User Insights on Fitness Smart Device Usage

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Updated on: 3rd June 2021

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Business Case

Bellabeat’s cofounder knows that an analysis of fitness smart device data would reveal more opportunities for growth. Obtain analysis insights and provide recommendations for Bellabeat marketing strategy.

Objectives

- Gain insights into how people are using fitness smart devices
- Provide marketing strategy recommendations for Bellabeat product

Metadata

Dataset is obtained from Fitbit users

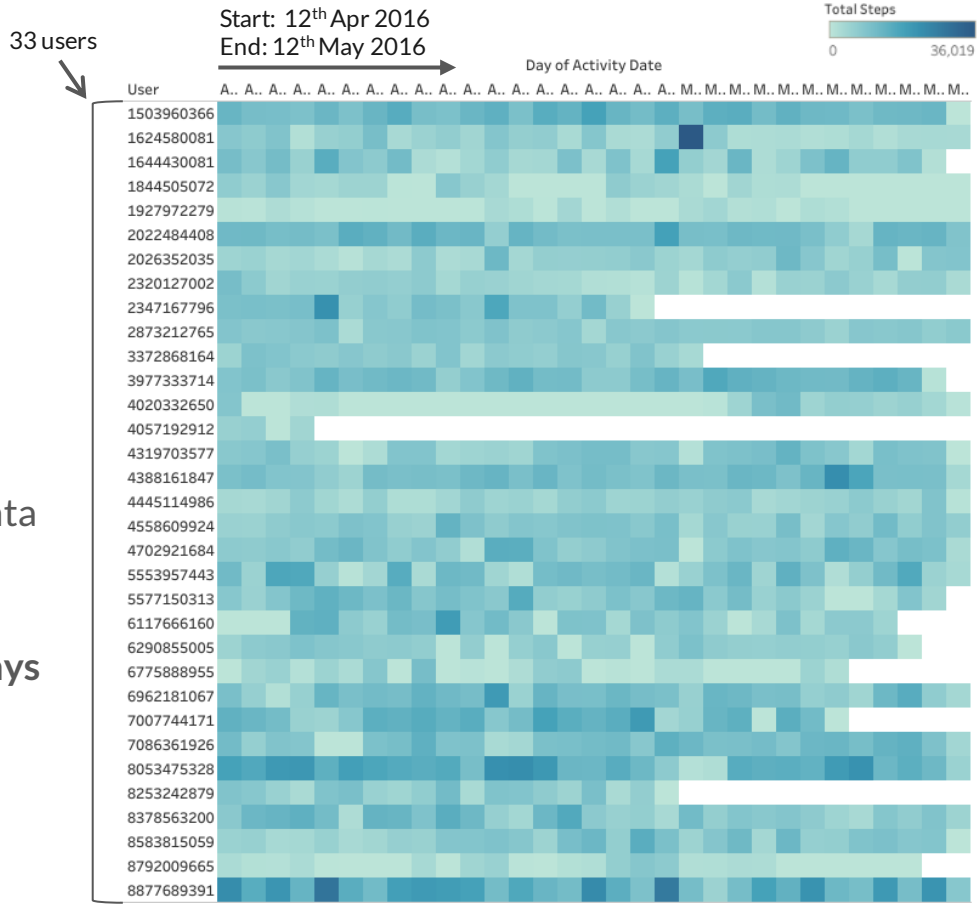
Source: Kaggle dataset titled [FitBit Fitness Tracker Data]

Tables Used	dailyActivity.csv	sleepDay.csv
Number of Records	940	410
Number of Users	33	24
Time Period	12th Apr 2016 to 12th May 2016 (31 days)	

Insights:
User Activity

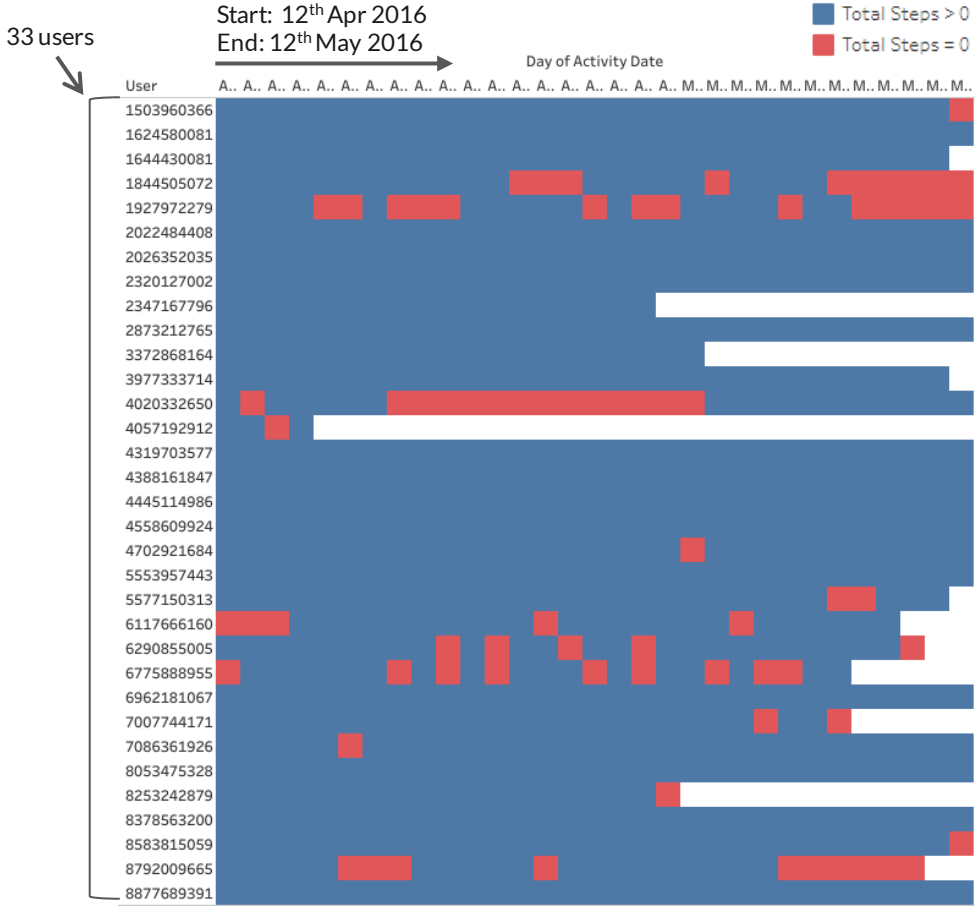
User Activity:
Tracking Total Steps

- 33 users tracked their data
- 21 out of 33 users (64%) tracked their data for **all days** -- *see non-blank rows in visual*
- All users tracked their data in **running days**



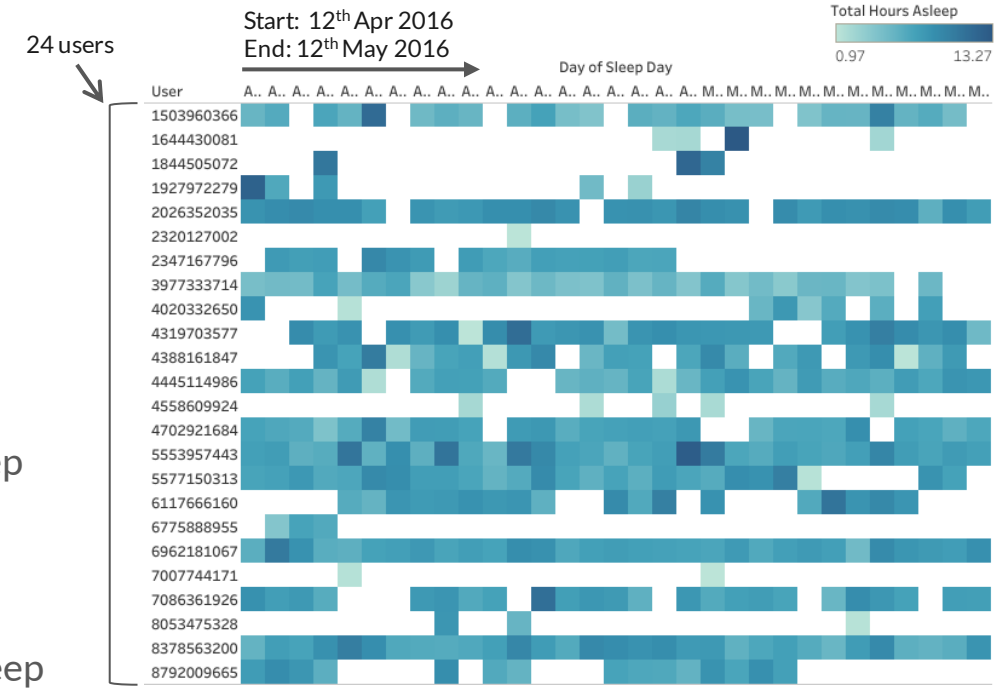
User Activity:
Tracking Total Steps

- 77 out of 940 records (8%) registered **total steps of 0** for the entire day



User Activity:
Tracking Sleep

- 24 out of 33 users (73%) tracked their sleep
- 3 out of 33 users (9%) tracked their sleep data for **all days** -- *see non-blank rows in visual*
- 5 out of 33 users (15%) tracked their sleep data in **running days**

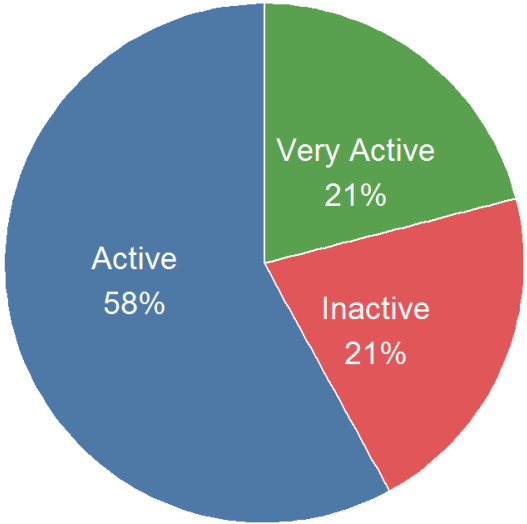


Insights:
User Profile

User Profile:
Users by Steps

- 7 inactive users (21%)
- 19 active users (58%)
- 7 very active users (21%)

- Note: steps are averaged individually for each user

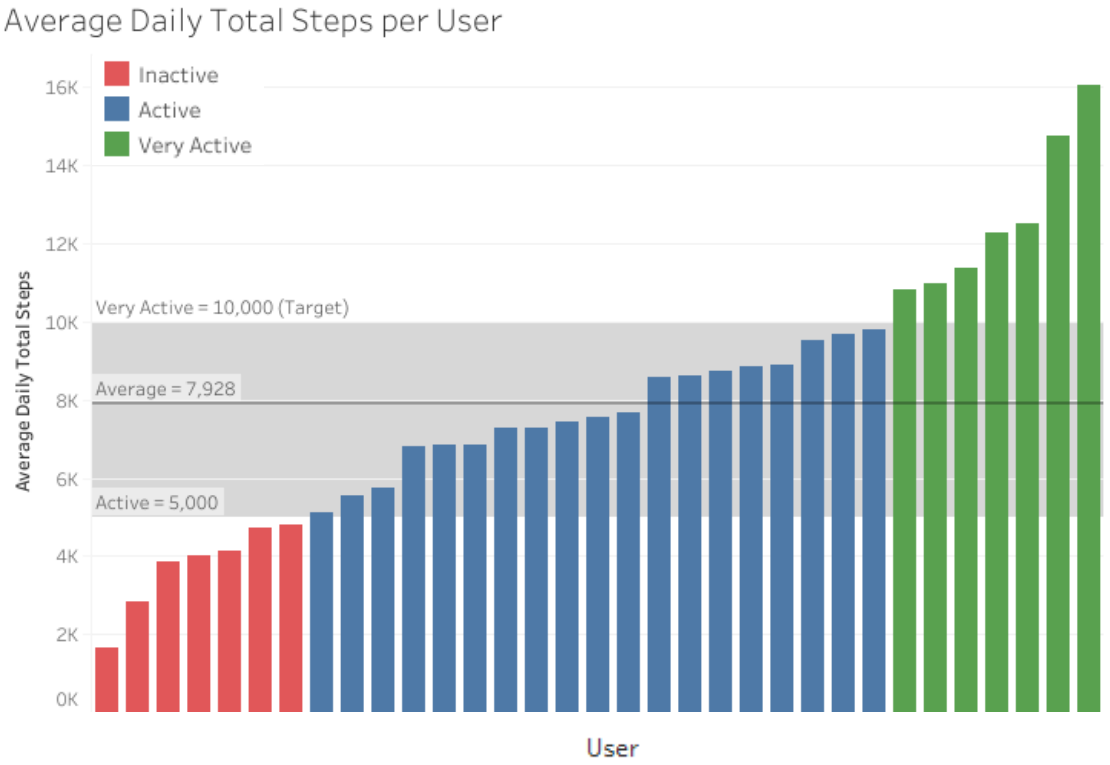


Inactive: less than 5,000 steps per day
Active: between 5,000 and 9,999 steps per day
Very Active: at least 10,000 steps per day

User Profile:
Users by Steps

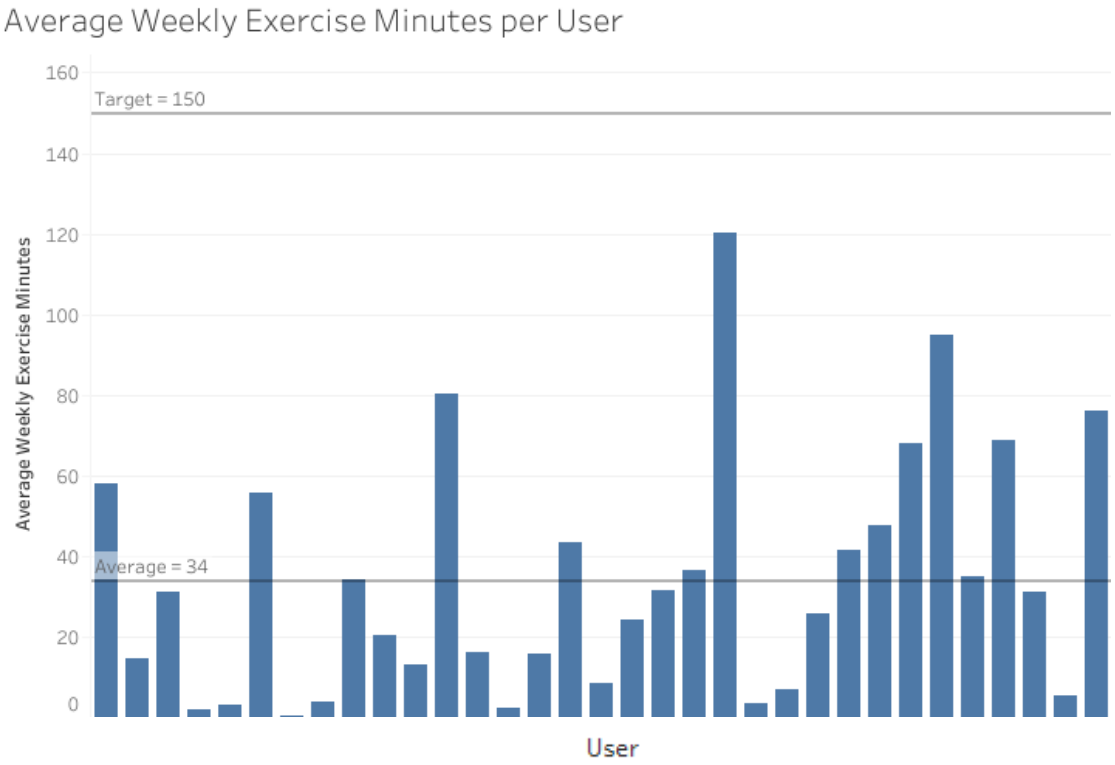
- There is a **wide and normal distribution** of inactive, active, and very active users

- The average user takes an average of **7928 steps daily**, below the recommended [10,000 steps daily]



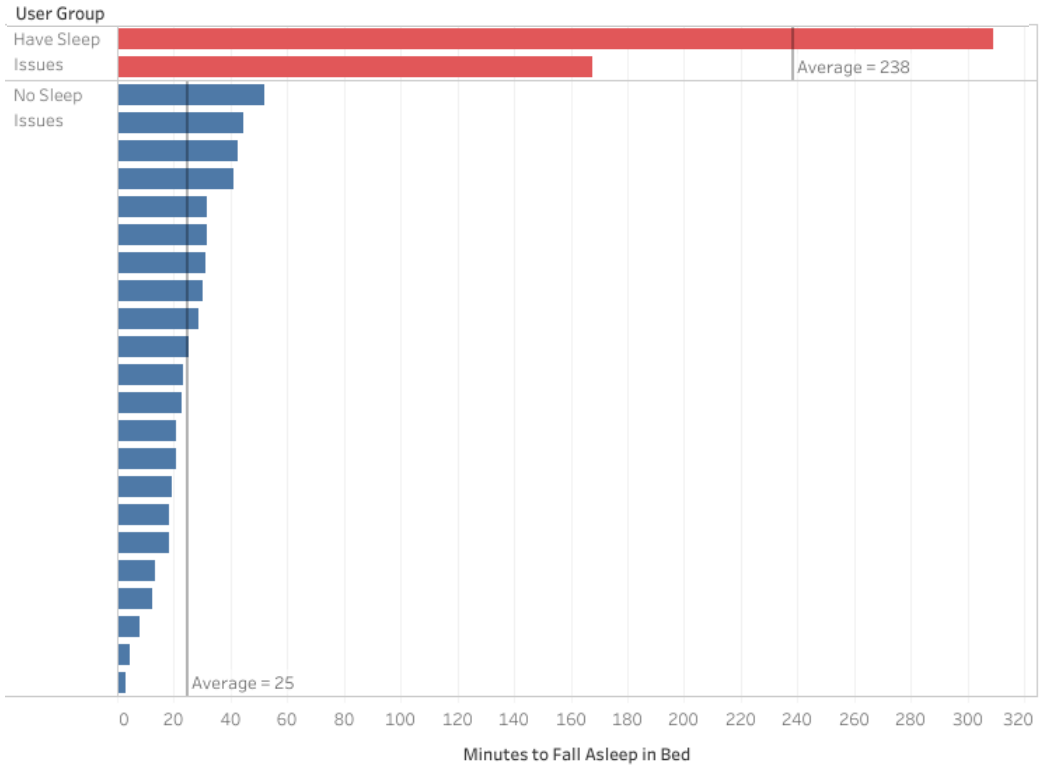
User Profile: Users by Exercise Minutes

- There is a **wide distribution** of users
- The average user exercises an average of **34 minutes weekly**, below the recommended 150 minutes daily



User Profile:
Users by Time to Fall Asleep

- Majority of the users (91%) have **no sleep issues**, and take an average of 25 minutes to fall asleep



Conclusion and Recommendations

Conclusion

1) 64% of users tracked their data for all days [slide 6]
2) 8% of total records registered total steps of 0 for the entire day [slide 7]
3) 9% of users tracked their sleep data for all days [slide 8]
4) The user profile of fitness smart devices [slides 10-13]:
    - Wide and normal distribution of inactive, active and very active users (by steps)
    - All users exercise less than 150 minutes weekly, with an average of 34 minutes
    - Have no sleep issues

Recommendations

Battery Life

Bellabeat product has **stronger battery life** than those in the market

Bellabeat product has the capability to **send user alerts** when the device is on low battery, fully charged, or not worn for 24 hours

Sleep Convenience

Bellabeat product is able to **auto detect and track sleep**

Bellabeat product is designed for **comfort** during sleep ("you can't feel it")

Recommendations

Fashion

Bellabeat product is designed to **fashionably** appeal to specific demographic preference

Target User Profile

Bellabeat product can be marketed to the **general population** (existing demand)

There is possibly an untapped market of **people who exercise more than 150 minutes weekly**

Thanks!

Template is from Google Slides

Appendix

Limitations and Assumptions

1) Unable to validate data with the original source
2) Data is limited to 33 Fitbit users, and may not be representative of the population
3) Data is limited to April and May, and there might be seasonal trends
4) Data provided is in 2016, and user behaviour might change over time
5) Data is insufficient to decisively determine reasons for user behaviour
    - For example: why users stop tracking their fitness data, as well as sleep data
6) Assume distance units to be in kilometers

Further Investigations

1) Why users stop tracking their fitness data? [slide 6]
    - Battery died? Privacy concerns? Discontinued product usage due to preferences?
2) Why did users register total steps of 0 for the entire day? [slide 7]
    - User forgot to wear device? User is charging device?
3) Why is there significantly lesser sleep data records? [slide 8]
    - Inconvenient/uncomfortable/unable to track sleep? User charge during sleep?
4) Are “people who exercise more than 150 minutes weekly”, an untapped market, or are they not interested in fitness smart devices? [slide 12]

Opportunities

1) Collect data from more fitness smart device users
2) Collect data over several years
3) Make sure data is current
4) Collect more data points to determine user behaviour
    - Surveys, interviews etc
5) Collect demographics data
6) Analyze data by minute
    - Example: send alert when user is not moving and not sleeping, for the last hour

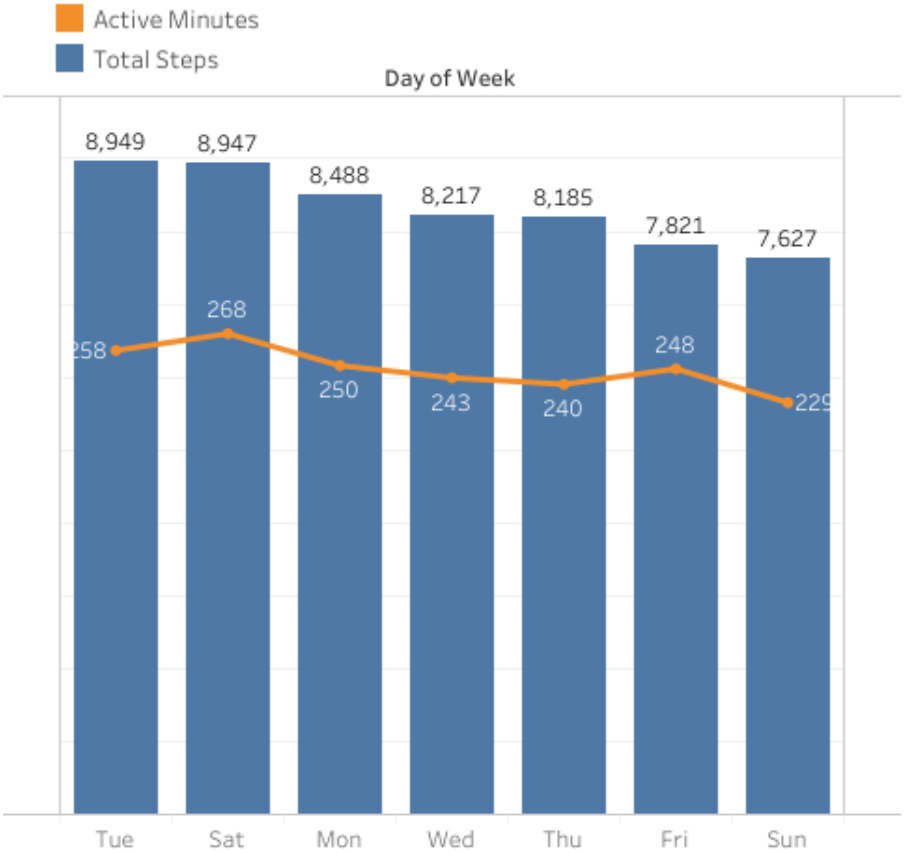
Data Cleaning Documentation

- Data is cleaned via SQL (see sql script)
  - Bellabeat_dailyActivity.sql
  - Bellabeat_sleepDay.sql
- Alternate data cleaning version using R (see R markdown)
  - Bellabeat_dailyActivity_clean.html
  - Bellabeat_sleepDay_clean.html
- Changelog
  - Changelog_Bellabeat_dailyActivity.txt
  - Changelog_Bellabeat_sleepDay.txt
- Checklist
  - Data Cleaning Checklist - Google DA Capstone - Case Study 2.xlsx

Appendix:
Other Insights

User Habit:
Activity by Day of Week

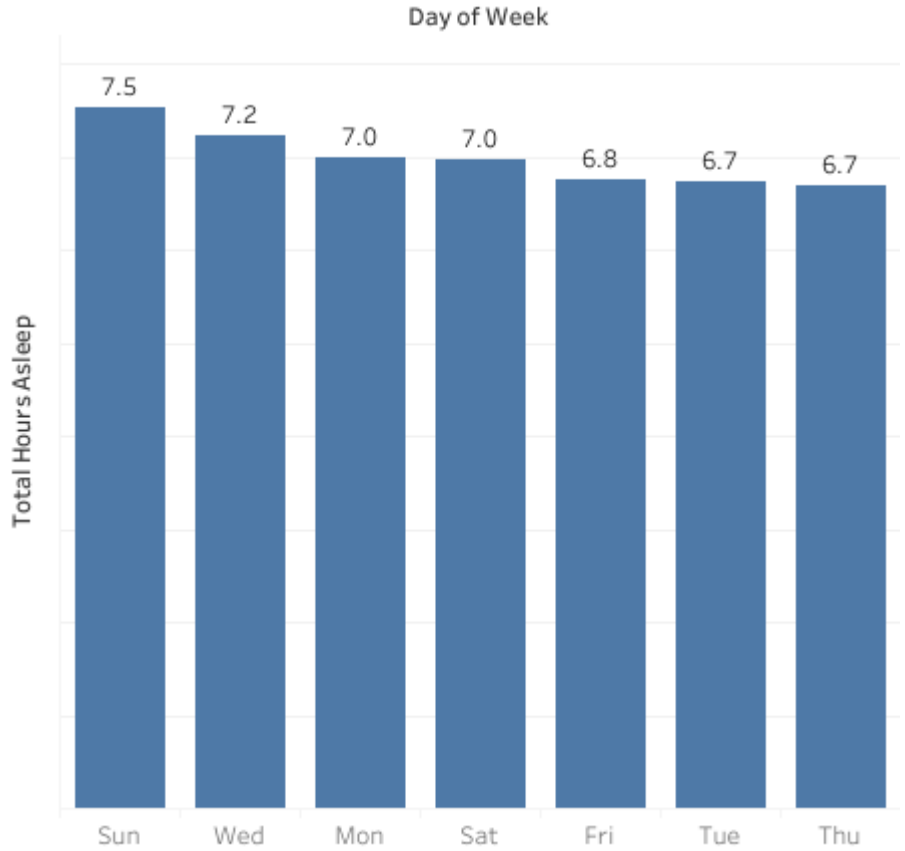
- Users are **most active** on Tuesdays and Saturdays
- Users are **least active** on Sundays
- Trend for active minutes and total steps is generally **similar**, except for Friday



Note: Measure is averaged over all user records

User Habit:
Sleep Hours by Day of Week

- Users **sleep the most** on days transitioning to Sunday (~20-50 mins more)
- Users **sleep the least** on days transitioning to Tuesday and Thursday (6.7 hours)

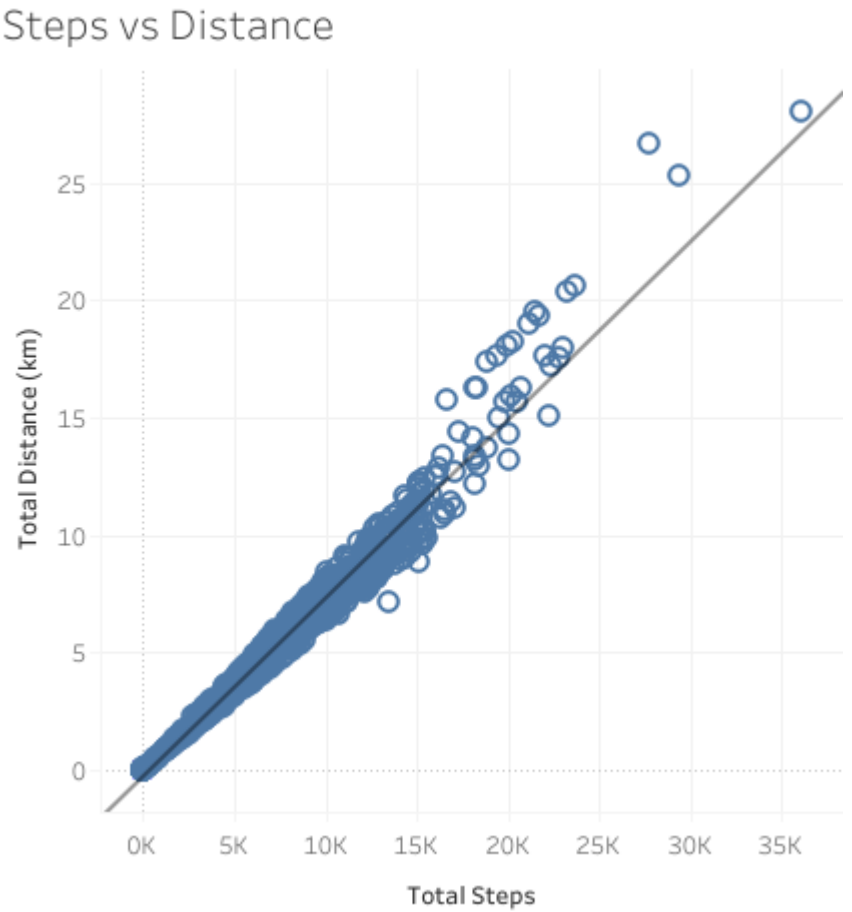


Note: Measure is averaged over all user records

Trend:
Steps vs Distance

- There is **near perfect correlation** that higher total steps leads to higher distance covered

- Correlation coefficient of **0.98**
    - The closer to 1.0, the stronger the positive correlation



Trend:
Steps vs Calories

- There is a **moderate correlation** that higher total steps leads to higher calories burn

- Correlation coefficient of **0.56**
    - The closer to 1.0, the stronger the positive correlation