Fitbit Analysis

Welcome to the Fitbit Analysis project repository! This project aims to analyze various datasets provided by Fitbit to gain insights into users' activity, sleep patterns, and overall health metrics.

Task Details

Task 1: Data Preparation and Analysis

- Imported hourlyCalories, hourlyIntensities, and hourlySteps_merged CSV files into Google Colab.
- Converted 'ActivityHour' to datetime format for all three datasets.
- Merged all three CSV files based on ID and activity hour.
- Assigned unique names for each ID to represent individuals.
- Plotted the distribution of calories against frequency.
- Generated a correlation matrix for the merged data.
- Created a scatter plot for calories versus total intensity.
- Downloaded the merged data as a new CSV file named MASTER_DATA.1.

Task 2: Sleep and Weight Analysis

- Imported Sleepday and weightLoginfo_merged CSV files into Google Colab.
- Merged Sleepday and weightLoginfo_merged dataframes based on ID.
- Dropped the 'Sleepday' column.
- Assigned unique names for each unique ID.
- Plotted a graph to analyze the frequency of total minutes asleep.
- Generated a correlation matrix for the merged data.
- Downloaded the merged data as a new CSV file named MASTER_DATA.2.

Task 3: Daily Activity Analysis

- Imported dailyActivity_merged.csv into Google Colab.
- Checked for null data (no null data found).
- Assigned unique names for each unique ID.
- Plotted the distribution of total steps.
- Created boxplots of total steps and sedentary minutes by name.
- Generated a correlation matrix for steps, active minutes, calories, and sedentary minutes.
- Identified individuals who burned the most calories, grouped by minimum and maximum.
- Downloaded the data as a new CSV file named MASTER_DATA.3.

Task 4: Final Data Analysis

- Merged all three MASTER_DATA files to create a MASTER_DATA.csv.
- Checked for null values.
- Filled missing values using a random function and average, then shuffled them randomly.
- Plotted a scatterplot between total steps and calories burned.
- Created a bar graph showing calories burned per activity.

Task 5: Tableau Dashboard Creation

Created a dashboard in Tableau to visualize and explore the Fitbit analysis results comprehensively.

Conclusion

The Fitbit Analysis project involved the consolidation, cleaning, and analysis of various Fitbit datasets to understand users' activity patterns, sleep behavior, and health metrics. Through data manipulation, visualization, and correlation analysis, valuable insights were gained to inform health and wellness strategies. The Tableau dashboard offers an interactive platform to explore the findings further and derive actionable insights.