**Fitbit Data Analysis**

**Report**

**Introduction:**

Fitbit is a popular wearable device used to track daily physical activity, including steps taken, calories burned, and exercise intensity. In this report, we analyze data collected from Fitbit devices to gain insights into users activity patterns and behavior.

**Dataset Description:**

The dataset includes several variables recorded on a daily and hourly basis, including:

1. Daily Activity: Total steps taken, calories burned, and exercise intensity.
2. Hourly Activity: Hourly breakdown of steps taken and exercise intensity.

**Objective:**

The objective of this analysis is to:

1. Understand users daily activity patterns.
2. Identify peak activity hours.
3. Analyze the relationship between total steps, calories burned, and exercise intensity.

**Fitbit Data Analysis and EDA done by:**

* + **Laharika P. Gudur.**

**References:**

- Fitbit Official Website: [Fitbit](https://www.fitbit.com/)

**Data Analysis:**

1. Overall Daily Activity Trends:

* We begin by analyzing the overall trends in daily activity. This includes examining the distribution of total steps taken, calories burned, and exercise intensity levels.
* Visualizations such as histograms and box plots are used to illustrate these trends and identify any outliers or anomalies.

2. Peak Activity Hours:

* Next, we explore users activity patterns throughout the day by analyzing hourly activity data.
* Line graphs or bar charts are used to visualize the hourly distribution of steps taken and exercise intensity levels.

3. Relationship Between Variables:

* We then examine the relationship between total steps, calories burned, and exercise intensity.
* Correlation analysis or scatter plots may be used to explore the strength and direction of relationships between these variables.

**Recommendations & Insights:**

Based on our analysis, we can derive several insights and recommendations:

1. Peak Activity Hours:Users tend to be most active during specific times of the day, such as early morning or evening. Encouraging users to engage in physical activity during peak hours. 2. Exercise Intensity:Understanding the relationship between exercise intensity and total steps/calories burned can help users optimize their workouts for maximum effectiveness.

3. Goal Setting: Analyzing daily activity trends can help users set realistic goals and track their progress over time. Incorporating gamification elements such as challenges and rewards can motivate users to achieve their fitness objectives.

**Tools Used:**

- Python for data cleaning, analysis and dataset visualization.

**Conclusion:**

In conclusion, Fitbit data analysis provides valuable insights into users activity patterns and behavior. By leveraging this data, organizations can better understand user preferences, tailor their products/services to meet user needs, and promote healthy lifestyle choices.

**Reference Links:**

* **Hourly Activity :**

[**Hourly\_Activity.ipynb**](https://colab.research.google.com/drive/1CVVNDhjxuGkSSAx_WH_760JAxDEjAcu5?usp=sharing)

* **Sleep Data Analysis :** [**SleepData.ipynb**](https://colab.research.google.com/drive/1ORVqiqJFYl3XbU7FjyK13S6gQKo-iXpU?usp=sharing)
* **Daily Activity :** [**dailyActivity\_merged.ipynb**](https://colab.research.google.com/drive/1Y5Hvl8T4Jvm3rHMr_hLzAR5tcAdlb4D1?usp=drive_link)
* **Weight Log:**

[**weightLogInfo\_merged.ipynb**](https://colab.research.google.com/drive/1TYxOVyPTpqM0CoISGCI1u8i4pxGHDnbq?usp=drive_link)

* **Heart Rate :**

[**heartrate\_seconds\_merged.ipyn**](https://colab.research.google.com/drive/1SJ6Y9iR9z1-XbohYmkmjB0MdV4YGB3of?usp=drive_link)**b**

* **Minutely Activity :**

[**minutelyActivity\_merged.ipynb**](https://colab.research.google.com/drive/1L5t2X0Xkp58UXGBe5YTjDLHprP4-t5jf?usp=drive_link)