HEALTH ANALYSIS OF FITBIT DATA

Jaswanth Galle, Alice Liu, Andrew Tobin, & Srivatsav Vellan

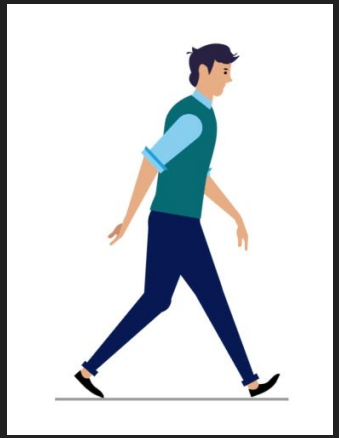
USE CASE

FitBit Fitness Tracker Data features recorded data of 30 users over a 2-month period of their physical activity and sleep patterns. Using the provided data, we can analyze trends of users' daily routines and what is defined as "healthy" to help FitBit better understand their consumers' patterns. Below are some guidelines we have defined as healthy versus unhealthy for the sake of this project:

- If distance is greater than 8 miles, calories is greater than 1000, and steps is greater than 10,000 then the person is considered to be high-burning calories and is very healthy.
- Else if distance is between 4 and 8 miles, calories is between 500 and 1000, and steps is between 5,000 and 10,000 then the person is considered to be medium-burning calories and is moderately healthy.
- Else if distance is less than 4 miles, calories is less than 500, and steps is less than 5,000 then the person is considered to be low-burning calories and is not healthy.
- Overall, if the person walks less than 5,000 steps, they are considered not to be healthy.

USE CASE

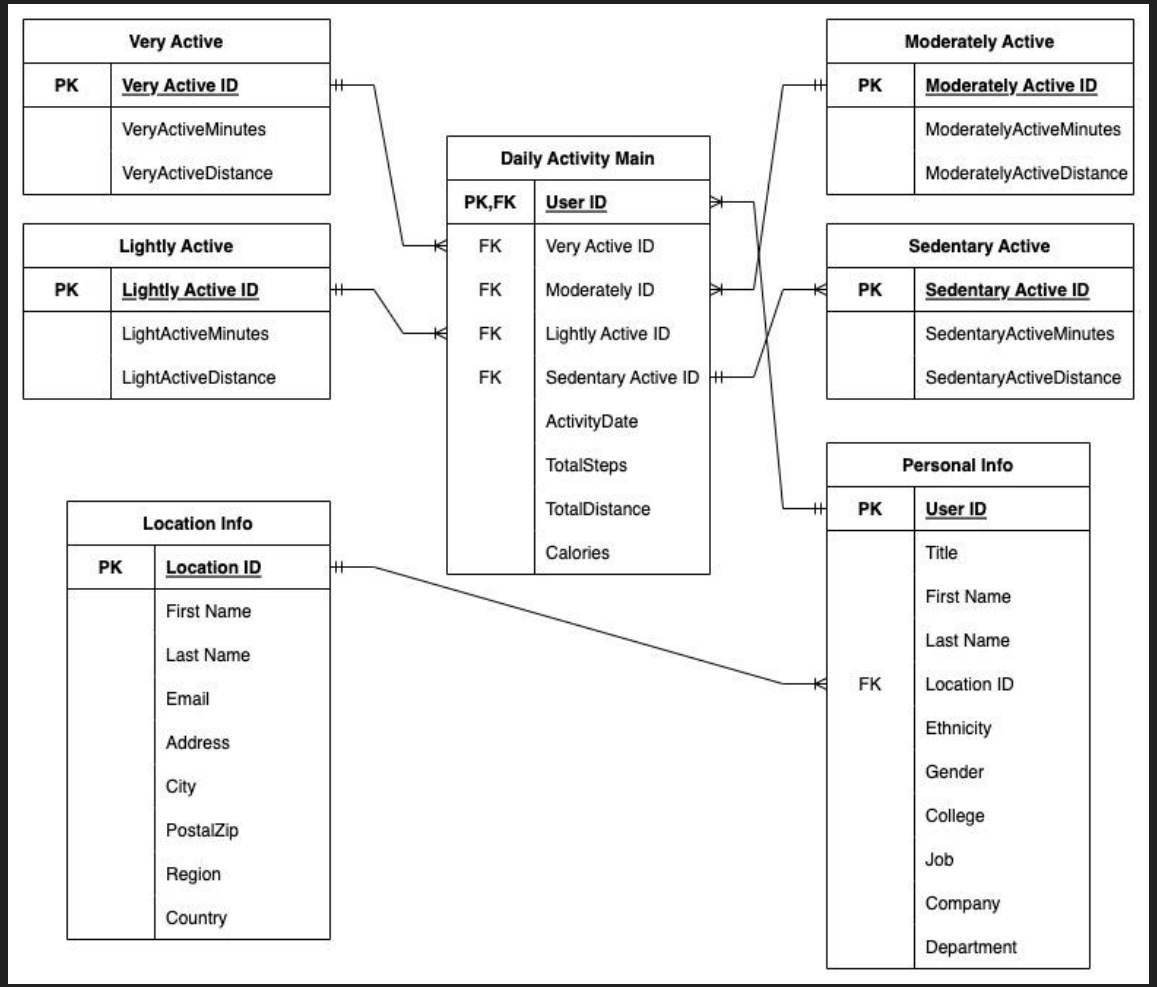
It is important to note that age and gender is unknown for this study, which could prove to be a limitation in analyzing the data. However, we will be assigning each ID to the demographic information randomly generated. While we understand that this would not applicable in the real-world, for the purpose of this project, we will assume that the information generated matches directly to the original data information.



BUSINESS RULES

- User is identified by an ID.
- If the user wears the FitBit, activity date, total steps, total distance, and total calories is recorded.
- A user also has recorded activity. Each user can only have one activity for each of the four categories: very active, moderately active, lightly active, or sedentary.
- Each category of activity has a corresponding distance and time.
- Each user also has personal information attached, which also expands to include location information.

ERD


Very Active
PK
Very Active ID
VeryActiveMinutes
VeryActiveDistance
Lightly Active
PK
Lightly Active ID
LightActiveMinutes
LightActiveDistance
Daily Activity Main
PK,FK
User ID
FK
Very Active ID
FK
Moderately ID
FK
Lightly Active ID
FK
Sedentary Active ID
ActivityDate
TotalSteps
TotalDistance
Calories
Moderately Active
PK
Moderately Active ID
ModeratelyActiveMinutes
ModeratelyActiveDistance
Sedentary Active
PK
Sedentary Active ID
SedentaryActiveMinutes
SedentaryActiveDistance
Personal Info
PK
User ID
Title
First Name
Last Name
FK
Location ID
Ethnicity
Gender
College
Job
Company
Department
Location Info
PK
Location ID
First Name
Last Name
Email
Address
City
PostalZip
Region
Country

FUNCTION MEASURING CALORIC BURN LEVEL

For certain ranges of distance, steps, and calories, a user's activity is labeled as high-burning, medium-burning, or low-burning. This is helpful for the use case because it informs us who is considered to be healthy versus unhealthy.

Name: dsitanceCaloriesCheck

```
CREATE DEFINER=`root`@`localhost` FUNCTION `dsitanceCaloriesCheck`(dis int ,steps int, cal int) RETURNS
    DETERMINISTIC
BEGIN

    if cal>2000 then
       return 'High Calories';
    elseif   cal>1000 and cal<2000 and dis<8 and 10000>steps then
      return 'Medium Calories';
    elseif dis<4 and cal<1000 and steps<5000 then
       return 'Very low calories';
    elseif steps>0 and steps<5000 and cal<500 then
        return 'Very low calories';
    End if ;
    return 'Very low calories';
```

OUTPUT FROM VIEWS

View #1 - Steps sorted in decreasing order with corresponding calories, categorized as walked a lot if greater than or equal to 10,000

	TotalSteps	Calories	Walked
▶	36019	2690	Walked a lot
	18387	2732	Walked a lot
	18213	3846	Walked a lot
	18134	2159	Walked a lot
	15506	2035	Walked a lot
	15355	2013	Walked a lot

View #2 - Summary of the Data

AvgCalories	FewestCalories	MostCalories	AvgSteps	FewestSteps	MostSteps
1983.0370	0	3846	6507.4722	0	36019

View #3 - Total Sum, Distance, and Calories partitioned by ID

	SumSteps	SumDistance	SumCalories
	375619	242.09999895100003	56309
	375619	242.09999895100003	56309
	178061	121.36000061509999	45984
	178061	121.36000061509999	45984
	178061	121.36000061509999	45984
	178061	121.36000061509999	45984
	178061	121.36000061509999	45984