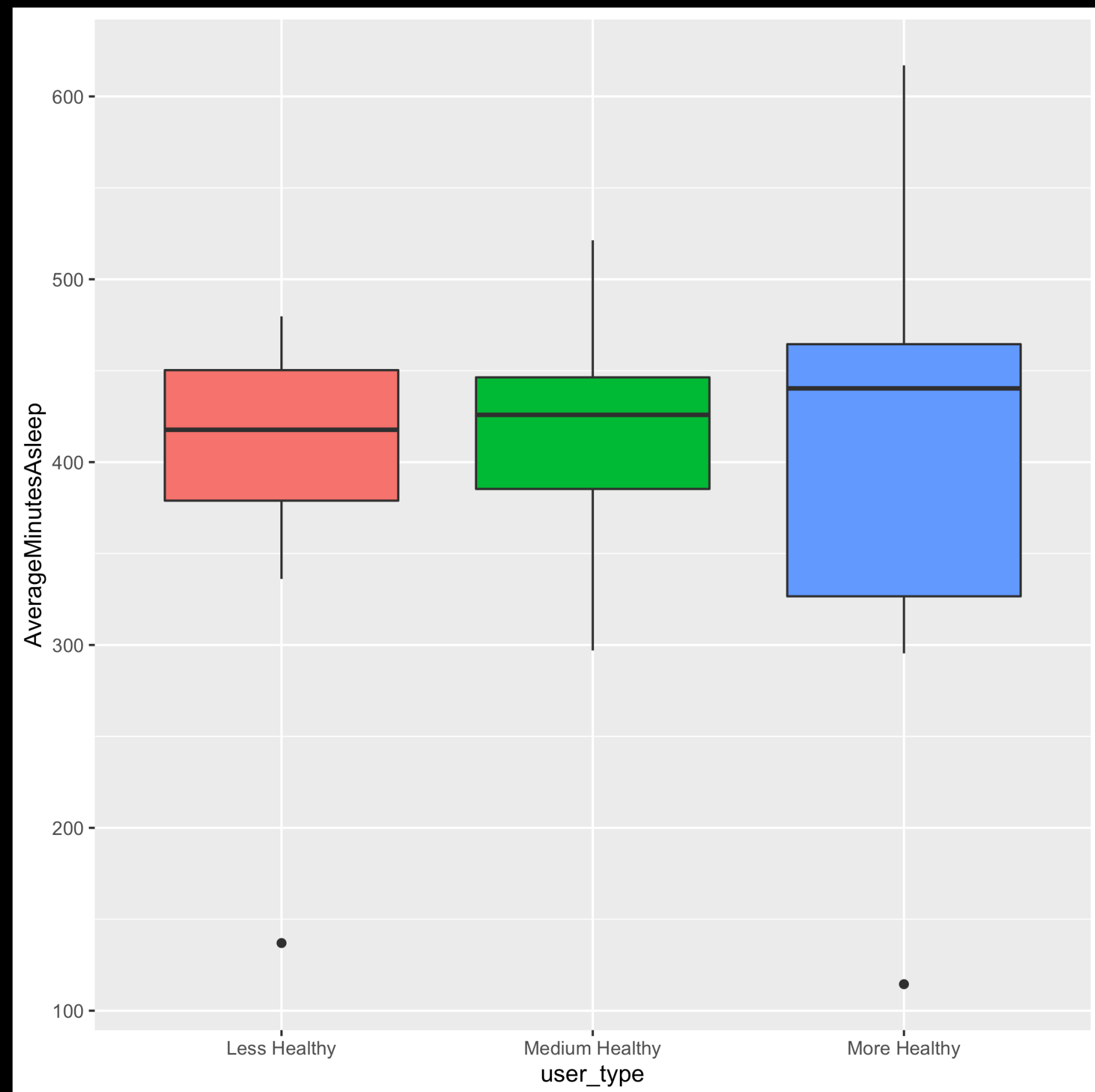
User Activity



1. **Medium Healthy** users had the highest average MET count.
2. **Less Healthy** users had the second highest average MET count, and
3. **More Healthy** users actually had the lowest.

Findings

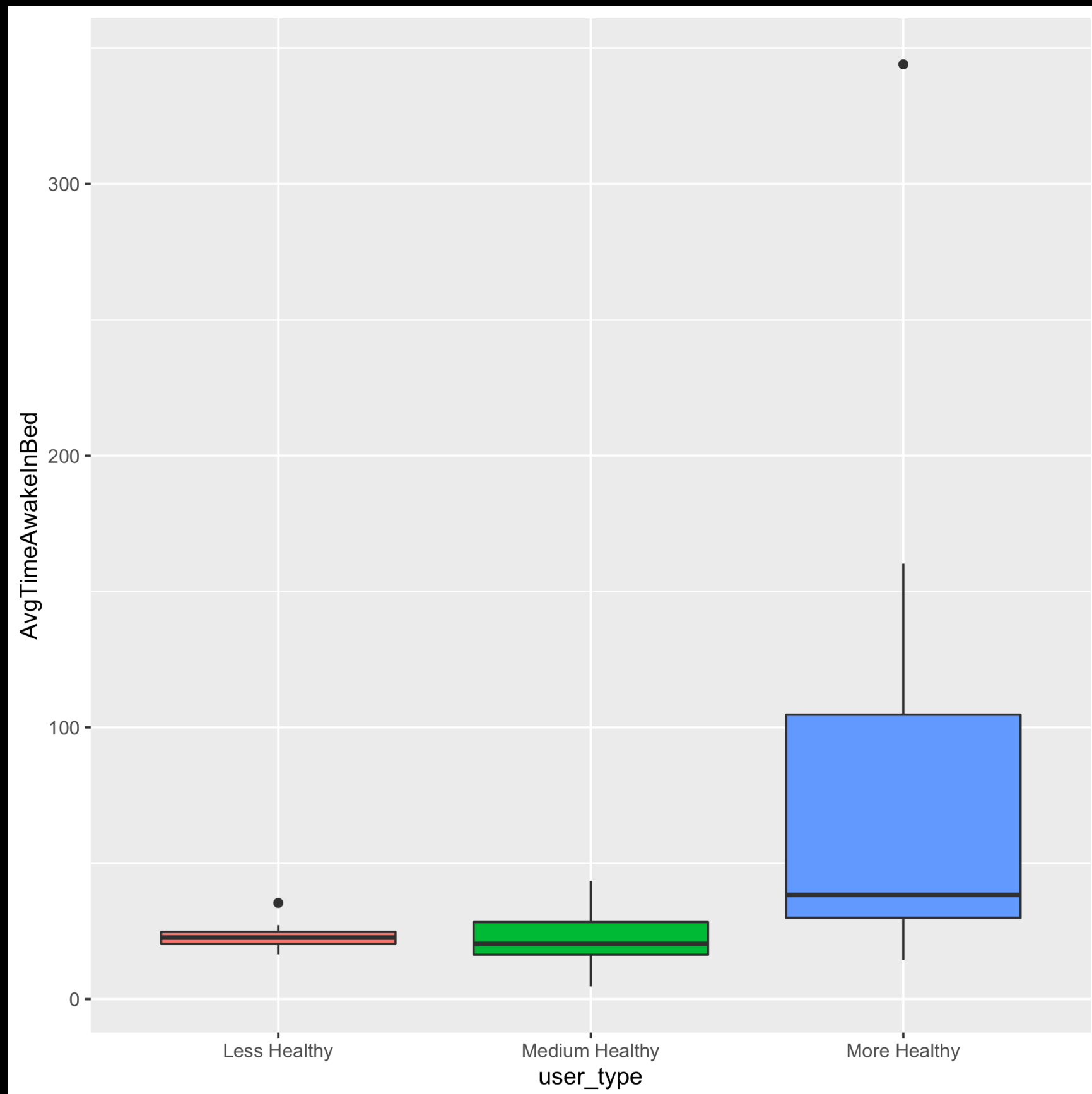
User Sleep



1. **More Healthy** users had the highest average amount of sleep.
2. **Medium Healthy** users had the second highest.
3. **Less Healthy** users had the lowest.

Findings

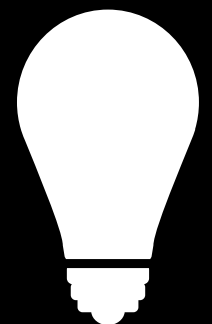
User Time In Bed (Not Asleep)



1. **More Healthy** users had the highest amount of time in bed not sleeping.
2. **Less Healthy** users had the second highest average with a super small amount of variation.
3. **Medium Healthy** users had the lowest average amount of time in bed. (however, medium healthy users had a larger range of time in bed averages than less healthy users)

Recommendations

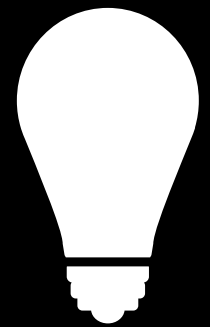
How we can use this Fitbit data to improve Bellabeat marketing for the Time wellness watch



Running campaigns and friendly competitions as well as forming well-moderated online communities in support of body positivity, sleep, and recovery routines.

Why: Users hardly ever logged their weight, potentially showing body negativity. Also, the users with the more healthy METs had more average sleep and time in bed. Improved health will increase customer loyalty.

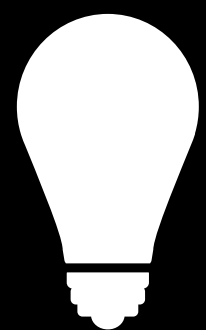
| Recommendations



Emphasize the stress tracking feature of Bellabeat's Time product.

Why: Stress tracking is a feature that is not included with the Fitbits in this study. Promoting stress monitoring and reduction seems in line with promoting sleep, recovery, and body positivity.

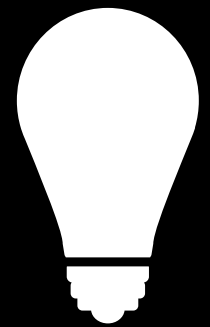
| Recommendations



Release marketing material at times of lower activity as indicated by the Activity Times chart. 3pm may be the best time for this, as it is a time of lower activity that is not too late in the day.

Why: We want to reach as many potential customers and existing customers as we can. Reaching them at a time when they are not too busy and still receptive is important for this.

| Recommendations



Market towards the medium healthy user-base as they were the most active according to this data.

Why: The more active a user is the more likely they are to benefit from the product and become a loyal customer and spread positive and genuine word of mouth to other prospective customers.

Questions?

Thank you