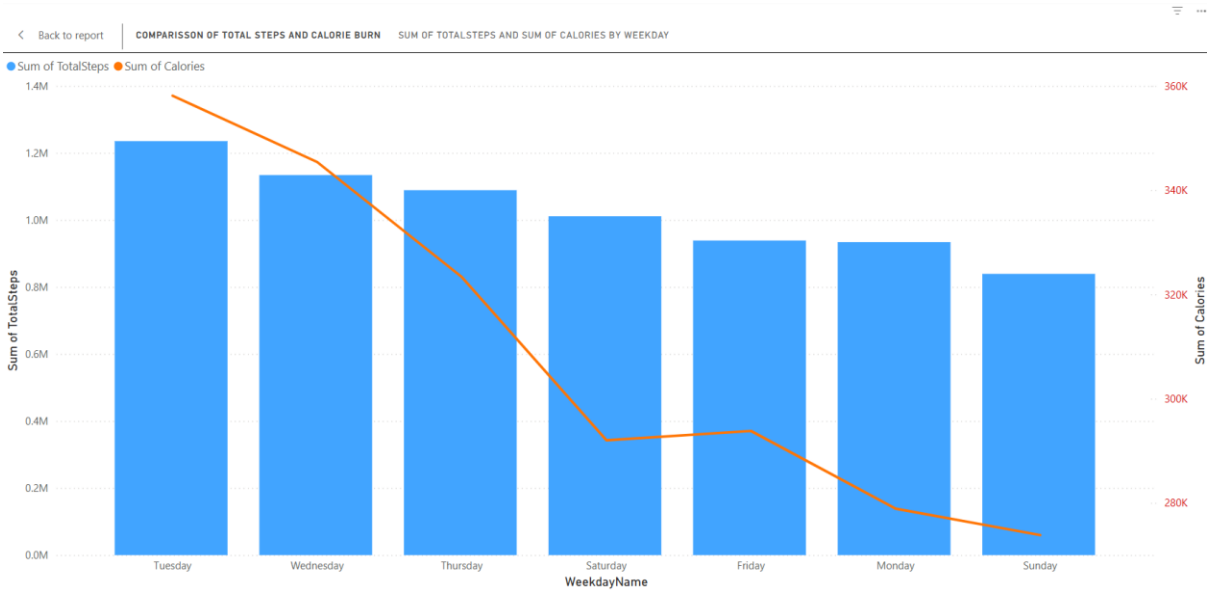
Strava Fitness Data Analysis Case Study Power BI Dashboard Analysis

Data Analysis and Visualization using Power BI

Following the python analysis, all the newly formed datasets and cleaned datasets were saved and loaded to Power BI platform. Further analysis was done through visualization to identify patterns and trends. As most of the complicated analysis was completed using SQL and Python, basic visualization analysis was conducted here.

Comparison of Total Steps and Calorie burn

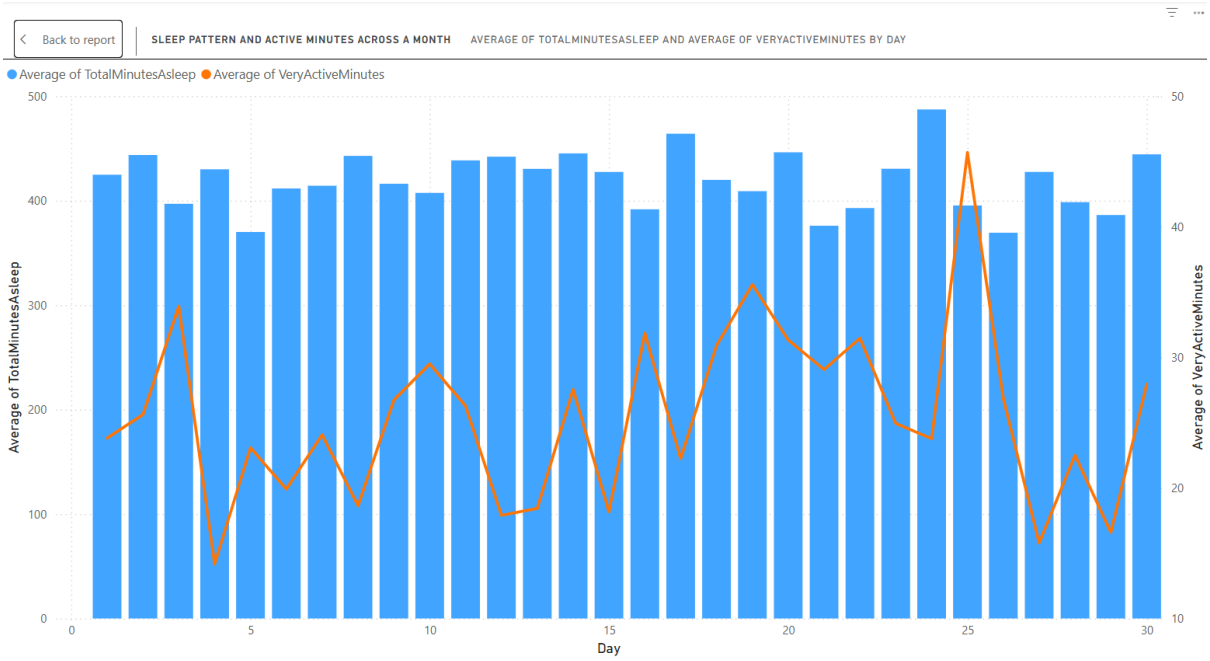
The graph below compares the total steps taken and calories burned across different weekdays. The blue bars represent the sum of total steps, highlighting how activity levels fluctuate throughout the week. The orange line shows the total calories burned on each day, providing insight into energy used patterns. Overall, the visualization reveals a positive correlation between them, indicating higher physical activity and calorie burn during certain weekdays.



Sleep Pattern and Active Minutes across a Month

The below chart illustrates the variations in sleep patterns over a month. The blue bars represent the average total minutes asleep each day, showing how sleep duration fluctuates throughout the month. The yellow line shows the average of very active minutes per day, providing insight into daily activity levels. Generally, we see that higher activity on certain days often correlates with slightly less sleep, highlighting the relationship between physical activity and sleep quality. This is a new insight compared to what has been observed in the previous analysis.

One of the reasons could be the user performing aerobic exercise which causes the body to release endorphins. These chemicals can create a level of activity in the brain that keeps some people awake. However, as long as the type of activity is not provided, this cannot be confirmed.

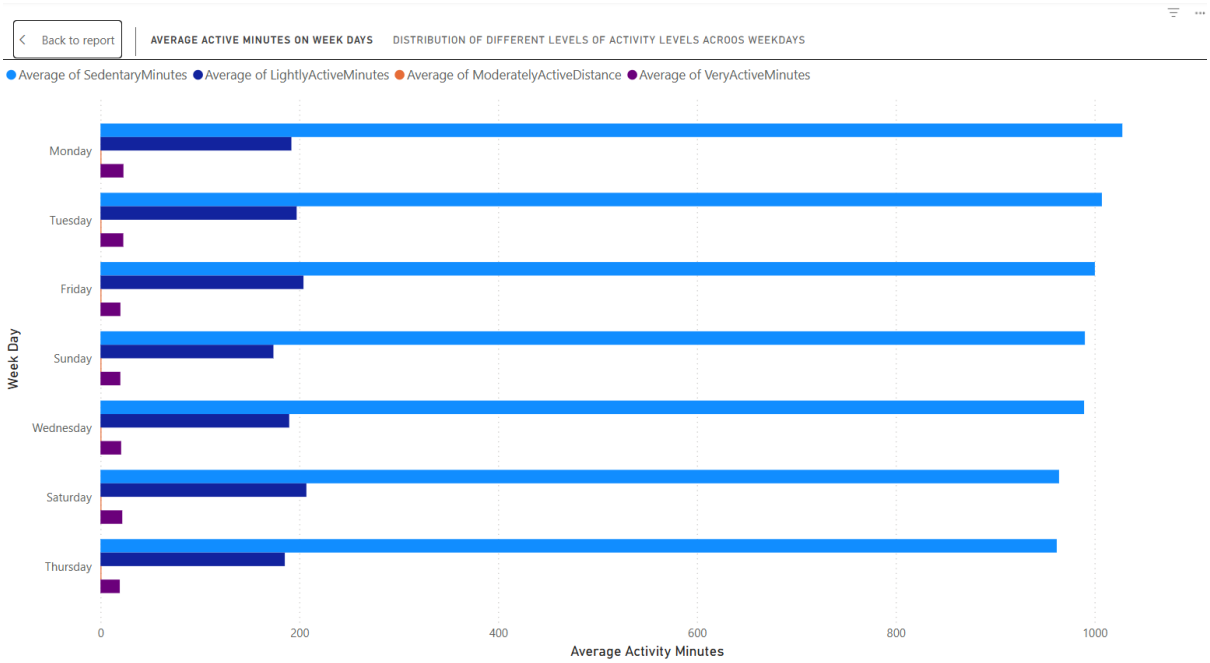


Average Active Minutes on Weekdays

The horizontal bar chart displays the average activity minutes across different weekdays, categorized by activity level. The blue bars show the average sedentary minutes, indicating how much time is spent being inactive on each day. The dark blue bars represent lightly active minutes, while the orange bars show moderately active minutes, and purple indicates very active minutes.

From the chart, it's evident that weekdays (Monday to Friday) have higher sedentary and light activity levels compared to weekends, where more days show increased moderate and very active minutes. Notably, Saturday and Sunday tend to have higher levels of physical activity, reflecting more active routines during the weekend. This visualization helps identify patterns in activity levels throughout the week, which can inform personal fitness plans or health interventions.

The possible reasons must be related to lifestyle patterns related to work which keeps the users idle for longer time over the weekdays.



Key Takeaways from Power BI Analysis

The Key takeaways from the analysis are:

Encourage Consistent Daily Activity: To balance energy expenditure and sleep quality, suggest users to aim for consistent activity levels throughout the week, rather than prolonged inactivity during weekdays.

Promote Active Breaks During Work Hours: Incorporating short exercise sessions, or walking breaks during the workday can help reduce sedentary time and enhance overall health.

Monitor and Adjust Sleep and Activity Balance: If higher activity levels are impacting sleep, consider suggesting relaxation techniques or adjusting workout times to improve sleep quality.

Further Exploration of Activity Types: To better understand the impact of different exercises, collecting data on activity types (aerobic, strength training, etc.) can provide deeper insights into how specific activities influence sleep and overall health.

Conclusion Based on All Three Analyses

The current dataset is limited by its age, as it primarily covers data from 2016, making it somewhat outdated for analysing recent user behaviours and trends. Additionally, it lacks detailed features such as activity types, and personal metrics like age, gender, weight (not enough), profession, interests, or stress levels, which are essential for conducting a more in-depth and personalized analysis. These limitations restrict the ability to provide highly tailored insights and personalized recommendations.

To enhance user engagement and health outcomes, the platform should generate tailored content and suggestions based on individual activity and sleep patterns. Regular prompts and motivational messages can encourage users to log all relevant metrics accurately, encouraging a holistic view of their health. Promoting consistent device usage and minimizing sedentary minutes are crucial. Reminders to stand, move, and track throughout the day can help establish healthier habits. By emphasizing the benefits of maintaining regular activity and tracking, the platform can motivate users to develop sustainable routines, leading to improved overall health and greater long-term engagement.