Smart Device Trends

Michael B - November 10, 2022

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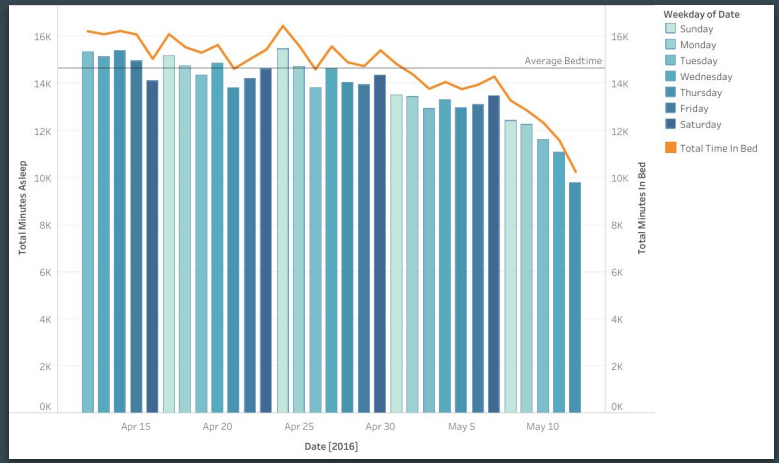
Objective

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

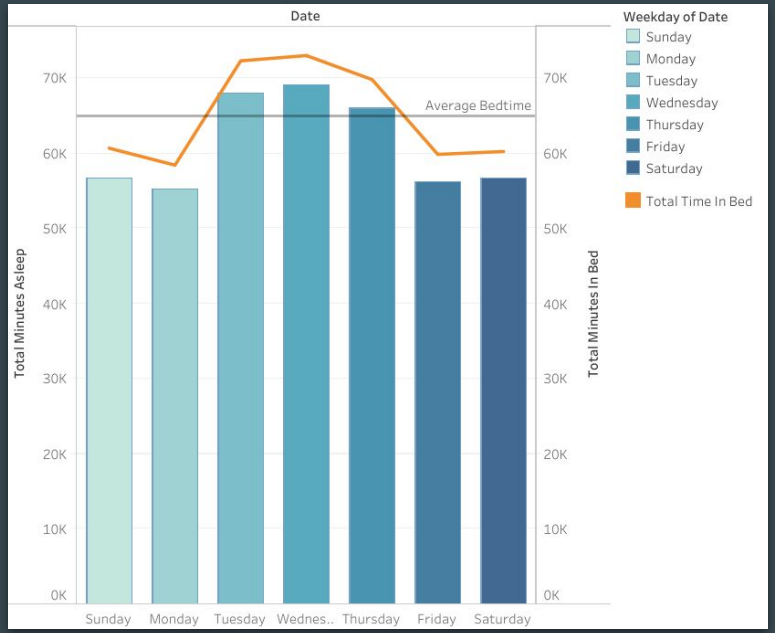


Total Bedtime

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.

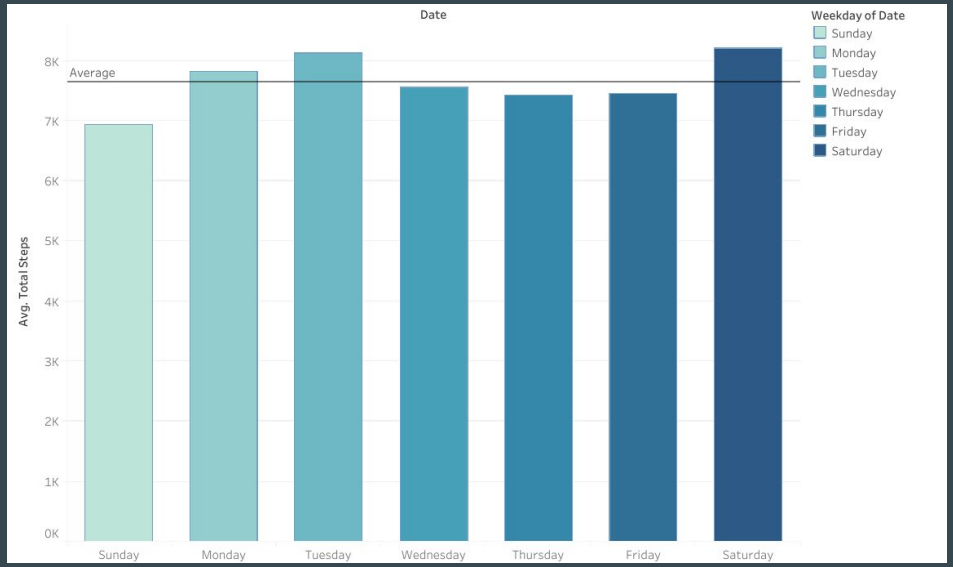
Total Minutes Asleep



Total Bedtime

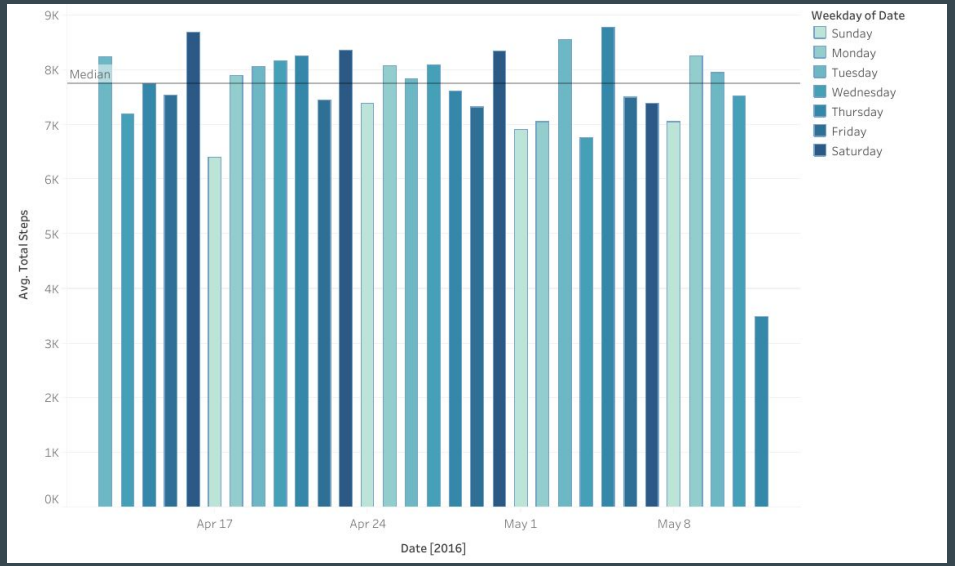
Average Steps by Weekday

- 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.



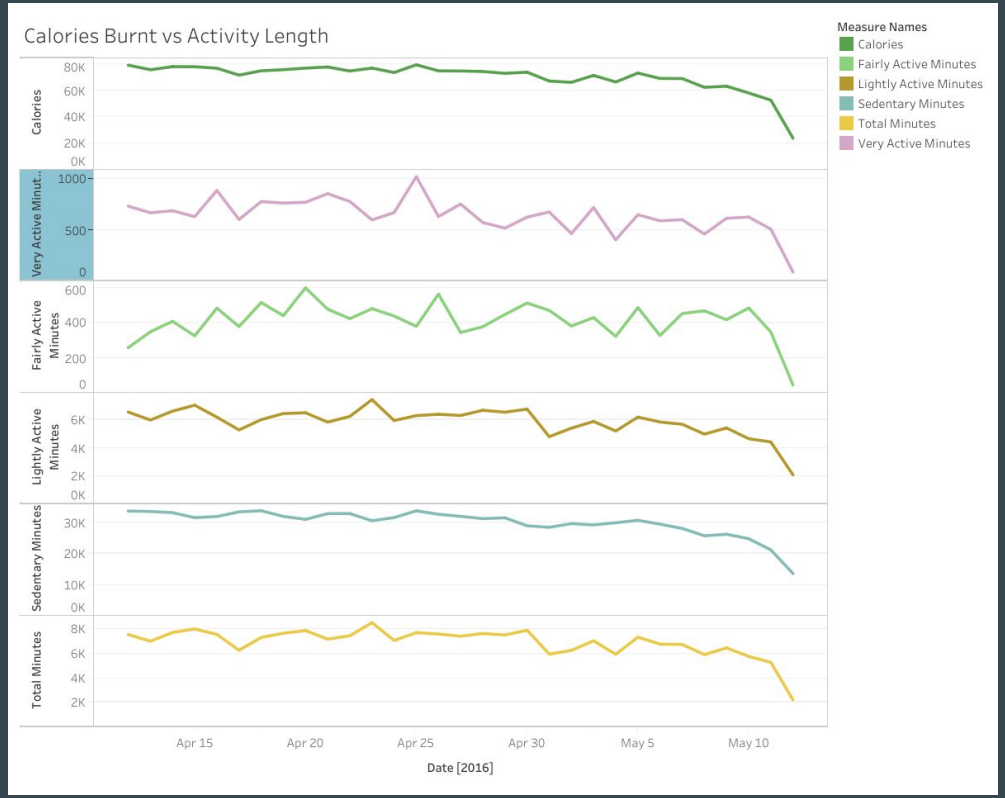
Date's impact?

- 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.



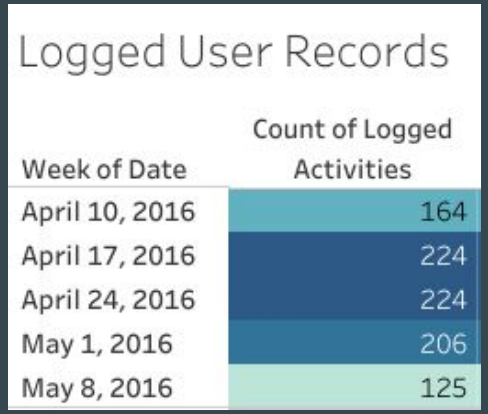
Distance Trends

- 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 data in total steps, activity time, and sleep time which is what's causing a downward trend in each



The higher the number, the more times a user's data was recorded.

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