Smart Device Trends

Michael B - November 9, 2022

Table of Contents

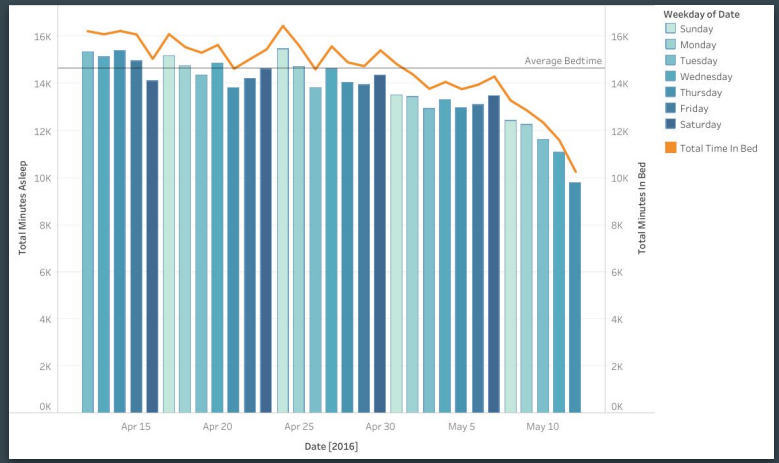
Objective

Identify any patterns based on recorded sleep patterns and physical activity (total steps/distance walked) to gain a better understanding on how consumers utilize their smart devices.

Sleep and Bedtime Patterns

- Average Cumulative Bed Time is around 13.2 thousand hours.
- Around the beginning of May, the amount of sleep users are getting is decreasing.
- Recent downward trend in both overall bedtime and sleep time as they are highly correlated of each other.

Total Sleep

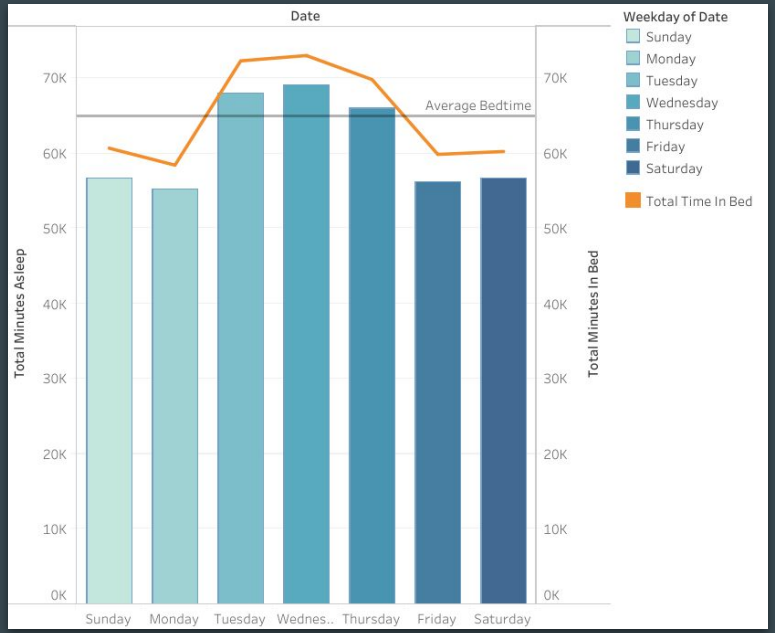


Total Bedtime

Sleep by the Day

- Average cumulative bed time is around 58.8K among all days of the week.
- Both sleep time and bed time seem to peak at the middle of the week (Tuesday to Thursday).
- Day of the week seems to be a strong indicator of the amount of sleep/bedtime a typical user is getting.

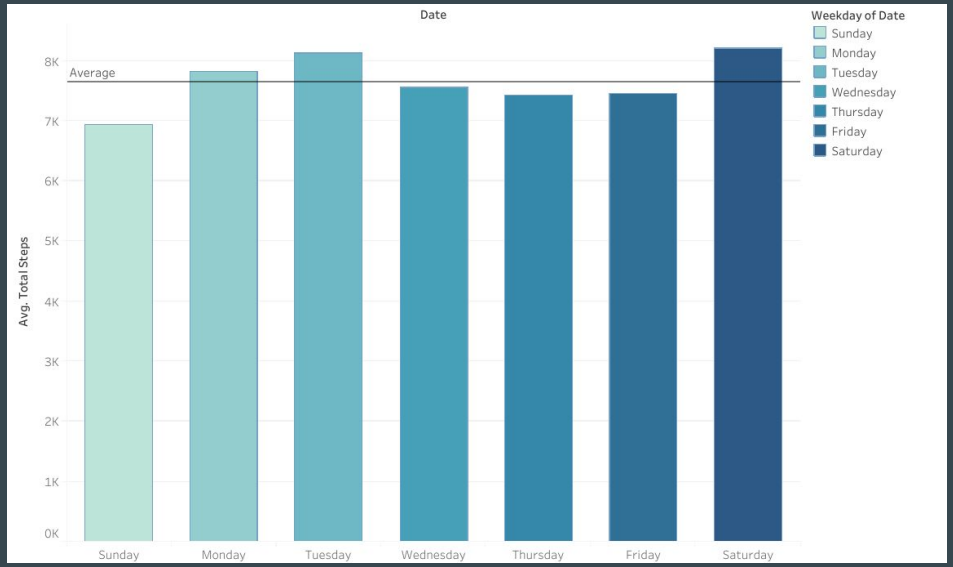
Total Minutes Asleep



Total Bedtime

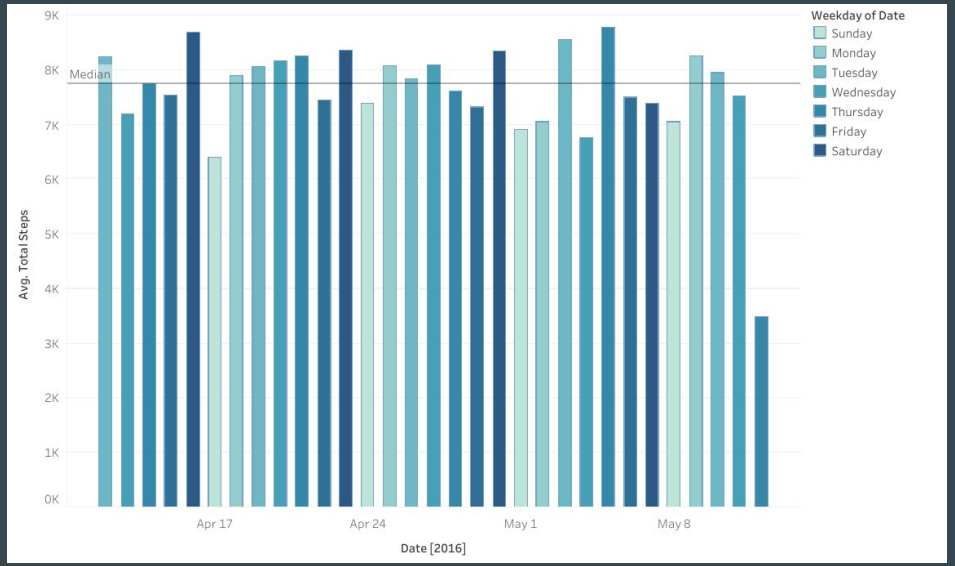
Average Steps by Weekday

- Wednesday, Thursday, and Friday are all slightly below average
- Monday, Tuesday, and Saturday are the most walked, all above average.
- Reasoning is uncertain. More research can be done in the future to further look into this observation.



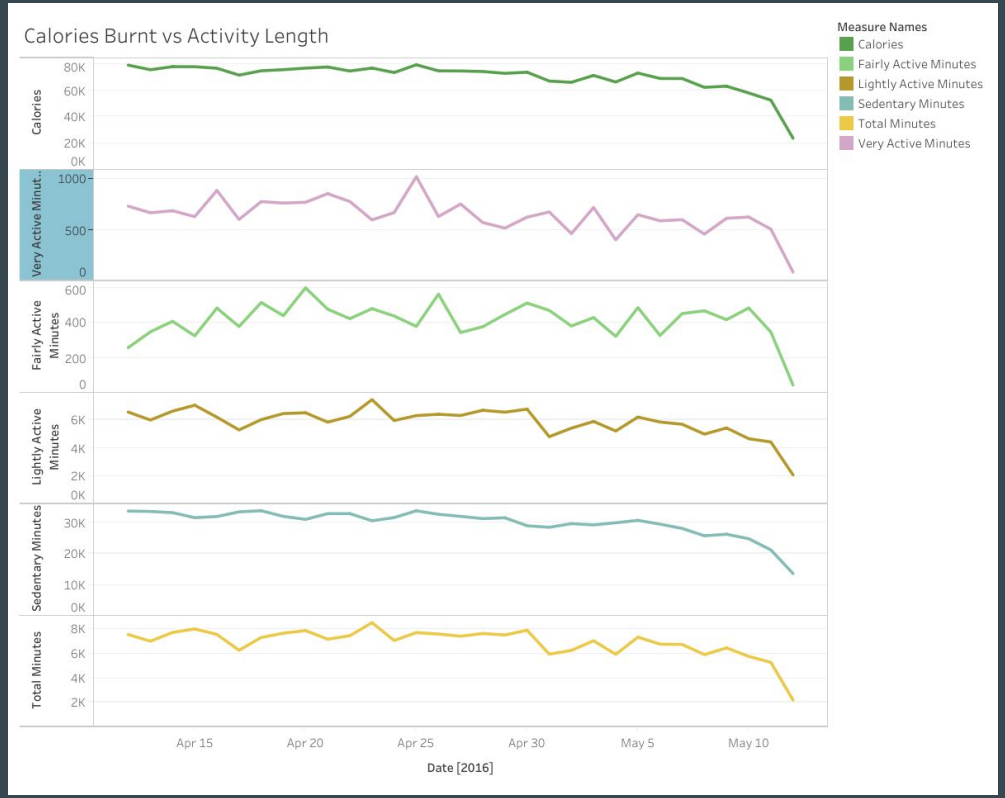
Date's impact?

- Despite Saturday having an above average step count, it drops off heavily into the last recorded week.
- Tuesday remains above the median for every week
- May 12 has the lowest average step count by far, making it an outlier from other dates
- Not enough data to confidently say that there exists a downward trend.



Distance Trends

- Some variation between different types of minutes
- Common peaks are at around mid to the end of April. Some at early May.
- Overall, all types of minutes logged are dropping , even before May 12. Calories burnt also decreasing.
- Common regression trend of exercise is likely due to lack of data from later dates.



Logged User Records

- Hypothesis: Lack of records in the last week skewed the total steps / minutes / sleep time which is what's causing a downward trend in each

Week of Date	
April 10, 2016	164
April 17, 2016	224
April 24, 2016	224
May 1, 2016	206
May 8, 2016	125

Main Takeaways

1. People tend to sleep more in the middle of the week than in the beginning or the end.

2. * The total amount of sleep and bed from users is on a slight decline

3. The day of the week is not a strong indicator on the amount of steps walked by users. Although Tuesdays, Mondays, and Saturdays might want to be looked into further.

4. * Total time spent on physical activity step count, and calories burnt are possibly on a decline as well.

*Further research is desired as there is a possibility of the results being skewed due to a lack of data in later weeks.

Appendix / Extra Notes

- Dataset used:
  - Fitbit Fitness Tracker Data Kaggle Dataset (CC0 Public Domain) by MÖBIUS:
    - https://www.kaggle.com/datasets/arashnic/fitbit
- Datasets recording to daily activity and sleep day were briefly cleaned using Sheets before being imported into SQL (BigQuery)
- For sleep/bed activity, not every user had everything recorded. To clean my data, I had to make some assumptions when filling in null/blank values:
  - Any null value for time slept will be set to the ideal number of hours an adult should sleep for:
    - 8 * 60 minutes = 480
  - According to Sleep Foundation, an organization that focuses on sleep wellness, A typical adult would take anywhere from “15 to 20 minutes” to fall asleep on a “typical night.” [1]
    - As such, default bedtime will be set to 500 minutes (480+20)

[1] https://www.sleepfoundation.org/sleep-faqs/how-long-should-it-take-to-fall-asleep