Bellabeat Case Study

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```
library(tidyverse)
```

```
## -- Attaching core tidyverse packages ------------------------ tidyverse 2.0.0 --
## v dplyr     1.1.2     v readr     2.1.4
## v forcats   1.0.0     v stringr   1.5.0
## v ggplot2   3.4.2     v tibble    3.2.1
## v lubridate 1.9.2     v tidyr     1.3.0
## v purrr     1.0.1
## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors
```

```
dailyActivity_merged = read_csv("/Users/vaishnavishankardevadig/Downloads/Fitabase Data 4.12.16-5.12.16/
```

```
## Rows: 940 Columns: 15
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr  (1): ActivityDate
## dbl (14): Id, TotalSteps, TotalDistance, TrackerDistance, LoggedActivitiesDi...
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
dailyCalories_merged = read_csv("/Users/vaishnavishankardevadig/Downloads/Fitabase Data 4.12.16-5.12.16/
```

```
## Rows: 940 Columns: 3
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr (1): ActivityDay
## dbl (2): Id, Calories
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
dailyIntensities_merged = read_csv("/Users/vaishnavishankardevadig/Downloads/Fitabase Data 4.12.16-5.12
```

```
## Rows: 940 Columns: 10
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr (1): ActivityDay
## dbl (9): Id, SedentaryMinutes, LightlyActiveMinutes, FairlyActiveMinutes, Ve...
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
dailySteps_merged = read_csv("/Users/vaishnavishankardevadig/Downloads/Fitabase Data 4.12.16-5.12.16/da
```

```
## Rows: 940 Columns: 3
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr (1): ActivityDay
## dbl (2): Id, StepTotal
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
heartrate_seconds_merged = read_csv("/Users/vaishnavishankardevadig/Downloads/Fitabase Data 4.12.16-5.1
```

```
## Rows: 2483658 Columns: 3
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr (1): Time
## dbl (2): Id, Value
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
hourlyCalories_merged = read_csv("/Users/vaishnavishankardevadig/Downloads/Fitabase Data 4.12.16-5.12.1
```

```
## Rows: 22099 Columns: 3
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr (1): ActivityHour
## dbl (2): Id, Calories
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
hourlyIntensities_merged = read_csv("/Users/vaishnavishankardevadig/Downloads/Fitabase Data 4.12.16-5.1
```

```
## Rows: 22099 Columns: 4
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr (1): ActivityHour
## dbl (3): Id, TotalIntensity, AverageIntensity
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
hourlySteps_merged = read_csv("/Users/vaishnavishankardevadig/Downloads/Fitabase Data 4.12.16-5.12.16/ho
```

```
## Rows: 22099 Columns: 3
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr (1): ActivityHour
## dbl (2): Id, StepTotal
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
minuteCaloriesNarrow_merged = read_csv("/Users/vaishnavishankardevadig/Downloads/Fitabase Data 4.12.16-5
```

```
## Rows: 1325580 Columns: 3
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr (1): ActivityMinute
## dbl (2): Id, Calories
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
minuteCaloriesWide_merged = read_csv("/Users/vaishnavishankardevadig/Downloads/Fitabase Data 4.12.16-5.
```

```
## Rows: 21645 Columns: 62
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr  (1): ActivityHour
## dbl (61): Id, Calories00, Calories01, Calories02, Calories03, Calories04, Ca...
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
minuteIntensitiesNarrow_merged = read_csv("/Users/vaishnavishankardevadig/Downloads/Fitabase Data 4.12.
```

```
## Rows: 1325580 Columns: 3
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr (1): ActivityMinute
## dbl (2): Id, Intensity
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
minuteIntensitiesWide_merged = read_csv("/Users/vaishnavishankardevadig/Downloads/Fitabase Data 4.12.16
```

```
## Rows: 21645 Columns: 62
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr  (1): ActivityHour
## dbl (61): Id, Intensity00, Intensity01, Intensity02, Intensity03, Intensity0...
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
minuteMETsNarrow_merged = read_csv("/Users/vaishnavishankardevadig/Downloads/Fitabase Data 4.12.16-5.12
```

```
## Rows: 1325580 Columns: 3
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr (1): ActivityMinute
## dbl (2): Id, METs
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
minuteSleep_merged = read_csv("/Users/vaishnavishankardevadig/Downloads/Fitabase Data 4.12.16-5.12.16/m
```

```
## Rows: 188521 Columns: 4
## -- Column specification --------------------------------------------------------
## Delimiter: ","
```

```
## chr (1): date
## dbl (3): Id, value, logId
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
minuteStepsNarrow_merged = read_csv("/Users/vaishnavishankardevadig/Downloads/Fitabase Data 4.12.16-5.1
```

```
## Rows: 1325580 Columns: 3
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr (1): ActivityMinute
## dbl (2): Id, Steps
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
minuteStepsWide_merged = read_csv("/Users/vaishnavishankardevadig/Downloads/Fitabase Data 4.12.16-5.12.
```

```
## Rows: 21645 Columns: 62
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr  (1): ActivityHour
## dbl (61): Id, Steps00, Steps01, Steps02, Steps03, Steps04, Steps05, Steps06,...
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
sleepDay_merged = read_csv("/Users/vaishnavishankardevadig/Downloads/Fitabase Data 4.12.16-5.12.16/sleep
```

```
## Rows: 413 Columns: 5
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr (1): SleepDay
## dbl (4): Id, TotalSleepRecords, TotalMinutesAsleep, TotalTimeInBed
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
weightLogInfo_merged = read_csv("/Users/vaishnavishankardevadig/Downloads/Fitabase Data 4.12.16-5.12.16/
```

```
## Rows: 67 Columns: 8
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr (1): Date
## dbl (6): Id, WeightKg, WeightPounds, Fat, BMI, LogId
## lgl (1): IsManualReport
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

Checking for the dataset dailyActivity_merged, converting the ActivityDate column from Character to Date type.

```
head(dailyActivity_merged)
```

```
## # A tibble: 6 x 15
##           Id ActivityDate TotalSteps TotalDistance TrackerDistance
##        <dbl> <chr>             <dbl>         <dbl>           <dbl>
## 1 1503960366 4/12/2016         13162          8.5             8.5
## 2 1503960366 4/13/2016         10735          6.97            6.97
## 3 1503960366 4/14/2016         10460          6.74            6.74
## 4 1503960366 4/15/2016          9762          6.28            6.28
## 5 1503960366 4/16/2016         12669          8.16            8.16
## 6 1503960366 4/17/2016          9705          6.48            6.48
## # i 10 more variables: LoggedActivitiesDistance <dbl>,
## #   VeryActiveDistance <dbl>, ModeratelyActiveDistance <dbl>,
## #   LightActiveDistance <dbl>, SedentaryActiveDistance <dbl>,
## #   VeryActiveMinutes <dbl>, FairlyActiveMinutes <dbl>,
## #   LightlyActiveMinutes <dbl>, SedentaryMinutes <dbl>, Calories <dbl>
```

```
library(lubridate)
dailyActivity_merged$ActivityDate = as.Date(dailyActivity_merged$ActivityDate, format='%m/%d/%Y')
head(dailyActivity_merged)
```

```
## # A tibble: 6 x 15
##           Id ActivityDate TotalSteps TotalDistance TrackerDistance
##        <dbl> <date>            <dbl>         <dbl>           <dbl>
## 1 1503960366 2016-04-12        13162          8.5             8.5
## 2 1503960366 2016-04-13        10735          6.97            6.97
## 3 1503960366 2016-04-14        10460          6.74            6.74
## 4 1503960366 2016-04-15         9762          6.28            6.28
## 5 1503960366 2016-04-16        12669          8.16            8.16
## 6 1503960366 2016-04-17         9705          6.48            6.48
## # i 10 more variables: LoggedActivitiesDistance <dbl>,
## #   VeryActiveDistance <dbl>, ModeratelyActiveDistance <dbl>,
## #   LightActiveDistance <dbl>, SedentaryActiveDistance <dbl>,
## #   VeryActiveMinutes <dbl>, FairlyActiveMinutes <dbl>,
## #   LightlyActiveMinutes <dbl>, SedentaryMinutes <dbl>, Calories <dbl>
```

Checking for null values

```
nulldam = colSums(is.na(dailyActivity_merged))
nulldam
```

```
##                       Id             ActivityDate               TotalSteps
##                        0                        0                        0
##            TotalDistance          TrackerDistance LoggedActivitiesDistance
##                        0                        0                        0
##       VeryActiveDistance ModeratelyActiveDistance      LightActiveDistance
##                        0                        0                        0
##  SedentaryActiveDistance        VeryActiveMinutes      FairlyActiveMinutes
##                        0                        0                        0
##     LightlyActiveMinutes         SedentaryMinutes                 Calories
##                        0                        0                        0
```

Changing the format for date in the datasets for daily calories, intensities and steps

```
dailyCalories_merged$ActivityDay = as.Date(dailyCalories_merged$ActivityDay, format='%m/%d/%Y')
dailyIntensities_merged$ActivityDay = as.Date(dailyIntensities_merged$ActivityDay, format='%m/%d/%Y')
dailySteps_merged$ActivityDay = as.Date(dailySteps_merged$ActivityDay, format='%m/%d/%Y')
head(dailyCalories_merged)
```

```
## # A tibble: 6 x 3
##           Id ActivityDay Calories
##        <dbl> <date>         <dbl>
## 1 1503960366 2016-04-12      1985
## 2 1503960366 2016-04-13      1797
## 3 1503960366 2016-04-14      1776
## 4 1503960366 2016-04-15      1745
## 5 1503960366 2016-04-16      1863
## 6 1503960366 2016-04-17      1728
```

```
head(dailyIntensities_merged)
```

```
## # A tibble: 6 x 10
##         Id ActivityDay SedentaryMinutes LightlyActiveMinutes FairlyActiveMinutes
##      <dbl> <date>                 <dbl>                <dbl>                <dbl>
## 1   1.50e9 2016-04-12               728                  328                   13
## 2   1.50e9 2016-04-13               776                  217                   19
## 3   1.50e9 2016-04-14              1218                  181                   11
## 4   1.50e9 2016-04-15               726                  209                   34
## 5   1.50e9 2016-04-16               773                  221                   10
## 6   1.50e9 2016-04-17               539                  164                   20
## # i 5 more variables: VeryActiveMinutes <dbl>, SedentaryActiveDistance <dbl>,
## #   LightActiveDistance <dbl>, moderatelyActiveDistance <dbl>,
## #   VeryActiveDistance <dbl>
```

```
head(dailySteps_merged)
```

```
## # A tibble: 6 x 3
##           Id ActivityDay StepTotal
##        <dbl> <date>          <dbl>
## 1 1503960366 2016-04-12      13162
## 2 1503960366 2016-04-13      10735
## 3 1503960366 2016-04-14      10460
## 4 1503960366 2016-04-15       9762
## 5 1503960366 2016-04-16      12669
## 6 1503960366 2016-04-17       9705
```

Checking for null values

```
ndcm = colSums(is.na(dailyCalories_merged))
ndim = colSums(is.na(dailyIntensities_merged))
ndsm = colSums(is.na(dailySteps_merged))
print("dailyCalories_merged")
```

```
## [1] "dailyCalories_merged"
```

```
ndcm
```

```
##          Id ActivityDay    Calories
##           0           0           0
```

```
cat("\n")
```

```
print("dailyIntensities_merged")
```

```
## [1] "dailyIntensities_merged"
```

```
ndim
```

```
##                        Id              ActivityDay         SedentaryMinutes
##                         0                        0                        0
##     LightlyActiveMinutes      FairlyActiveMinutes        VeryActiveMinutes
##                         0                        0                        0
##  SedentaryActiveDistance      LightActiveDistance ModeratelyActiveDistance
##                         0                        0                        0
##       VeryActiveDistance
##                         0
```

```
cat("\n")
```

```
print("dailySteps_merged")
```

```
## [1] "dailySteps_merged"
```

```
ndsm
```

```
##          Id ActivityDay   StepTotal
##           0           0           0
```

```
cat("\n")
```

Converting the respective date and time columns to POSIX objects for the remaining datasets.

```
minuteCaloriesNarrow_merged$ActivityMinute <- as.POSIXct(minuteCaloriesNarrow_merged$ActivityMinute, fo
minuteCaloriesWide_merged$ActivityHour <- as.POSIXct(minuteCaloriesWide_merged$ActivityHour, format = "
minuteIntensitiesNarrow_merged$ActivityMinute <- as.POSIXct(minuteIntensitiesNarrow_merged$ActivityMinu
minuteIntensitiesWide_merged$ActivityHour <- as.POSIXct(minuteIntensitiesWide_merged$ActivityHour, forma
minuteMETsNarrow_merged$ActivityMinute <- as.POSIXct(minuteMETsNarrow_merged$ActivityMinute, format = "
hourlyCalories_merged$ActivityHour <- as.POSIXct(hourlyCalories_merged$ActivityHour, format = "%m/%d/%Y
hourlyIntensities_merged$ActivityHour <- as.POSIXct(hourlyIntensities_merged$ActivityHour, format = "%m
heartrate_seconds_merged$Time = as.POSIXct(heartrate_seconds_merged$Time, format='%m/%d/%Y %H:%M:%S')
minuteSleep_merged$date = as.POSIXct(minuteSleep_merged$date, format='%m/%d/%Y %H:%M:%S')
sleepDay_merged$SleepDay = as.POSIXct(sleepDay_merged$SleepDay, format='%m/%d/%Y %H:%M:%S')
weightLogInfo_merged$Date = as.POSIXct(weightLogInfo_merged$Date, format='%m/%d/%Y %H:%M:%S')
hourlySteps_merged$ActivityHour <- as.POSIXct(hourlySteps_merged$ActivityHour, format = "%m/%d/%Y %I:%M
head(minuteCaloriesNarrow_merged)
```

```
## # A tibble: 6 x 3
##           Id ActivityMinute      Calories
##        <dbl> <dttm>                <dbl>
## 1 1503960366 2016-04-12 00:00:00    0.786
## 2 1503960366 2016-04-12 00:01:00    0.786
```

```
## 3 1503960366 2016-04-12 00:02:00    0.786
## 4 1503960366 2016-04-12 00:03:00    0.786
## 5 1503960366 2016-04-12 00:04:00    0.786
## 6 1503960366 2016-04-12 00:05:00    0.944
```

```
head(minuteCaloriesWide_merged)
```

```
## # A tibble: 6 x 62
##           Id ActivityHour        Calories00 Calories01 Calories02 Calories03
##        <dbl> <dttm>                   <dbl>      <dbl>      <dbl>      <dbl>
## 1 1503960366 2016-04-13 00:00:00      1.89       2.20       0.944      0.944
## 2 1503960366 2016-04-13 01:00:00      0.786      0.786      0.786      0.786
## 3 1503960366 2016-04-13 02:00:00      0.786      0.786      0.786      0.786
## 4 1503960366 2016-04-13 03:00:00      0.786      0.786      0.786      0.786
## 5 1503960366 2016-04-13 04:00:00      0.786      0.786      0.786      0.786
## 6 1503960366 2016-04-13 05:00:00      0.786      0.786      0.786      0.786
## # i 56 more variables: Calories04 <dbl>, Calories05 <dbl>, Calories06 <dbl>,
## #   Calories07 <dbl>, Calories08 <dbl>, Calories09 <dbl>, Calories10 <dbl>,
## #   Calories11 <dbl>, Calories12 <dbl>, Calories13 <dbl>, Calories14 <dbl>,
## #   Calories15 <dbl>, Calories16 <dbl>, Calories17 <dbl>, Calories18 <dbl>,
## #   Calories19 <dbl>, Calories20 <dbl>, Calories21 <dbl>, Calories22 <dbl>,
## #   Calories23 <dbl>, Calories24 <dbl>, Calories25 <dbl>, Calories26 <dbl>,
## #   Calories27 <dbl>, Calories28 <dbl>, Calories29 <dbl>, Calories30 <dbl>, ...
```

```
head(minuteIntensitiesNarrow_merged)
```

```
## # A tibble: 6 x 3
##           Id ActivityMinute      Intensity
##        <dbl> <dttm>                  <dbl>
## 1 1503960366 2016-04-12 00:00:00         0
## 2 1503960366 2016-04-12 00:01:00         0
## 3 1503960366 2016-04-12 00:02:00         0
## 4 1503960366 2016-04-12 00:03:00         0
## 5 1503960366 2016-04-12 00:04:00         0
## 6 1503960366 2016-04-12 00:05:00         0
```

```
head(minuteIntensitiesWide_merged)
```

```
## # A tibble: 6 x 62
##           Id ActivityHour        Intensity00 Intensity01 Intensity02 Intensity03
##        <dbl> <dttm>                    <dbl>       <dbl>       <dbl>       <dbl>
## 1 1503960366 2016-04-13 00:00:00           1           1           0           0
## 2 1503960366 2016-04-13 01:00:00           0           0           0           0
## 3 1503960366 2016-04-13 02:00:00           0           0           0           0
## 4 1503960366 2016-04-13 03:00:00           0           0           0           0
## 5 1503960366 2016-04-13 04:00:00           0           0           0           0
## 6 1503960366 2016-04-13 05:00:00           0           0           0           0
## # i 56 more variables: Intensity04 <dbl>, Intensity05 <dbl>, Intensity06 <dbl>,
## #   Intensity07 <dbl>, Intensity08 <dbl>, Intensity09 <dbl>, Intensity10 <dbl>,
## #   Intensity11 <dbl>, Intensity12 <dbl>, Intensity13 <dbl>, Intensity14 <dbl>,
## #   Intensity15 <dbl>, Intensity16 <dbl>, Intensity17 <dbl>, Intensity18 <dbl>,
## #   Intensity19 <dbl>, Intensity20 <dbl>, Intensity21 <dbl>, Intensity22 <dbl>,
## #   Intensity23 <dbl>, Intensity24 <dbl>, Intensity25 <dbl>, Intensity26 <dbl>,
## #   Intensity27 <dbl>, Intensity28 <dbl>, Intensity29 <dbl>, ...
```

```
head(minuteMETsNarrow_merged)
```

```
## # A tibble: 6 x 3
##           Id ActivityMinute       METs
##        <dbl> <dttm>              <dbl>
## 1 1503960366 2016-04-12 00:00:00    10
## 2 1503960366 2016-04-12 00:01:00    10
## 3 1503960366 2016-04-12 00:02:00    10
## 4 1503960366 2016-04-12 00:03:00    10
## 5 1503960366 2016-04-12 00:04:00    10
## 6 1503960366 2016-04-12 00:05:00    12
```

```
head(hourlyCalories_merged)
```

```
## # A tibble: 6 x 3
##           Id ActivityHour        Calories
##        <dbl> <dttm>                 <dbl>
## 1 1503960366 2016-04-12 00:00:00       81
## 2 1503960366 2016-04-12 01:00:00       61
## 3 1503960366 2016-04-12 02:00:00       59
## 4 1503960366 2016-04-12 03:00:00       47
## 5 1503960366 2016-04-12 04:00:00       48
## 6 1503960366 2016-04-12 05:00:00       48
```

```
head(hourlyIntensities_merged)
```

```
## # A tibble: 6 x 4
##           Id ActivityHour        TotalIntensity AverageIntensity
##        <dbl> <dttm>                       <dbl>            <dbl>
## 1 1503960366 2016-04-12 00:00:00             20            0.333
## 2 1503960366 2016-04-12 01:00:00              8            0.133
## 3 1503960366 2016-04-12 02:00:00              7            0.117
## 4 1503960366 2016-04-12 03:00:00              0            0
## 5 1503960366 2016-04-12 04:00:00              0            0
## 6 1503960366 2016-04-12 05:00:00              0            0
```

```
head(hourlySteps_merged)
```

```
## # A tibble: 6 x 3
##           Id ActivityHour        StepTotal
##        <dbl> <dttm>                  <dbl>
## 1 1503960366 2016-04-12 00:00:00       373
## 2 1503960366 2016-04-12 01:00:00       160
## 3 1503960366 2016-04-12 02:00:00       151
## 4 1503960366 2016-04-12 03:00:00         0
## 5 1503960366 2016-04-12 04:00:00         0
## 6 1503960366 2016-04-12 05:00:00         0
```

```
head(heartrate_seconds_merged)
```

```
## # A tibble: 6 x 3
##           Id Time                Value
##        <dbl> <dttm>              <dbl>
## 1 2022484408 2016-04-12 07:21:00    97
## 2 2022484408 2016-04-12 07:21:05   102
## 3 2022484408 2016-04-12 07:21:10   105
## 4 2022484408 2016-04-12 07:21:20   103
```

```
## 5 2022484408 2016-04-12 07:21:25   101
## 6 2022484408 2016-04-12 07:22:05    95
```

```
head(minuteSleep_merged)
```

```
## # A tibble: 6 x 4
##           Id date                value       logId
##        <dbl> <dttm>              <dbl>       <dbl>
## 1 1503960366 2016-04-12 02:47:30     3 11380564589
## 2 1503960366 2016-04-12 02:48:30     2 11380564589
## 3 1503960366 2016-04-12 02:49:30     1 11380564589
## 4 1503960366 2016-04-12 02:50:30     1 11380564589
## 5 1503960366 2016-04-12 02:51:30     1 11380564589
## 6 1503960366 2016-04-12 02:52:30     1 11380564589
```

```
head(sleepDay_merged)
```

```
## # A tibble: 6 x 5
##       Id SleepDay            TotalSleepRecords TotalMinutesAsleep TotalTimeInBed
##    <dbl> <dttm>                          <dbl>              <dbl>          <dbl>
## 1 1.50e9 2016-04-12 12:00:00                 1                327            346
## 2 1.50e9 2016-04-13 12:00:00                 2                384            407
## 3 1.50e9 2016-04-15 12:00:00                 1                412            442
## 4 1.50e9 2016-04-16 12:00:00                 2                340            367
## 5 1.50e9 2016-04-17 12:00:00                 1                700            712
## 6 1.50e9 2016-04-19 12:00:00                 1                304            320
```

```
head(weightLogInfo_merged)
```

```
## # A tibble: 6 x 8
##          Id Date                WeightKg WeightPounds   Fat   BMI IsManualReport
##       <dbl> <dttm>                 <dbl>        <dbl> <dbl> <dbl> <lgl>
## 1    1.50e9 2016-05-02 11:59:59     52.6         116.    22  22.6 TRUE
## 2    1.50e9 2016-05-03 11:59:59     52.6         116.    NA  22.6 TRUE
## 3    1.93e9 2016-04-13 01:08:52    134.          294.    NA  47.5 FALSE
## 4    2.87e9 2016-04-21 11:59:59     56.7         125.    NA  21.5 TRUE
## 5    2.87e9 2016-05-12 11:59:59     57.3         126.    NA  21.7 TRUE
## 6    4.32e9 2016-04-17 11:59:59     72.4         160.    25  27.5 TRUE
## # i 1 more variable: LogId <dbl>
```

#Checking for null values

```
colSums(is.na(hourlyCalories_merged))
```

```
##           Id ActivityHour     Calories
##            0            0            0
```

```
colSums(is.na(hourlyIntensities_merged))
```

```
##               Id     ActivityHour   TotalIntensity AverageIntensity
##                0                0                0                0
```

```
colSums(is.na(hourlySteps_merged))
```

```
##           Id ActivityHour    StepTotal
##            0            0            0
```

```
colSums(is.na(minuteCaloriesNarrow_merged))
```

```
##             Id ActivityMinute       Calories
```

```
##              0              0              0
```

```
colSums(is.na(minuteCaloriesWide_merged))
```

```
##           Id ActivityHour   Calories00   Calories01   Calories02   Calories03
##            0            0            0            0            0            0
##   Calories04   Calories05   Calories06   Calories07   Calories08   Calories09
##            0            0            0            0            0            0
##   Calories10   Calories11   Calories12   Calories13   Calories14   Calories15
##            0            0            0            0            0            0
##   Calories16   Calories17   Calories18   Calories19   Calories20   Calories21
##            0            0            0            0            0            0
##   Calories22   Calories23   Calories24   Calories25   Calories26   Calories27
##            0            0            0            0            0            0
##   Calories28   Calories29   Calories30   Calories31   Calories32   Calories33
##            0            0            0            0            0            0
##   Calories34   Calories35   Calories36   Calories37   Calories38   Calories39
##            0            0            0            0            0            0
##   Calories40   Calories41   Calories42   Calories43   Calories44   Calories45
##            0            0            0            0            0            0
##   Calories46   Calories47   Calories48   Calories49   Calories50   Calories51
##            0            0            0            0            0            0
##   Calories52   Calories53   Calories54   Calories55   Calories56   Calories57
##            0            0            0            0            0            0
##   Calories58   Calories59
##            0            0
```

```
colSums(is.na(minuteIntensitiesNarrow_merged))
```

```
##             Id ActivityMinute      Intensity
##              0              0              0
```

```
colSums(is.na(minuteIntensitiesWide_merged))
```

```
##           Id ActivityHour  Intensity00  Intensity01  Intensity02  Intensity03
##            0            0            0            0            0            0
##  Intensity04  Intensity05  Intensity06  Intensity07  Intensity08  Intensity09
##            0            0            0            0            0            0
##  Intensity10  Intensity11  Intensity12  Intensity13  Intensity14  Intensity15
##            0            0            0            0            0            0
##  Intensity16  Intensity17  Intensity18  Intensity19  Intensity20  Intensity21
##            0            0            0            0            0            0
##  Intensity22  Intensity23  Intensity24  Intensity25  Intensity26  Intensity27
##            0            0            0            0            0            0
##  Intensity28  Intensity29  Intensity30  Intensity31  Intensity32  Intensity33
##            0            0            0            0            0            0
##  Intensity34  Intensity35  Intensity36  Intensity37  Intensity38  Intensity39
##            0            0            0            0            0            0
##  Intensity40  Intensity41  Intensity42  Intensity43  Intensity44  Intensity45
##            0            0            0            0            0            0
##  Intensity46  Intensity47  Intensity48  Intensity49  Intensity50  Intensity51
##            0            0            0            0            0            0
##  Intensity52  Intensity53  Intensity54  Intensity55  Intensity56  Intensity57
##            0            0            0            0            0            0
##  Intensity58  Intensity59
##            0            0
```

```
colSums(is.na(minuteMETsNarrow_merged))
```

```
##             Id ActivityMinute           METs
##              0              0              0
```

```
colSums(is.na(heartrate_seconds_merged))
```

```
##    Id  Time Value
##     0     0     0
```

```
colSums(is.na(minuteSleep_merged))
```

```
##    Id  date value logId
##     0     0     0     0
```

```
colSums(is.na(sleepDay_merged))
```

```
##                 Id           SleepDay  TotalSleepRecords TotalMinutesAsleep
##                  0                  0                  0                  0
##     TotalTimeInBed
##                  0
```

```
colSums(is.na(weightLogInfo_merged))
```

```
##             Id           Date       WeightKg   WeightPounds            Fat
##              0              0              0              0             65
##            BMI IsManualReport          LogId
##              0              0              0
```

#Summary of a few datasets in order to identify general trends

```
summary(dailyActivity_merged)
```

```
##        Id             ActivityDate          TotalSteps    TotalDistance
##  Min.   :1.504e+09   Min.   :2016-04-12   Min.   :    0   Min.   : 0.000
##  1st Qu.:2.320e+09   1st Qu.:2016-04-19   1st Qu.: 3790   1st Qu.: 2.620
##  Median :4.445e+09   Median :2016-04-26   Median : 7406   Median : 5.245
##  Mean   :4.855e+09   Mean   :2016-04-26   Mean   : 7638   Mean   : 5.490
##  3rd Qu.:6.962e+09   3rd Qu.:2016-05-04   3rd Qu.:10727   3rd Qu.: 7.713
##  Max.   :8.878e+09   Max.   :2016-05-12   Max.   :36019   Max.   :28.030
##  TrackerDistance  LoggedActivitiesDistance VeryActiveDistance
##  Min.   : 0.000   Min.   :0.0000           Min.   : 0.000
##  1st Qu.: 2.620   1st Qu.:0.0000           1st Qu.: 0.000
##  Median : 5.245   Median :0.0000           Median : 0.210
##  Mean   : 5.475   Mean   :0.1082           Mean   : 1.503
##  3rd Qu.: 7.710   3rd Qu.:0.0000           3rd Qu.: 2.053
##  Max.   :28.030   Max.   :4.9421           Max.   :21.920
##  ModeratelyActiveDistance LightActiveDistance SedentaryActiveDistance
##  Min.   :0.0000           Min.   : 0.000      Min.   :0.000000
##  1st Qu.:0.0000           1st Qu.: 1.945      1st Qu.:0.000000
##  Median :0.2400           Median : 3.365      Median :0.000000
##  Mean   :0.5675           Mean   : 3.341      Mean   :0.001606
##  3rd Qu.:0.8000           3rd Qu.: 4.782      3rd Qu.:0.000000
##  Max.   :6.4800           Max.   :10.710      Max.   :0.110000
##  VeryActiveMinutes FairlyActiveMinutes LightlyActiveMinutes SedentaryMinutes
##  Min.   :  0.00    Min.   :  0.00      Min.   :  0.0        Min.   :   0.0
##  1st Qu.:  0.00    1st Qu.:  0.00      1st Qu.:127.0        1st Qu.: 729.8
##  Median :  4.00    Median :  6.00      Median :199.0        Median :1057.5
```

```
##  Mean   : 21.16    Mean   : 13.56      Mean   :192.8        Mean   : 991.2
##  3rd Qu.: 32.00    3rd Qu.: 19.00      3rd Qu.:264.0        3rd Qu.:1229.5
##  Max.   :210.00    Max.   :143.00      Max.   :518.0        Max.   :1440.0
##     Calories
##  Min.   :   0
##  1st Qu.:1828
##  Median :2134
##  Mean   :2304
##  3rd Qu.:2793
##  Max.   :4900
```

As per studies, on an average, an adult woman should burn about 2000 calories a day, while an adult man should be burning about 2500 calories a day.

The 'Calories' column shows the mean value to be 2304, which is above average for adult women but below average for adult male.

Sedentary Minutes shows the mean value to be 991.2, which is about 16.5 hours. This value is extremely high and has scope to be reduced.

```
summary(sleepDay_merged)
```

```
##        Id               SleepDay                       TotalSleepRecords
##  Min.   :1.504e+09   Min.   :2016-04-12 12:00:00.00   Min.   :1.000
##  1st Qu.:3.977e+09   1st Qu.:2016-04-19 12:00:00.00   1st Qu.:1.000
##  Median :4.703e+09   Median :2016-04-27 12:00:00.00   Median :1.000
##  Mean   :5.001e+09   Mean   :2016-04-27 00:40:05.80   Mean   :1.119
##  3rd Qu.:6.962e+09   3rd Qu.:2016-05-04 12:00:00.00   3rd Qu.:1.000
##  Max.   :8.792e+09   Max.   :2016-05-12 12:00:00.00   Max.   :3.000
##  TotalMinutesAsleep TotalTimeInBed
##  Min.   : 58.0      Min.   : 61.0
##  1st Qu.:361.0      1st Qu.:403.0
##  Median :433.0      Median :463.0
##  Mean   :419.5      Mean   :458.6
##  3rd Qu.:490.0      3rd Qu.:526.0
##  Max.   :796.0      Max.   :961.0
```

The mean total minutes asleep is 6.99 ~ 7 hours, which is also slightly below the accepted average of 8 hours. However, this is an acceptable number.

```
summary(heartrate_seconds_merged)
```

```
##        Id                  Time                           Value
##  Min.   :2.022e+09   Min.   :2016-04-12 01:00:00.00   Min.   : 36.00
##  1st Qu.:4.388e+09   1st Qu.:2016-04-19 03:04:40.00   1st Qu.: 63.00
##  Median :5.554e+09   Median :2016-04-26 11:31:10.00   Median : 73.00
##  Mean   :5.514e+09   Mean   :2016-04-26 13:54:16.31   Mean   : 77.33
##  3rd Qu.:6.962e+09   3rd Qu.:2016-05-04 04:34:20.00   3rd Qu.: 88.00
##  Max.   :8.878e+09   Max.   :2016-05-12 12:59:55.00   Max.   :203.00
```

Changing the various column names for time and date as ActivityDate to facilitate merging

```
colnames(sleepDay_merged)[colnames(sleepDay_merged) == "SleepDay"] <- "ActivityDate"
colnames(heartrate_seconds_merged)[colnames(heartrate_seconds_merged) == "Time"] <- "ActivityDate"
```

```
colnames(weightLogInfo_merged)[colnames(weightLogInfo_merged) == "Date"] <- "ActivityDate"
head(dailyActivity_merged)
```

```
## # A tibble: 6 x 15
##           Id ActivityDate TotalSteps TotalDistance TrackerDistance
##        <dbl> <date>            <dbl>         <dbl>           <dbl>
## 1 1503960366 2016-04-12        13162          8.5             8.5
## 2 1503960366 2016-04-13        10735          6.97            6.97
## 3 1503960366 2016-04-14        10460          6.74            6.74
## 4 1503960366 2016-04-15         9762          6.28            6.28
## 5 1503960366 2016-04-16        12669          8.16            8.16
## 6 1503960366 2016-04-17         9705          6.48            6.48
## # i 10 more variables: LoggedActivitiesDistance <dbl>,
## #   VeryActiveDistance <dbl>, ModeratelyActiveDistance <dbl>,
## #   LightActiveDistance <dbl>, SedentaryActiveDistance <dbl>,
## #   VeryActiveMinutes <dbl>, FairlyActiveMinutes <dbl>,
## #   LightlyActiveMinutes <dbl>, SedentaryMinutes <dbl>, Calories <dbl>
```

```
head(sleepDay_merged)
```

```
## # A tibble: 6 x 5
##       Id ActivityDate        TotalSleepRecords TotalMinutesAsleep TotalTimeInBed
##    <dbl> <dttm>                          <dbl>              <dbl>          <dbl>
## 1 1.50e9 2016-04-12 12:00:00                1                327            346
## 2 1.50e9 2016-04-13 12:00:00                2                384            407
## 3 1.50e9 2016-04-15 12:00:00                1                412            442
## 4 1.50e9 2016-04-16 12:00:00                2                340            367
## 5 1.50e9 2016-04-17 12:00:00                1                700            712
## 6 1.50e9 2016-04-19 12:00:00                1                304            320
```

```
head(weightLogInfo_merged)
```

```
## # A tibble: 6 x 8
##          Id ActivityDate        WeightKg WeightPounds   Fat   BMI IsManualReport
##       <dbl> <dttm>                 <dbl>        <dbl> <dbl> <dbl> <lgl>
## 1    1.50e9 2016-05-02 11:59:59     52.6         116.    22  22.6 TRUE
## 2    1.50e9 2016-05-03 11:59:59     52.6         116.    NA  22.6 TRUE
## 3    1.93e9 2016-04-13 01:08:52    134.          294.    NA  47.5 FALSE
## 4    2.87e9 2016-04-21 11:59:59     56.7         125.    NA  21.5 TRUE
## 5    2.87e9 2016-05-12 11:59:59     57.3         126.    NA  21.7 TRUE
## 6    4.32e9 2016-04-17 11:59:59     72.4         160.    25  27.5 TRUE
## # i 1 more variable: LogId <dbl>
```

```
head(heartrate_seconds_merged)
```

```
## # A tibble: 6 x 3
##           Id ActivityDate        Value
##        <dbl> <dttm>              <dbl>
## 1 2022484408 2016-04-12 07:21:00    97
## 2 2022484408 2016-04-12 07:21:05   102
## 3 2022484408 2016-04-12 07:21:10   105
## 4 2022484408 2016-04-12 07:21:20   103
## 5 2022484408 2016-04-12 07:21:25   101
## 6 2022484408 2016-04-12 07:22:05    95
```

Separating date and time columns

```
library(tidyverse)

sleepnew_df = separate(sleepDay_merged, ActivityDate, into = c("ActivityDate", "Time"), sep = " ")
weightnew_df = separate(weightLogInfo_merged, ActivityDate, into = c("ActivityDate", "Time"), sep = " ")
heartnew_df = separate(heartrate_seconds_merged, ActivityDate, into = c("ActivityDate", "Time"), sep = "
stepsnew_df = separate(hourlySteps_merged, ActivityHour, into = c("ActivityDate", "Time"), sep = " ")
head(sleepnew_df)
```

```
## # A tibble: 6 x 6
##         Id ActivityDate Time  TotalSleepRecords TotalMinutesAsleep TotalTimeInBed
##      <dbl> <chr>        <chr>             <dbl>              <dbl>          <dbl>
## 1  1.50e9 2016-04-12   12:0~                 1                327            346
## 2  1.50e9 2016-04-13   12:0~                 2                384            407
## 3  1.50e9 2016-04-15   12:0~                 1                412            442
## 4  1.50e9 2016-04-16   12:0~                 2                340            367
## 5  1.50e9 2016-04-17   12:0~                 1                700            712
## 6  1.50e9 2016-04-19   12:0~                 1                304            320
```

```
head(weightnew_df)
```

```
## # A tibble: 6 x 9
##           Id ActivityDate Time  WeightKg WeightPounds   Fat   BMI IsManualReport
##        <dbl> <chr>        <chr>    <dbl>        <dbl> <dbl> <dbl> <lgl>
## 1 1503960366 2016-05-02   11:5~     52.6         116.    22  22.6 TRUE
## 2 1503960366 2016-05-03   11:5~     52.6         116.    NA  22.6 TRUE
## 3 1927972279 2016-04-13   01:0~    134.          294.    NA  47.5 FALSE
## 4 2873212765 2016-04-21   11:5~     56.7         125.    NA  21.5 TRUE
## 5 2873212765 2016-05-12   11:5~     57.3         126.    NA  21.7 TRUE
## 6 4319703577 2016-04-17   11:5~     72.4         160.    25  27.5 TRUE
## # i 1 more variable: LogId <dbl>
```

```
head(heartnew_df)
```

```
## # A tibble: 6 x 4
##           Id ActivityDate Time     Value
##        <dbl> <chr>        <chr>    <dbl>
## 1 2022484408 2016-04-12   07:21:00    97
## 2 2022484408 2016-04-12   07:21:05   102
## 3 2022484408 2016-04-12   07:21:10   105
## 4 2022484408 2016-04-12   07:21:20   103
## 5 2022484408 2016-04-12   07:21:25   101
## 6 2022484408 2016-04-12   07:22:05    95
```

```
head(stepsnew_df)
```

```
## # A tibble: 6 x 4
##           Id ActivityDate Time     StepTotal
##        <dbl> <chr>        <chr>        <dbl>
## 1 1503960366 2016-04-12   00:00:00       373
## 2 1503960366 2016-04-12   01:00:00       160
## 3 1503960366 2016-04-12   02:00:00       151
## 4 1503960366 2016-04-12   03:00:00         0
## 5 1503960366 2016-04-12   04:00:00         0
## 6 1503960366 2016-04-12   05:00:00         0
```

Merging the Activity and Sleep datasets

```
final = merge(dailyActivity_merged, sleepnew_df, by = c('Id', 'ActivityDate'))
final
```

```
##             Id ActivityDate TotalSteps TotalDistance TrackerDistance
## 1   1503960366   2016-04-12      13162          8.50            8.50
## 2   1503960366   2016-04-13      10735          6.97            6.97
## 3   1503960366   2016-04-15       9762          6.28            6.28
## 4   1503960366   2016-04-16      12669          8.16            8.16
## 5   1503960366   2016-04-17       9705          6.48            6.48
## 6   1503960366   2016-04-19      15506          9.88            9.88
## 7   1503960366   2016-04-20      10544          6.68            6.68
## 8   1503960366   2016-04-21       9819          6.34            6.34
## 9   1503960366   2016-04-23      14371          9.04            9.04
## 10  1503960366   2016-04-24      10039          6.41            6.41
## 11  1503960366   2016-04-25      15355          9.80            9.80
## 12  1503960366   2016-04-26      13755          8.79            8.79
## 13  1503960366   2016-04-28      13154          8.53            8.53
## 14  1503960366   2016-04-29      11181          7.15            7.15
## 15  1503960366   2016-04-30      14673          9.25            9.25
## 16  1503960366   2016-05-01      10602          6.81            6.81
## 17  1503960366   2016-05-02      14727          9.71            9.71
## 18  1503960366   2016-05-03      15103          9.66            9.66
## 19  1503960366   2016-05-05      14070          8.90            8.90
## 20  1503960366   2016-05-06      12159          8.03            8.03
## 21  1503960366   2016-05-07      11992          7.71            7.71
## 22  1503960366   2016-05-08      10060          6.58            6.58
## 23  1503960366   2016-05-09      12022          7.72            7.72
## 24  1503960366   2016-05-10      12207          7.77            7.77
## 25  1503960366   2016-05-11      12770          8.13            8.13
## 26  1644430081   2016-04-29       3176          2.31            2.31
## 27  1644430081   2016-04-30      18213         13.24           13.24
## 28  1644430081   2016-05-02       3758          2.73            2.73
## 29  1644430081   2016-05-08       6724          4.89            4.89
## 30  1844505072   2016-04-15       3844          2.54            2.54
## 31  1844505072   2016-04-30       4014          2.67            2.67
## 32  1844505072   2016-05-01       2573          1.70            1.70
## 33  1927972279   2016-04-12        678          0.47            0.47
## 34  1927972279   2016-04-13        356          0.25            0.25
## 35  1927972279   2016-04-15        980          0.68            0.68
## 36  1927972279   2016-04-26       3761          2.60            2.60
## 37  1927972279   2016-04-28       1675          1.16            1.16
## 38  2026352035   2016-04-12       4414          2.74            2.74
## 39  2026352035   2016-04-13       4993          3.10            3.10
## 40  2026352035   2016-04-14       3335          2.07            2.07
## 41  2026352035   2016-04-15       3821          2.37            2.37
## 42  2026352035   2016-04-16       2547          1.58            1.58
## 43  2026352035   2016-04-17        838          0.52            0.52
## 44  2026352035   2016-04-19       2424          1.50            1.50
## 45  2026352035   2016-04-20       7222          4.48            4.48
## 46  2026352035   2016-04-21       2467          1.53            1.53
## 47  2026352035   2016-04-22       2915          1.81            1.81
## 48  2026352035   2016-04-23      12357          7.71            7.71
```

```
## 49  2026352035   2016-04-24       3490          2.16          2.16
## 50  2026352035   2016-04-25       6017          3.73          3.73
## 51  2026352035   2016-04-27       6088          3.77          3.77
## 52  2026352035   2016-04-28       6375          3.95          3.95
## 53  2026352035   2016-04-29       7604          4.71          4.71
## 54  2026352035   2016-04-30       4729          2.93          2.93
## 55  2026352035   2016-05-01       3609          2.28          2.28
## 56  2026352035   2016-05-02       7018          4.35          4.35
## 57  2026352035   2016-05-04       6564          4.07          4.07
## 58  2026352035   2016-05-05      12167          7.54          7.54
## 59  2026352035   2016-05-06       8198          5.08          5.08
## 60  2026352035   2016-05-07       4193          2.60          2.60
## 61  2026352035   2016-05-08       5528          3.45          3.45
## 62  2026352035   2016-05-09      10685          6.62          6.62
## 63  2026352035   2016-05-10        254          0.16          0.16
## 64  2026352035   2016-05-11       8580          5.32          5.32
## 65  2026352035   2016-05-12       8891          5.51          5.51
## 66  2320127002   2016-04-23       5079          3.42          3.42
## 67  2347167796   2016-04-13      10352          7.01          7.01
## 68  2347167796   2016-04-14      10129          6.70          6.70
## 69  2347167796   2016-04-15      10465          6.92          6.92
## 70  2347167796   2016-04-17       5472          3.62          3.62
## 71  2347167796   2016-04-18       8247          5.45          5.45
## 72  2347167796   2016-04-19       6711          4.44          4.44
## 73  2347167796   2016-04-21      10080          6.75          6.75
## 74  2347167796   2016-04-22       7804          5.16          5.16
## 75  2347167796   2016-04-23      16901         11.37         11.37
## 76  2347167796   2016-04-24       9471          6.26          6.26
## 77  2347167796   2016-04-25       9482          6.38          6.38
## 78  2347167796   2016-04-26       5980          3.95          3.95
## 79  2347167796   2016-04-27      11423          7.58          7.58
## 80  2347167796   2016-04-28       5439          3.60          3.60
## 81  2347167796   2016-04-29         42          0.03          0.03
## 82  3977333714   2016-04-12       8856          5.98          5.98
## 83  3977333714   2016-04-13      10035          6.71          6.71
## 84  3977333714   2016-04-14       7641          5.11          5.11
## 85  3977333714   2016-04-15       9010          6.06          6.06
## 86  3977333714   2016-04-16      13459          9.00          9.00
## 87  3977333714   2016-04-17      10415          6.97          6.97
## 88  3977333714   2016-04-18      11663          7.80          7.80
## 89  3977333714   2016-04-19      12414          8.78          8.78
## 90  3977333714   2016-04-20      11658          7.83          7.83
## 91  3977333714   2016-04-21       6093          4.08          4.08
## 92  3977333714   2016-04-22       8911          5.96          5.96
## 93  3977333714   2016-04-23      12058          8.07          8.07
## 94  3977333714   2016-04-24      14112         10.00         10.00
## 95  3977333714   2016-04-25      11177          8.48          8.48
## 96  3977333714   2016-04-26      11388          7.62          7.62
## 97  3977333714   2016-04-27       7193          5.04          5.04
## 98  3977333714   2016-04-28       7114          4.88          4.88
## 99  3977333714   2016-04-29      10645          7.75          7.75
## 100 3977333714   2016-04-30      13238          9.20          9.20
## 101 3977333714   2016-05-01      10414          7.07          7.07
## 102 3977333714   2016-05-02      16520         11.05         11.05
```

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## 103 3977333714   2016-05-03      14335          9.59           9.59
## 104 3977333714   2016-05-04      13559          9.44           9.44
## 105 3977333714   2016-05-05      12312          8.58           8.58
## 106 3977333714   2016-05-06      11677          8.28           8.28
## 107 3977333714   2016-05-07      11550          7.73           7.73
## 108 3977333714   2016-05-08      13585          9.09           9.09
## 109 3977333714   2016-05-10      13072          8.78           8.78
## 110 4020332650   2016-04-12       8539          6.12           6.12
## 111 4020332650   2016-04-16       1982          1.42           1.42
## 112 4020332650   2016-05-03       4496          3.22           3.22
## 113 4020332650   2016-05-04      10252          7.35           7.35
## 114 4020332650   2016-05-05      11728          8.43           8.43
## 115 4020332650   2016-05-06       4369          3.13           3.13
## 116 4020332650   2016-05-08       5862          4.20           4.20
## 117 4020332650   2016-05-10       5546          3.98           3.98
## 118 4319703577   2016-04-14      10210          6.88           6.88
## 119 4319703577   2016-04-15       5664          3.80           3.80
## 120 4319703577   2016-04-16       4744          3.18           3.18
## 121 4319703577   2016-04-18       2276          1.55           1.55
## 122 4319703577   2016-04-19       8925          5.99           5.99
## 123 4319703577   2016-04-20       8954          6.01           6.01
## 124 4319703577   2016-04-21       3702          2.48           2.48
## 125 4319703577   2016-04-22       4500          3.02           3.02
## 126 4319703577   2016-04-23       4935          3.31           3.31
## 127 4319703577   2016-04-24       4081          2.74           2.74
## 128 4319703577   2016-04-25       9259          6.21           6.21
## 129 4319703577   2016-04-26       9899          6.64           6.64
## 130 4319703577   2016-04-27      10780          7.23           7.23
## 131 4319703577   2016-04-28      10817          7.28           7.28
## 132 4319703577   2016-04-29       7990          5.36           5.36
## 133 4319703577   2016-04-30       8221          5.52           5.52
## 134 4319703577   2016-05-01       1251          0.84           0.84
## 135 4319703577   2016-05-02       9261          6.24           6.24
## 136 4319703577   2016-05-03       9648          6.47           6.47
## 137 4319703577   2016-05-06       9524          6.42           6.42
## 138 4319703577   2016-05-07       7937          5.33           5.33
## 139 4319703577   2016-05-08       3672          2.46           2.46
## 140 4319703577   2016-05-09      10378          6.96           6.96
## 141 4319703577   2016-05-10       9487          6.37           6.37
## 142 4319703577   2016-05-11       9129          6.13           6.13
## 143 4319703577   2016-05-12         17          0.01           0.01
## 144 4388161847   2016-04-15       8758          6.73           6.73
## 145 4388161847   2016-04-16       6580          5.06           5.06
## 146 4388161847   2016-04-17       4660          3.58           3.58
## 147 4388161847   2016-04-18      11009          9.10           9.10
## 148 4388161847   2016-04-19      10181          7.83           7.83
## 149 4388161847   2016-04-20      10553          8.12           8.12
## 150 4388161847   2016-04-21      10055          7.73           7.73
## 151 4388161847   2016-04-22      12139          9.34           9.34
## 152 4388161847   2016-04-23      13236         10.18          10.18
## 153 4388161847   2016-04-24      10243          7.88           7.88
## 154 4388161847   2016-04-26       9461          7.28           7.28
## 155 4388161847   2016-04-27      11193          8.61           8.61
## 156 4388161847   2016-04-28      10074          7.75           7.75
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## 157 4388161847   2016-04-30      12533          9.64           9.64
## 158 4388161847   2016-05-01      10255          7.89           7.89
## 159 4388161847   2016-05-02      10096          8.40           8.40
## 160 4388161847   2016-05-04      12375          9.52           9.52
## 161 4388161847   2016-05-05       9603          7.38           7.38
## 162 4388161847   2016-05-05       9603          7.38           7.38
## 163 4388161847   2016-05-07      22770         17.54          17.54
## 164 4388161847   2016-05-08      17298         14.38          14.38
## 165 4388161847   2016-05-09      10218          7.86           7.86
## 166 4388161847   2016-05-10      10299          7.92           7.92
## 167 4388161847   2016-05-11      10201          7.84           7.84
## 168 4445114986   2016-04-12       3276          2.20           2.20
## 169 4445114986   2016-04-13       2961          1.99           1.99
## 170 4445114986   2016-04-14       3974          2.67           2.67
## 171 4445114986   2016-04-15       7198          4.83           4.83
## 172 4445114986   2016-04-16       3945          2.65           2.65
## 173 4445114986   2016-04-17       2268          1.52           1.52
## 174 4445114986   2016-04-19       2064          1.39           1.39
## 175 4445114986   2016-04-20       2072          1.39           1.39
## 176 4445114986   2016-04-21       3809          2.56           2.56
## 177 4445114986   2016-04-22       6831          4.58           4.58
## 178 4445114986   2016-04-25       3385          2.27           2.27
## 179 4445114986   2016-04-26       6326          4.41           4.41
## 180 4445114986   2016-04-27       7243          5.03           5.03
## 181 4445114986   2016-04-28       4493          3.01           3.01
## 182 4445114986   2016-04-29       4676          3.14           3.14
## 183 4445114986   2016-04-30       6222          4.18           4.18
## 184 4445114986   2016-05-01       5232          3.51           3.51
## 185 4445114986   2016-05-02       6910          4.75           4.75
## 186 4445114986   2016-05-03       7502          5.18           5.18
## 187 4445114986   2016-05-04       2923          1.96           1.96
## 188 4445114986   2016-05-05       3800          2.55           2.55
## 189 4445114986   2016-05-06       4514          3.03           3.03
## 190 4445114986   2016-05-07       5183          3.59           3.59
## 191 4445114986   2016-05-08       7303          4.90           4.90
## 192 4445114986   2016-05-09       5275          3.54           3.54
## 193 4445114986   2016-05-10       3915          2.63           2.63
## 194 4445114986   2016-05-11       9105          6.11           6.11
## 195 4445114986   2016-05-12        768          0.52           0.52
## 196 4558609924   2016-04-21      13743          9.08           9.08
## 197 4558609924   2016-04-26       9148          6.05           6.05
## 198 4558609924   2016-04-29       7833          5.18           5.18
## 199 4558609924   2016-05-01       3428          2.27           2.27
## 200 4558609924   2016-05-08       6543          4.33           4.33
## 201 4702921684   2016-04-12       7213          5.88           5.88
## 202 4702921684   2016-04-13       6877          5.58           5.58
## 203 4702921684   2016-04-14       7860          6.37           6.37
## 204 4702921684   2016-04-15       6506          5.28           5.28
## 205 4702921684   2016-04-16      11140          9.03           9.03
## 206 4702921684   2016-04-17      12692         10.29          10.29
## 207 4702921684   2016-04-18       9105          7.38           7.38
## 208 4702921684   2016-04-19       6708          5.44           5.44
## 209 4702921684   2016-04-20       8793          7.13           7.13
## 210 4702921684   2016-04-21       6530          5.30           5.30
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## 211 4702921684   2016-04-23      15126         12.27          12.27
## 212 4702921684   2016-04-24      15050         12.22          12.22
## 213 4702921684   2016-04-25       9167          7.43           7.43
## 214 4702921684   2016-04-26       6108          4.95           4.95
## 215 4702921684   2016-04-27       7047          5.72           5.72
## 216 4702921684   2016-04-28       9023          7.32           7.32
## 217 4702921684   2016-04-29       9930          8.05           8.05
## 218 4702921684   2016-04-30      10144          8.23           8.23
## 219 4702921684   2016-05-03       9454          7.67           7.67
## 220 4702921684   2016-05-04       8161          6.62           6.62
## 221 4702921684   2016-05-05       8614          6.99           6.99
## 222 4702921684   2016-05-06       6943          5.63           5.63
## 223 4702921684   2016-05-07      14370         11.65          11.65
## 224 4702921684   2016-05-07      14370         11.65          11.65
## 225 4702921684   2016-05-09       8232          6.68           6.68
## 226 4702921684   2016-05-10      10613          8.61           8.61
## 227 4702921684   2016-05-11       9810          7.96           7.96
## 228 4702921684   2016-05-12       2752          2.23           2.23
## 229 5553957443   2016-04-12      11596          7.57           7.57
## 230 5553957443   2016-04-13       4832          3.16           3.16
## 231 5553957443   2016-04-14      17022         11.12          11.12
## 232 5553957443   2016-04-15      16556         10.86          10.86
## 233 5553957443   2016-04-16       5771          3.77           3.77
## 234 5553957443   2016-04-17        655          0.43           0.43
## 235 5553957443   2016-04-18       3727          2.43           2.43
## 236 5553957443   2016-04-19      15482         10.11          10.11
## 237 5553957443   2016-04-20       2713          1.77           1.77
## 238 5553957443   2016-04-21      12346          8.06           8.06
## 239 5553957443   2016-04-22      11682          7.63           7.63
## 240 5553957443   2016-04-23       4112          2.69           2.69
## 241 5553957443   2016-04-24       1807          1.18           1.18
## 242 5553957443   2016-04-25      10946          7.19           7.19
## 243 5553957443   2016-04-26      11886          7.76           7.76
## 244 5553957443   2016-04-27      10538          6.88           6.88
## 245 5553957443   2016-04-28      11393          7.63           7.63
## 246 5553957443   2016-04-29      12764          8.33           8.33
## 247 5553957443   2016-04-30       1202          0.78           0.78
## 248 5553957443   2016-05-01       5164          3.37           3.37
## 249 5553957443   2016-05-02       9769          6.38           6.38
## 250 5553957443   2016-05-03      12848          8.39           8.39
## 251 5553957443   2016-05-04       4249          2.77           2.77
## 252 5553957443   2016-05-05      14331          9.51           9.51
## 253 5553957443   2016-05-06       9632          6.29           6.29
## 254 5553957443   2016-05-07       1868          1.22           1.22
## 255 5553957443   2016-05-08       6083          4.00           4.00
## 256 5553957443   2016-05-09      11611          7.58           7.58
## 257 5553957443   2016-05-10      16358         10.71          10.71
## 258 5553957443   2016-05-11       4926          3.22           3.22
## 259 5553957443   2016-05-12       3121          2.04           2.04
## 260 5577150313   2016-04-12       8135          6.08           6.08
## 261 5577150313   2016-04-13       5077          3.79           3.79
## 262 5577150313   2016-04-14       8596          6.42           6.42
## 263 5577150313   2016-04-15      12087          9.08           9.08
## 264 5577150313   2016-04-16      14269         10.66          10.66
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## 265 5577150313   2016-04-17      12231          9.14          9.14
## 266 5577150313   2016-04-18       9893          7.39          7.39
## 267 5577150313   2016-04-19      12574          9.42          9.42
## 268 5577150313   2016-04-20       8330          6.22          6.22
## 269 5577150313   2016-04-21      10830          8.09          8.09
## 270 5577150313   2016-04-22       9172          6.85          6.85
## 271 5577150313   2016-04-23       7638          5.71          5.71
## 272 5577150313   2016-04-24      15764         11.78         11.78
## 273 5577150313   2016-04-25       6393          4.78          4.78
## 274 5577150313   2016-04-26       5325          3.98          3.98
## 275 5577150313   2016-04-27       6805          5.14          5.14
## 276 5577150313   2016-04-28       9841          7.43          7.43
## 277 5577150313   2016-04-29       7924          5.92          5.92
## 278 5577150313   2016-04-30      12363          9.24          9.24
## 279 5577150313   2016-05-01      13368          9.99          9.99
## 280 5577150313   2016-05-02       7439          5.56          5.56
## 281 5577150313   2016-05-03      11045          8.25          8.25
## 282 5577150313   2016-05-04       5206          3.89          3.89
## 283 5577150313   2016-05-05       7550          5.64          5.64
## 284 5577150313   2016-05-10       8869          6.65          6.65
## 285 5577150313   2016-05-11       4038          3.04          3.04
## 286 6117666160   2016-04-16      14450         10.91         10.91
## 287 6117666160   2016-04-17       7150          5.40          5.40
## 288 6117666160   2016-04-18       5153          3.91          3.91
## 289 6117666160   2016-04-19      11135          8.41          8.41
## 290 6117666160   2016-04-20      10449          8.02          8.02
## 291 6117666160   2016-04-21      19542         15.01         15.01
## 292 6117666160   2016-04-22       8206          6.20          6.20
## 293 6117666160   2016-04-23      11495          8.68          8.68
## 294 6117666160   2016-04-24       7623          5.76          5.76
## 295 6117666160   2016-04-27       9411          7.11          7.11
## 296 6117666160   2016-04-28       3403          2.60          2.60
## 297 6117666160   2016-04-29       9592          7.24          7.24
## 298 6117666160   2016-05-01       8915          6.73          6.73
## 299 6117666160   2016-05-05       9799          7.40          7.40
## 300 6117666160   2016-05-06       3365          2.68          2.68
## 301 6117666160   2016-05-07       7336          5.54          5.54
## 302 6117666160   2016-05-08       7328          5.53          5.53
## 303 6117666160   2016-05-09       4477          3.38          3.38
## 304 6775888955   2016-04-13       4053          2.91          2.91
## 305 6775888955   2016-04-14       5162          3.70          3.70
## 306 6775888955   2016-04-15       1282          0.92          0.92
## 307 6962181067   2016-04-12      10199          6.74          6.74
## 308 6962181067   2016-04-13       5652          3.74          3.74
## 309 6962181067   2016-04-14       1551          1.03          1.03
## 310 6962181067   2016-04-15       5563          3.68          3.68
## 311 6962181067   2016-04-16      13217          8.74          8.74
## 312 6962181067   2016-04-17      10145          6.71          6.71
## 313 6962181067   2016-04-18      11404          7.54          7.54
## 314 6962181067   2016-04-19      10742          7.10          7.10
## 315 6962181067   2016-04-20      13928          9.55          9.55
## 316 6962181067   2016-04-21      11835          9.71          7.88
## 317 6962181067   2016-04-22      10725          7.09          7.09
## 318 6962181067   2016-04-23      20031         13.24         13.24
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## 319 6962181067   2016-04-24       5029          3.32          3.32
## 320 6962181067   2016-04-25      13239          9.27          9.08
## 321 6962181067   2016-04-26      10433          6.90          6.90
## 322 6962181067   2016-04-27      10320          6.82          6.82
## 323 6962181067   2016-04-28      12627          8.35          8.35
## 324 6962181067   2016-04-29      10762          7.11          7.11
## 325 6962181067   2016-04-30      10081          6.66          6.66
## 326 6962181067   2016-05-01       5454          3.61          3.61
## 327 6962181067   2016-05-02      12912          8.54          8.54
## 328 6962181067   2016-05-03      12109          8.12          8.12
## 329 6962181067   2016-05-04      10147          6.71          6.71
## 330 6962181067   2016-05-05      10524          6.96          6.96
## 331 6962181067   2016-05-06       5908          3.91          3.91
## 332 6962181067   2016-05-07       6815          4.50          4.50
## 333 6962181067   2016-05-08       4188          2.77          2.77
## 334 6962181067   2016-05-09      12342          8.72          8.68
## 335 6962181067   2016-05-10      15448         10.21         10.21
## 336 6962181067   2016-05-11       6722          4.44          4.44
## 337 6962181067   2016-05-12       3587          2.37          2.37
## 338 7007744171   2016-04-16       4631          3.10          3.10
## 339 7007744171   2016-05-01       5600          3.75          3.75
## 340 7086361926   2016-04-12      11317          8.41          8.41
## 341 7086361926   2016-04-13       5813          3.62          3.62
## 342 7086361926   2016-04-14       9123          6.12          6.12
## 343 7086361926   2016-04-15       8585          5.67          5.67
## 344 7086361926   2016-04-19      10688          7.29          7.29
## 345 7086361926   2016-04-20      14365         10.64         10.64
## 346 7086361926   2016-04-21       9469          6.18          6.18
## 347 7086361926   2016-04-22       9753          6.53          6.53
## 348 7086361926   2016-04-24       3520          2.16          2.16
## 349 7086361926   2016-04-25      10091          6.82          6.82
## 350 7086361926   2016-04-26      10387          7.07          7.07
## 351 7086361926   2016-04-27      11107          8.34          8.34
## 352 7086361926   2016-04-28      11584          7.80          7.80
## 353 7086361926   2016-04-30      14560          9.41          9.41
## 354 7086361926   2016-05-01      12390          8.07          8.07
## 355 7086361926   2016-05-02      10052          6.81          6.81
## 356 7086361926   2016-05-03      10288          6.76          6.76
## 357 7086361926   2016-05-04      10988          8.31          8.31
## 358 7086361926   2016-05-06      12461          8.38          8.38
## 359 7086361926   2016-05-07      12827          8.48          8.48
## 360 7086361926   2016-05-08      10677          7.10          7.10
## 361 7086361926   2016-05-09      13566          9.11          9.11
## 362 7086361926   2016-05-11       9572          6.52          6.52
## 363 7086361926   2016-05-12       3789          2.56          2.56
## 364 8053475328   2016-04-20      15108         12.19         12.19
## 365 8053475328   2016-04-23      22359         17.19         17.19
## 366 8053475328   2016-05-07      19769         15.67         15.67
## 367 8378563200   2016-04-12       7626          6.05          6.05
## 368 8378563200   2016-04-13      12386          9.82          9.82
## 369 8378563200   2016-04-14      13318         10.56         10.56
## 370 8378563200   2016-04-15      14461         11.47         11.47
## 371 8378563200   2016-04-16      11207          8.89          8.89
## 372 8378563200   2016-04-17       2132          1.69          1.69
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## 373 8378563200   2016-04-18      13630         10.81           10.81
## 374 8378563200   2016-04-19      13070         10.36           10.36
## 375 8378563200   2016-04-20       9388          7.44            7.44
## 376 8378563200   2016-04-21      15148         12.01           12.01
## 377 8378563200   2016-04-22      12200          9.67            9.67
## 378 8378563200   2016-04-23       5709          4.53            4.53
## 379 8378563200   2016-04-24       3703          2.94            2.94
## 380 8378563200   2016-04-25      12405          9.84            9.84
## 381 8378563200   2016-04-25      12405          9.84            9.84
## 382 8378563200   2016-04-26      16208         12.85           12.85
## 383 8378563200   2016-04-27       7359          5.84            5.84
## 384 8378563200   2016-04-28       5417          4.30            4.30
## 385 8378563200   2016-04-29       6175          4.90            4.90
## 386 8378563200   2016-04-30       2946          2.34            2.34
## 387 8378563200   2016-05-01      11419          9.06            9.06
## 388 8378563200   2016-05-02       6064          4.81            4.81
## 389 8378563200   2016-05-03       8712          6.91            6.91
## 390 8378563200   2016-05-04       7875          6.24            6.24
## 391 8378563200   2016-05-05       8567          6.79            6.79
## 392 8378563200   2016-05-06       7045          5.59            5.59
## 393 8378563200   2016-05-07       4468          3.54            3.54
## 394 8378563200   2016-05-08       2943          2.33            2.33
## 395 8378563200   2016-05-09       8382          6.65            6.65
## 396 8378563200   2016-05-10       6582          5.22            5.22
## 397 8378563200   2016-05-11       9143          7.25            7.25
## 398 8378563200   2016-05-12       4561          3.62            3.62
## 399 8792009665   2016-04-12       2564          1.64            1.64
## 400 8792009665   2016-04-13       1320          0.84            0.84
## 401 8792009665   2016-04-14       1219          0.78            0.78
## 402 8792009665   2016-04-15       2483          1.59            1.59
## 403 8792009665   2016-04-20       3147          2.01            2.01
## 404 8792009665   2016-04-22       4068          2.60            2.60
## 405 8792009665   2016-04-23       5245          3.36            3.36
## 406 8792009665   2016-04-27       1758          1.13            1.13
## 407 8792009665   2016-04-28       6157          3.94            3.94
## 408 8792009665   2016-04-29       8360          5.35            5.35
## 409 8792009665   2016-04-30       7174          4.59            4.59
## 410 8792009665   2016-05-01       1619          1.04            1.04
## 411 8792009665   2016-05-02       1831          1.17            1.17
## 412 8792009665   2016-05-03       2421          1.55            1.55
## 413 8792009665   2016-05-04       2283          1.46            1.46
##     LoggedActivitiesDistance VeryActiveDistance ModeratelyActiveDistance
## 1                   0.000000              1.88                      0.55
## 2                   0.000000              1.57                      0.69
## 3                   0.000000              2.14                      1.26
## 4                   0.000000              2.71                      0.41
## 5                   0.000000              3.19                      0.78
## 6                   0.000000              3.53                      1.32
## 7                   0.000000              1.96                      0.48
## 8                   0.000000              1.34                      0.35
## 9                   0.000000              2.81                      0.87
## 10                  0.000000              2.92                      0.21
## 11                  0.000000              5.29                      0.57
## 12                  0.000000              2.33                      0.92
```

```
## 13          0.000000          3.54          1.16
## 14          0.000000          1.06          0.50
## 15          0.000000          3.56          1.42
## 16          0.000000          2.29          1.60
## 17          0.000000          3.21          0.57
## 18          0.000000          3.73          1.05
## 19          0.000000          2.92          1.08
## 20          0.000000          1.97          0.25
## 21          0.000000          2.46          2.12
## 22          0.000000          3.53          0.32
## 23          0.000000          3.45          0.53
## 24          0.000000          3.35          1.16
## 25          0.000000          2.56          1.01
## 26          0.000000          0.00          0.00
## 27          0.000000          0.63          3.14
## 28          0.000000          0.07          0.31
## 29          0.000000          0.00          0.00
## 30          0.000000          0.00          0.00
## 31          0.000000          0.00          0.00
## 32          0.000000          0.00          0.26
## 33          0.000000          0.00          0.00
## 34          0.000000          0.00          0.00
## 35          0.000000          0.00          0.00
## 36          0.000000          0.00          0.00
## 37          0.000000          0.00          0.00
## 38          0.000000          0.19          0.35
## 39          0.000000          0.00          0.00
## 40          0.000000          0.00          0.00
## 41          0.000000          0.00          0.00
## 42          0.000000          0.00          0.00
## 43          0.000000          0.00          0.00
## 44          0.000000          0.00          0.00
## 45          0.000000          0.00          0.00
## 46          0.000000          0.00          0.00
## 47          0.000000          0.00          0.00
## 48          0.000000          0.00          0.00
## 49          0.000000          0.00          0.00
## 50          0.000000          0.00          0.00
## 51          0.000000          0.00          0.00
## 52          0.000000          0.00          0.00
## 53          0.000000          0.00          0.00
## 54          0.000000          0.00          0.00
## 55          0.000000          0.00          0.00
## 56          0.000000          0.00          0.00
## 57          0.000000          0.00          0.00
## 58          0.000000          0.00          0.00
## 59          0.000000          0.00          0.00
## 60          0.000000          0.00          0.00
## 61          0.000000          0.00          0.00
## 62          0.000000          0.00          0.00
## 63          0.000000          0.00          0.00
## 64          0.000000          0.00          0.00
## 65          0.000000          0.00          0.00
## 66          0.000000          0.00          0.00
```

```
## 67       0.000000        1.66        1.94
## 68       0.000000        0.02        2.74
## 69       0.000000        0.07        1.42
## 70       0.000000        0.08        0.28
## 71       0.000000        0.79        0.86
## 72       0.000000        0.00        0.00
## 73       0.000000        1.85        1.53
## 74       0.000000        0.56        1.68
## 75       0.000000        2.78        1.45
## 76       0.000000        0.00        0.00
## 77       0.000000        1.27        0.52
## 78       0.000000        0.00        0.00
## 79       0.000000        1.86        0.40
## 80       0.000000        0.00        0.00
## 81       0.000000        0.00        0.00
## 82       0.000000        3.06        0.91
## 83       0.000000        2.03        2.13
## 84       0.000000        0.32        0.97
## 85       0.000000        1.05        1.75
## 86       0.000000        2.03        4.00
## 87       0.000000        0.70        2.35
## 88       0.000000        0.25        3.73
## 89       0.000000        2.24        2.45
## 90       0.000000        0.20        4.35
## 91       0.000000        0.00        0.00
## 92       0.000000        2.33        0.58
## 93       0.000000        0.00        4.22
## 94       0.000000        3.27        4.56
## 95       0.000000        5.62        0.43
## 96       0.000000        0.45        4.22
## 97       0.000000        0.00        0.42
## 98       0.000000        1.37        0.29
## 99       0.000000        3.74        1.30
## 100      0.000000        3.69        2.10
## 101      0.000000        2.67        1.98
## 102      0.000000        1.54        6.48
## 103      0.000000        3.32        1.74
## 104      0.000000        1.81        4.58
## 105      0.000000        1.76        4.11
## 106      0.000000        3.11        2.51
## 107      0.000000        0.00        4.13
## 108      0.000000        0.68        5.24
## 109      0.000000        0.07        5.40
## 110      0.000000        0.15        0.24
## 111      0.000000        0.45        0.37
## 112      0.000000        0.00        0.00
## 113      0.000000        0.67        1.04
## 114      0.000000        2.62        1.68
## 115      0.000000        0.00        0.00
## 116      0.000000        0.00        0.00
## 117      0.000000        0.00        0.00
## 118      0.000000        0.11        0.33
## 119      0.000000        0.00        0.00
## 120      0.000000        0.00        0.00
```

```
## 121          0.000000          0.07          0.33
## 122          0.000000          0.00          0.00
## 123          0.000000          0.00          0.68
## 124          0.000000          0.00          0.00
## 125          0.000000          0.06          0.81
## 126          0.000000          0.00          0.00
## 127          0.000000          0.06          0.20
## 128          0.000000          0.00          0.28
## 129          0.000000          0.57          0.92
## 130          0.000000          0.41          1.92
## 131          0.000000          1.01          0.33
## 132          0.000000          0.45          0.79
## 133          0.000000          0.40          1.61
## 134          0.000000          0.00          0.00
## 135          0.000000          0.00          0.44
## 136          0.000000          0.58          1.07
## 137          0.000000          0.41          0.47
## 138          0.000000          0.19          1.05
## 139          0.000000          0.00          0.00
## 140          0.000000          0.14          0.56
## 141          0.000000          0.21          0.46
## 142          0.000000          0.20          0.74
## 143          0.000000          0.00          0.00
## 144          0.000000          0.00          0.00
## 145          0.000000          0.21          0.40
## 146          0.000000          0.00          0.00
## 147          0.000000          3.56          0.40
## 148          0.000000          1.37          0.69
## 149          0.000000          1.10          1.72
## 150          0.000000          0.37          0.39
## 151          0.000000          3.30          1.11
## 152          0.000000          4.50          0.32
## 153          0.000000          1.08          0.51
## 154          0.000000          0.94          1.06
## 155          0.000000          0.70          2.51
## 156          0.000000          1.29          0.43
## 157          0.000000          0.70          2.00
## 158          0.000000          1.01          0.68
## 159          0.000000          3.77          0.08
## 160          0.000000          2.79          0.93
## 161          0.000000          0.63          1.67
## 162          0.000000          0.63          1.67
## 163          0.000000          9.45          2.77
## 164          0.000000          9.89          1.26
## 165          0.000000          0.34          0.73
## 166          0.000000          0.81          0.65
## 167          0.000000          0.53          0.79
## 168          0.000000          0.00          0.00
## 169          0.000000          0.00          0.00
## 170          0.000000          0.00          0.00
## 171          0.000000          0.00          0.00
## 172          0.000000          0.00          0.00
## 173          0.000000          0.00          0.00
## 174          0.000000          0.00          0.00
```

```
## 175          0.000000          0.00          0.00
## 176          0.000000          0.00          0.00
## 177          0.000000          0.00          0.00
## 178          0.000000          0.00          0.00
## 179          0.000000          2.41          0.04
## 180          0.000000          2.62          0.03
## 181          0.000000          0.00          0.00
## 182          0.000000          0.00          0.00
## 183          0.000000          0.00          0.00
## 184          0.000000          0.00          0.00
## 185          0.000000          2.21          0.19
## 186          0.000000          2.48          0.11
## 187          0.000000          0.00          0.00
## 188          0.000000          0.12          0.24
## 189          0.000000          0.00          0.00
## 190          0.000000          2.13          0.19
## 191          0.000000          0.00          0.25
## 192          0.000000          0.00          0.00
## 193          0.000000          0.00          0.00
## 194          0.000000          2.25          1.00
## 195          0.000000          0.00          0.00
## 196          0.000000          0.42          0.97
## 197          0.000000          0.43          2.03
## 198          0.000000          1.02          1.85
## 199          0.000000          0.00          0.00
## 200          0.000000          1.80          0.50
## 201          0.000000          0.00          0.00
## 202          0.000000          0.00          0.00
## 203          0.000000          0.00          0.00
## 204          0.000000          0.07          0.42
## 205          0.000000          0.24          1.25
## 206          0.000000          0.96          3.46
## 207          0.000000          1.82          1.49
## 208          0.000000          0.88          0.37
## 209          0.000000          0.16          1.23
## 210          0.000000          0.31          2.05
## 211          0.000000          0.76          3.24
## 212          0.000000          1.20          5.12
## 213          0.000000          0.49          0.82
## 214          0.000000          0.07          0.35
## 215          0.000000          0.09          0.80
## 216          0.000000          1.13          0.42
## 217          0.000000          1.06          0.92
## 218          0.000000          0.32          2.03
## 219          0.000000          0.00          0.00
## 220          0.000000          0.34          0.73
## 221          0.000000          0.67          0.22
## 222          0.000000          0.08          0.66
## 223          0.000000          0.37          2.31
## 224          0.000000          0.37          2.31
## 225          0.000000          0.00          0.57
## 226          0.000000          0.08          1.88
## 227          0.000000          0.78          2.16
## 228          0.000000          0.00          0.00
```

```
## 229          0.000000          1.37          0.79
## 230          0.000000          0.00          0.00
## 231          0.000000          4.00          2.45
## 232          0.000000          4.16          1.98
## 233          0.000000          0.00          0.00
## 234          0.000000          0.00          0.00
## 235          0.000000          0.00          0.00
## 236          0.000000          4.28          1.66
## 237          0.000000          0.00          0.00
## 238          0.000000          2.95          2.16
## 239          0.000000          1.38          0.63
## 240          0.000000          0.00          0.00
## 241          0.000000          0.00          0.00
## 242          0.000000          2.93          0.57
## 243          0.000000          2.37          0.93
## 244          0.000000          1.14          1.00
## 245          0.000000          3.71          0.75
## 246          0.000000          2.79          0.64
## 247          0.000000          0.00          0.00
## 248          0.000000          0.00          0.00
## 249          0.000000          1.06          0.41
## 250          0.000000          1.50          1.20
## 251          0.000000          0.00          0.00
## 252          0.000000          3.43          1.66
## 253          0.000000          1.52          0.54
## 254          0.000000          0.00          0.00
## 255          0.000000          0.22          0.47
## 256          0.000000          2.13          0.89
## 257          0.000000          3.87          1.61
## 258          0.000000          0.00          0.00
## 259          0.000000          0.58          0.40
## 260          0.000000          3.60          0.38
## 261          0.000000          0.32          0.22
## 262          0.000000          3.33          0.31
## 263          0.000000          3.92          1.60
## 264          0.000000          6.64          1.28
## 265          0.000000          5.98          0.83
## 266          0.000000          4.86          0.72
## 267          0.000000          7.02          0.64
## 268          0.000000          4.12          0.34
## 269          0.000000          3.65          1.66
## 270          0.000000          2.42          0.79
## 271          0.000000          1.21          0.36
## 272          0.000000          7.65          2.15
## 273          0.000000          1.35          0.67
## 274          0.000000          0.85          0.65
## 275          0.000000          1.81          0.40
## 276          0.000000          3.25          1.17
## 277          0.000000          2.84          0.61
## 278          0.000000          5.83          0.79
## 279          0.000000          5.31          1.44
## 280          0.000000          1.12          0.35
## 281          0.000000          4.52          0.15
## 282          0.000000          1.56          0.25
```

```
## 283    0.000000    2.50    0.47
## 284    0.000000    2.56    0.75
## 285    0.000000    1.83    0.30
## 286    0.000000    0.58    0.85
## 287    0.000000    0.00    0.00
## 288    0.000000    0.00    0.00
## 289    0.000000    0.00    0.00
## 290    0.000000    2.03    0.48
## 291    0.000000    0.98    0.40
## 292    0.000000    0.00    0.00
## 293    0.000000    0.00    0.00
## 294    0.000000    0.00    0.00
## 295    0.000000    0.00    0.00
## 296    0.000000    0.00    0.00
## 297    0.000000    0.00    0.00
## 298    0.000000    0.00    0.00
## 299    0.000000    0.00    0.00
## 300    0.000000    0.00    0.00
## 301    0.000000    0.00    0.00
## 302    0.000000    0.00    0.00
## 303    0.000000    0.00    0.00
## 304    0.000000    1.11    0.58
## 305    0.000000    0.87    0.86
## 306    0.000000    0.00    0.00
## 307    0.000000    3.40    0.83
## 308    0.000000    0.57    1.21
## 309    0.000000    0.00    0.00
## 310    0.000000    0.00    0.00
## 311    0.000000    3.66    0.19
## 312    0.000000    0.33    0.68
## 313    0.000000    0.83    2.39
## 314    0.000000    2.10    2.13
## 315    0.000000    4.28    0.19
## 316    4.081692    3.99    2.10
## 317    0.000000    1.77    1.55
## 318    0.000000    4.20    2.00
## 319    0.000000    0.00    0.00
## 320    2.785175    3.02    1.68
## 321    0.000000    2.58    0.42
## 322    0.000000    0.55    2.02
## 323    0.000000    2.51    0.24
## 324    0.000000    0.82    0.48
## 325    0.000000    2.24    0.76
## 326    0.000000    0.00    0.00
## 327    0.000000    1.20    2.00
## 328    0.000000    1.74    2.04
## 329    0.000000    0.47    1.68
## 330    0.000000    0.99    1.16
## 331    0.000000    0.00    0.00
## 332    0.000000    0.00    0.00
## 333    0.000000    0.00    0.52
## 334    3.167822    3.90    1.18
## 335    0.000000    3.47    1.75
## 336    0.000000    1.49    0.31
```

```
## 337  0.000000  0.00  0.25
## 338  0.000000  0.00  0.00
## 339  0.000000  0.00  0.00
## 340  0.000000  5.27  0.15
## 341  0.000000  0.56  0.21
## 342  0.000000  2.03  0.33
## 343  0.000000  2.04  1.11
## 344  0.000000  3.53  1.23
## 345  0.000000  7.64  0.45
## 346  0.000000  1.36  0.30
## 347  0.000000  2.87  0.97
## 348  0.000000  0.00  0.00
## 349  0.000000  3.75  0.70
## 350  0.000000  4.16  0.77
## 351  0.000000  5.63  0.18
## 352  0.000000  2.79  1.64
## 353  0.000000  3.12  1.04
## 354  0.000000  2.30  0.90
## 355  0.000000  3.48  0.66
## 356  0.000000  2.74  0.85
## 357  0.000000  5.28  0.12
## 358  0.000000  3.82  1.43
## 359  0.000000  1.46  2.33
## 360  0.000000  2.31  1.53
## 361  0.000000  4.26  1.71
## 362  0.000000  2.89  1.39
## 363  0.000000  0.38  0.27
## 364  0.000000  9.58  0.23
## 365  0.000000 12.54  0.63
## 366  0.000000 12.44  0.88
## 367  2.253081  0.83  0.71
## 368  2.092147  4.96  0.65
## 369  2.253081  5.62  1.03
## 370  0.000000  4.91  1.15
## 371  0.000000  5.37  1.07
## 372  0.000000  0.00  0.00
## 373  2.092147  5.05  0.56
## 374  2.253081  5.30  0.88
## 375  2.092147  2.23  0.44
## 376  2.253081  6.90  0.82
## 377  2.092147  4.91  0.59
## 378  0.000000  1.52  0.52
## 379  0.000000  0.00  0.00
## 380  2.092147  5.05  0.87
## 381  2.092147  5.05  0.87
## 382  0.000000  7.51  0.92
## 383  0.000000  0.33  0.18
## 384  0.000000  0.90  0.49
## 385  0.000000  0.25  0.36
## 386  0.000000  0.00  0.00
## 387  0.000000  6.03  0.56
## 388  2.092147  0.63  0.17
## 389  2.253081  1.34  1.06
## 390  0.000000  1.56  0.49
```

```
## 391                2.253081                0.89                    0.16
## 392                2.092147                1.55                    0.25
## 393                0.000000                0.00                    0.00
## 394                0.000000                0.00                    0.00
## 395                2.092147                1.27                    0.66
## 396                2.253081                0.66                    0.64
## 397                2.092147                1.39                    0.59
## 398                0.000000                0.65                    0.27
## 399                0.000000                0.00                    0.00
## 400                0.000000                0.00                    0.00
## 401                0.000000                0.00                    0.00
## 402                0.000000                0.00                    0.00
## 403                0.000000                0.00                    0.28
## 404                0.000000                0.05                    0.28
## 405                0.000000                0.16                    0.44
## 406                0.000000                0.00                    0.00
## 407                0.000000                0.00                    0.00
## 408                0.000000                0.14                    0.28
## 409                0.000000                0.33                    0.36
## 410                0.000000                0.00                    0.00
## 411                0.000000                0.00                    0.00
## 412                0.000000                0.00                    0.00
## 413                0.000000                0.00                    0.00
##     LightActiveDistance SedentaryActiveDistance VeryActiveMinutes
## 1                  6.06                    0.00                25
## 2                  4.71                    0.00                21
## 3                  2.83                    0.00                29
## 4                  5.04                    0.00                36
## 5                  2.51                    0.00                38
## 6                  5.03                    0.00                50
## 7                  4.24                    0.00                28
## 8                  4.65                    0.00                19
## 9                  5.36                    0.00                41
## 10                 3.28                    0.00                39
## 11                 3.94                    0.00                73
## 12                 5.54                    0.00                31
## 13                 3.79                    0.00                48
## 14                 5.58                    0.00                16
## 15                 4.27                    0.00                52
## 16                 2.92                    0.00                33
## 17                 5.92                    0.00                41
## 18                 4.88                    0.00                50
## 19                 4.88                    0.00                45
## 20                 5.81                    0.00                24
## 21                 3.13                    0.00                37
## 22                 2.73                    0.00                44
## 23                 3.74                    0.00                46
## 24                 3.26                    0.00                46
## 25                 4.55                    0.00                36
## 26                 2.31                    0.00                 0
## 27                 9.46                    0.00                 9
## 28                 2.35                    0.00                 1
## 29                 4.88                    0.00                 0
## 30                 2.54                    0.00                 0
```

```
## 31              2.65              0.00               0
## 32              1.45              0.00               0
## 33              0.47              0.00               0
## 34              0.25              0.00               0
## 35              0.68              0.00               0
## 36              2.60              0.00               0
## 37              1.16              0.00               0
## 38              2.20              0.00               3
## 39              3.10              0.00               0
## 40              2.05              0.00               0
## 41              2.37              0.00               0
## 42              1.58              0.00               0
## 43              0.52              0.00               0
## 44              1.50              0.00               0
## 45              4.48              0.00               0
## 46              1.53              0.00               0
## 47              1.81              0.00               0
## 48              7.71              0.00               0
## 49              2.16              0.00               0
## 50              3.73              0.00               0
## 51              3.77              0.00               0
## 52              3.95              0.00               0
## 53              4.71              0.00               0
## 54              2.93              0.00               0
## 55              2.28              0.00               0
## 56              4.35              0.00               0
## 57              4.07              0.00               0
## 58              7.54              0.00               0
## 59              5.08              0.00               0
## 60              2.60              0.00               0
## 61              3.45              0.00               0
## 62              6.60              0.00               0
## 63              0.16              0.00               0
## 64              5.32              0.00               0
## 65              5.51              0.00               0
## 66              3.42              0.00               0
## 67              3.41              0.00              19
## 68              3.94              0.00               1
## 69              5.43              0.00               1
## 70              3.26              0.00               1
## 71              3.79              0.00              11
## 72              4.44              0.00               0
## 73              3.38              0.00              23
## 74              2.92              0.00               9
## 75              7.15              0.00              32
## 76              6.26              0.00               0
## 77              4.60              0.00              15
## 78              3.95              0.00               0
## 79              5.32              0.00              26
## 80              3.60              0.00               0
## 81              0.03              0.00               0
## 82              2.01              0.00              44
## 83              2.55              0.00              31
## 84              3.82              0.00               5
```

```
## 85              3.26              0.00              15
## 86              2.97              0.00              31
## 87              3.92              0.00              11
## 88              3.82              0.00               4
## 89              3.96              0.00              19
## 90              3.28              0.00               2
## 91              4.06              0.00               0
## 92              3.06              0.00              33
## 93              3.85              0.00               0
## 94              2.17              0.00              30
## 95              2.41              0.00              50
## 96              2.95              0.00               7
## 97              4.62              0.00               0
## 98              3.22              0.00              15
## 99              2.71              0.00              36
## 100             3.41              0.00              43
## 101             2.41              0.00              41
## 102             3.02              0.00              24
## 103             4.53              0.00              47
## 104             2.89              0.00              14
## 105             2.71              0.00              14
## 106             2.67              0.00              29
## 107             3.59              0.00               0
## 108             3.17              0.00               9
## 109             3.31              0.00               1
## 110             5.68              0.00               4
## 111             0.59              0.00              65
## 112             3.15              0.05               0
## 113             5.58              0.00              13
## 114             4.04              0.07              38
## 115             3.10              0.01               0
## 116             4.15              0.00               0
## 117             3.87              0.04               0
## 118             6.44              0.00               1
## 119             3.80              0.00               0
## 120             3.18              0.00               0
## 121             1.12              0.00               1
## 122             5.99              0.00               0
## 123             5.31              0.00               0
## 124             0.35              0.00               0
## 125             2.15              0.00               1
## 126             3.31              0.00               0
## 127             2.47              0.00               1
## 128             5.93              0.00               0
## 129             5.15              0.00               8
## 130             4.91              0.00               6
## 131             5.94              0.00              13
## 132             4.12              0.00               6
## 133             3.51              0.00               6
## 134             0.84              0.00               0
## 135             5.71              0.00               0
## 136             4.83              0.00               8
## 137             5.46              0.00               6
## 138             4.08              0.00               3
```

```
## 139              2.46              0.00               0
## 140              6.25              0.00               2
## 141              5.70              0.00               3
## 142              5.18              0.00               3
## 143              0.01              0.00               0
## 144              6.73              0.00               0
## 145              4.45              0.00               6
## 146              3.58              0.00               0
## 147              5.14              0.00              27
## 148              5.77              0.00              20
## 149              5.29              0.00              19
## 150              6.98              0.00               7
## 151              4.92              0.00              77
## 152              5.35              0.00              58
## 153              6.30              0.00              14
## 154              5.27              0.00              14
## 155              5.39              0.00              11
## 156              6.03              0.00              19
## 157              6.94              0.00              14
## 158              6.20              0.00              12
## 159              4.55              0.00              33
## 160              5.80              0.00              35
## 161              5.09              0.00              12
## 162              5.09              0.00              12
## 163              5.33              0.00             120
## 164              3.23              0.00             107
## 165              6.79              0.00               6
## 166              6.46              0.00              13
## 167              6.53              0.00               8
## 168              2.20              0.00               0
## 169              1.99              0.00               0
## 170              2.67              0.00               0
## 171              4.83              0.00               0
## 172              2.65              0.00               0
## 173              1.52              0.00               0
## 174              1.39              0.00               0
## 175              1.39              0.00               0
## 176              2.54              0.00               0
## 177              4.58              0.00               0
## 178              2.27              0.00               0
## 179              1.96              0.00              29
## 180              2.38              0.00              32
## 181              3.01              0.00               0
## 182              3.13              0.00               0
## 183              4.18              0.00               0
## 184              3.51              0.00               0
## 185              2.35              0.00              27
## 186              2.58              0.00              30
## 187              1.96              0.00               0
## 188              2.18              0.00               2
## 189              3.03              0.00               0
## 190              1.25              0.00              26
## 191              4.65              0.00               0
## 192              3.54              0.00               0
```

```
## 193              2.63              0.00               0
## 194              2.86              0.00              34
## 195              0.52              0.00               0
## 196              7.70              0.00               6
## 197              3.59              0.00              12
## 198              2.31              0.00              15
## 199              2.27              0.00               0
## 200              2.02              0.00              66
## 201              5.85              0.00               0
## 202              5.58              0.00               0
## 203              6.37              0.00               0
## 204              4.79              0.00               1
## 205              7.54              0.00               3
## 206              5.88              0.00              12
## 207              4.07              0.00              22
## 208              4.19              0.00              10
## 209              5.73              0.00               2
## 210              2.94              0.00               4
## 211              8.27              0.00               9
## 212              5.88              0.00              15
## 213              6.11              0.00               6
## 214              4.54              0.00               1
## 215              4.78              0.00               1
## 216              5.77              0.00              14
## 217              6.07              0.00              12
## 218              5.88              0.00               4
## 219              7.67              0.00               0
## 220              5.54              0.00               4
## 221              6.09              0.00               8
## 222              4.87              0.00               1
## 223              8.97              0.00               5
## 224              8.97              0.00               5
## 225              6.10              0.00               0
## 226              6.65              0.00               1
## 227              4.98              0.00              10
## 228              2.23              0.00               0
## 229              5.41              0.00              19
## 230              3.16              0.00               0
## 231              4.67              0.00              61
## 232              4.71              0.00              58
## 233              3.77              0.00               0
## 234              0.43              0.00               0
## 235              2.43              0.00               0
## 236              4.18              0.00              69
## 237              1.77              0.00               0
## 238              2.96              0.00              47
## 239              5.60              0.00              25
## 240              2.68              0.00               0
## 241              1.18              0.00               0
## 242              3.69              0.00              51
## 243              4.46              0.00              40
## 244              4.74              0.00              16
## 245              3.17              0.00              49
## 246              4.91              0.00              46
```

```
## 247              0.78              0.00               0
## 248              3.37              0.00               0
## 249              4.90              0.00              23
## 250              5.68              0.00              26
## 251              2.77              0.00               0
## 252              4.43              0.00              44
## 253              4.23              0.00              21
## 254              1.22              0.00               0
## 255              3.30              0.00               3
## 256              4.56              0.00              59
## 257              5.20              0.00              61
## 258              3.22              0.00               0
## 259              1.06              0.00               8
## 260              2.10              0.00              86
## 261              3.25              0.00              15
## 262              2.78              0.00             118
## 263              3.56              0.00             115
## 264              2.73              0.00             184
## 265              2.32              0.00             200
## 266              1.82              0.00             114
## 267              1.76              0.00             108
## 268              1.76              0.00              87
## 269              2.78              0.00             110
## 270              3.30              0.00              62
## 271              4.14              0.00              24
## 272              1.98              0.00             210
## 273              2.76              0.00              61
## 274              2.47              0.00              38
## 275              2.93              0.00              63
## 276              3.01              0.00              99
## 277              2.47              0.00              97
## 278              2.61              0.00             207
## 279              3.24              0.00             194
## 280              4.07              0.00              37
## 281              3.57              0.00              97
## 282              2.08              0.00              25
## 283              2.67              0.00              45
## 284              3.35              0.00             104
## 285              0.89              0.00              45
## 286              9.48              0.00               7
## 287              5.40              0.00               0
## 288              3.89              0.00               0
## 289              8.41              0.00               0
## 290              5.52              0.00              26
## 291              5.62              0.00              11
## 292              6.20              0.00               0
## 293              8.68              0.00               0
## 294              5.76              0.00               0
## 295              7.11              0.00               0
## 296              2.60              0.00               0
## 297              7.24              0.00               0
## 298              6.73              0.00               0
## 299              7.40              0.00               0
## 300              2.68              0.00               0
```

```
## 301          5.54          0.00           0
## 302          5.53          0.00           0
## 303          3.38          0.00           0
## 304          1.22          0.00          17
## 305          1.97          0.00          14
## 306          0.92          0.00           0
## 307          2.51          0.00          50
## 308          1.96          0.00           8
## 309          1.03          0.00           0
## 310          3.68          0.00           0
## 311          4.88          0.00          50
## 312          5.69          0.00           5
## 313          4.32          0.00          13
## 314          2.87          0.00          35
## 315          5.09          0.00          48
## 316          3.51          0.11          53
## 317          3.77          0.00          30
## 318          7.04          0.00          58
## 319          3.32          0.00           0
## 320          4.46          0.10          35
## 321          3.90          0.00          36
## 322          4.25          0.00           7
## 323          5.59          0.00          38
## 324          5.81          0.00          12
## 325          3.67          0.00          32
## 326          3.61          0.00           0
## 327          5.34          0.00          18
## 328          4.33          0.00          21
## 329          4.55          0.00          15
## 330          4.81          0.00          14
## 331          3.91          0.00           0
## 332          4.50          0.00           0
## 333          2.25          0.00           0
## 334          3.65          0.00          43
## 335          4.99          0.00          62
## 336          2.65          0.00          24
## 337          2.11          0.00           0
## 338          3.10          0.00           0
## 339          3.75          0.00           0
## 340          2.97          0.00          59
## 341          2.84          0.00          31
## 342          3.66          0.00          35
## 343          2.53          0.00          30
## 344          2.51          0.00          67
## 345          2.54          0.00          87
## 346          4.51          0.00          19
## 347          2.67          0.00          58
## 348          2.15          0.00           0
## 349          2.37          0.00          69
## 350          2.12          0.00          70
## 351          2.53          0.00          55
## 352          3.36          0.00          54
## 353          5.24          0.00          42
## 354          4.85          0.00          30
```

```
## 355          2.66          0.00          66
## 356          3.16          0.00          57
## 357          2.90          0.00          45
## 358          3.12          0.00          84
## 359          4.68          0.00          20
## 360          3.25          0.00          32
## 361          3.12          0.00          67
## 362          2.23          0.00          57
## 363          1.89          0.00           5
## 364          2.38          0.00          89
## 365          4.02          0.00         125
## 366          2.35          0.00         121
## 367          4.50          0.00          65
## 368          4.21          0.00         116
## 369          3.91          0.00         123
## 370          5.41          0.00          60
## 371          2.44          0.00          64
## 372          1.69          0.00           0
## 373          5.20          0.00         117
## 374          4.18          0.00         120
## 375          4.78          0.00          82
## 376          4.29          0.00         137
## 377          4.18          0.00         113
## 378          2.48          0.00          19
## 379          2.94          0.00           0
## 380          3.92          0.00         117
## 381          3.92          0.00         117
## 382          4.42          0.00          90
## 383          5.33          0.00           4
## 384          2.91          0.00          11
## 385          4.27          0.00           3
## 386          2.34          0.00           0
## 387          2.47          0.00          71
## 388          4.01          0.00          63
## 389          4.50          0.00          71
## 390          4.20          0.00          19
## 391          5.74          0.00          66
## 392          3.78          0.00          74
## 393          3.54          0.00           0
## 394          2.33          0.00           0
## 395          4.72          0.00          71
## 396          3.92          0.00          63
## 397          5.27          0.00          72
## 398          2.69          0.00           8
## 399          1.64          0.00           0
## 400          0.84          0.00           0
## 401          0.78          0.00           0
## 402          1.59          0.00           0
## 403          1.74          0.00           0
## 404          2.27          0.00           1
## 405          2.75          0.00           8
## 406          1.13          0.00           0
## 407          3.94          0.00           0
## 408          4.93          0.00           6
```

```
## 409               3.91                  0.00               10
## 410               1.04                  0.00                0
## 411               1.17                  0.00                0
## 412               1.55                  0.00                0
## 413               1.46                  0.00                0
##     FairlyActiveMinutes LightlyActiveMinutes SedentaryMinutes Calories     Time
## 1                    13                  328              728     1985 12:00:00
## 2                    19                  217              776     1797 12:00:00
## 3                    34                  209              726     1745 12:00:00
## 4                    10                  221              773     1863 12:00:00
## 5                    20                  164              539     1728 12:00:00
## 6                    31                  264              775     2035 12:00:00
## 7                    12                  205              818     1786 12:00:00
## 8                     8                  211              838     1775 12:00:00
## 9                    21                  262              732     1949 12:00:00
## 10                    5                  238              709     1788 12:00:00
## 11                   14                  216              814     2013 12:00:00
## 12                   23                  279              833     1970 12:00:00
## 13                   28                  189              782     1898 12:00:00
## 14                   12                  243              815     1837 12:00:00
## 15                   34                  217              712     1947 12:00:00
## 16                   35                  246              730     1820 12:00:00
## 17                   15                  277              798     2004 12:00:00
## 18                   24                  254              816     1990 12:00:00
## 19                   24                  250              857     1959 12:00:00
## 20                    6                  289              754     1896 12:00:00
## 21                   46                  175              833     1821 12:00:00
## 22                    8                  203              574     1740 12:00:00
## 23                   11                  206              835     1819 12:00:00
## 24                   31                  214              746     1859 12:00:00
## 25                   23                  251              669     1783 12:00:00
## 26                    0                  120             1193     2498 12:00:00
## 27                   71                  402              816     3846 12:00:00
## 28                    7                  148              682     2580 12:00:00
## 29                    0                  295              991     2987 12:00:00
## 30                    0                  176              527     1725 12:00:00
## 31                    0                  184              218     1763 12:00:00
## 32                    7                   75              585     1541 12:00:00
## 33                    0                   55              734     2220 12:00:00
## 34                    0                   32              986     2151 12:00:00
## 35                    0                   51              941     2221 12:00:00
## 36                    0                  192             1058     2638 12:00:00
## 37                    0                   95             1167     2351 12:00:00
## 38                    8                  181              706     1459 12:00:00
## 39                    0                  238              663     1521 12:00:00
## 40                    0                  197              653     1431 12:00:00
## 41                    0                  188              687     1444 12:00:00
## 42                    0                  150              728     1373 12:00:00
## 43                    0                   60             1053     1214 12:00:00
## 44                    0                  141              785     1356 12:00:00
## 45                    0                  327              623     1667 12:00:00
## 46                    0                  153              749     1370 12:00:00
## 47                    0                  162              712     1399 12:00:00
## 48                    0                  432              458     1916 12:00:00
```

```
## 49                0       164       704    1401 12:00:00
## 50                0       260       821    1576 12:00:00
## 51                0       286       586    1593 12:00:00
## 52                0       331       626    1649 12:00:00
## 53                0       352       492    1692 12:00:00
## 54                0       233       594    1506 12:00:00
## 55                0       191       716    1447 12:00:00
## 56                0       355       716    1690 12:00:00
## 57                0       345       530    1658 12:00:00
## 58                0       475       479    1926 12:00:00
## 59                0       383       511    1736 12:00:00
## 60                0       229       665    1491 12:00:00
## 61                0       258       610    1555 12:00:00
## 62                0       401       543    1869 12:00:00
## 63                0        17      1002    1141 12:00:00
## 64                0       330       569    1698 12:00:00
## 65                0       343       330    1364 12:00:00
## 66                0       242      1129    1804 12:00:00
## 67               32       195       676    2038 12:00:00
## 68               48       206       705    2010 12:00:00
## 69               24       284       720    2133 12:00:00
## 70                7       249       508    1882 12:00:00
## 71               16       206       678    1944 12:00:00
## 72                7       382       648    2346 12:00:00
## 73               26       208       761    2048 12:00:00
## 74               27       206       781    1946 12:00:00
## 75               35       360       591    2629 12:00:00
## 76                0       360       584    2187 12:00:00
## 77               11       277       653    2095 12:00:00
## 78                0       227       732    1861 12:00:00
## 79                9       295       623    2194 12:00:00
## 80                0       229       764    1854 12:00:00
## 81                0         4         2     403 12:00:00
## 82               19       131       777    1450 12:00:00
## 83               46       153       754    1495 12:00:00
## 84               23       214       801    1433 12:00:00
## 85               42       183       644    1468 12:00:00
## 86               83       153       663    1625 12:00:00
## 87               58       205       600    1529 12:00:00
## 88               95       214       605    1584 12:00:00
## 89               67       221       738    1638 12:00:00
## 90               98       164       845    1554 12:00:00
## 91                0       242       712    1397 12:00:00
## 92               12       188       731    1481 12:00:00
## 93               92       252       724    1638 12:00:00
## 94               95       129       660    1655 12:00:00
## 95                9       133       781    1570 12:00:00
## 96               95       170       797    1551 12:00:00
## 97               10       176       714    1377 12:00:00
## 98                8       190       804    1407 12:00:00
## 99               32       150       744    1545 12:00:00
## 100              52       194       687    1650 12:00:00
## 101              40       124       691    1501 12:00:00
## 102             143       176       713    1760 12:00:00
```

```
## 103          41          258          594     1710 12:00:00
## 104          96          142          852     1628 12:00:00
## 105          88          178          680     1618 12:00:00
## 106          55          168          676     1590 12:00:00
## 107          86          208          703     1574 12:00:00
## 108         116          171          688     1633 12:00:00
## 109         115          196          676     1630 12:00:00
## 110          15          331          712     3654 12:00:00
## 111          21           55         1222     3051 12:00:00
## 112           0          174          950     2828 12:00:00
## 113          46          346          531     3879 12:00:00
## 114          42          196          916     3429 12:00:00
## 115           0          177          855     2704 12:00:00
## 116           0          263          775     3089 12:00:00
## 117           0          206          774     2926 12:00:00
## 118           9          339          589     2302 12:00:00
## 119           0          228          752     1985 12:00:00
## 120           0          194          724     1884 12:00:00
## 121           9           58          824     1632 12:00:00
## 122           0          311          604     2200 12:00:00
## 123          18          306          671     2220 12:00:00
## 124           0           34         1265     1792 12:00:00
## 125          19          176          709     1886 12:00:00
## 126           0          233          546     1945 12:00:00
## 127           5          191          692     1880 12:00:00
## 128           8          390          544     2314 12:00:00
## 129          21          288          649     2236 12:00:00
## 130          47          300          680     2324 12:00:00
## 131           8          359          552     2367 12:00:00
## 132          18          289          624     2175 12:00:00
## 133          38          196          695     2092 12:00:00
## 134           0           67          836     1593 12:00:00
## 135          11          344          585     2270 12:00:00
## 136          26          287          669     2235 12:00:00
## 137          11          314          692     2266 12:00:00
## 138          28          279          586     2158 12:00:00
## 139           0          153          603     1792 12:00:00
## 140          14          374          490     2345 12:00:00
## 141          12          329          555     2260 12:00:00
## 142          18          311          574     2232 12:00:00
## 143           0            2            0      257 12:00:00
## 144           0          299          837     3066 12:00:00
## 145           9          253          609     3073 12:00:00
## 146           0          201          721     2572 12:00:00
## 147           8          239         1017     3274 12:00:00
## 148          16          249          704     3015 12:00:00
## 149          42          228          696     3083 12:00:00
## 150          12          272          853     3069 12:00:00
## 151          25          220          945     3544 12:00:00
## 152           5          215          749     3306 12:00:00
## 153           8          239          584     2885 12:00:00
## 154          23          224          673     2929 12:00:00
## 155          48          241          684     3074 12:00:00
## 156           9          234          878     2969 12:00:00
```

```
## 157    43   300   537 3283 12:00:00
## 158    15   241   579 2926 12:00:00
## 159     4   204   935 3147 12:00:00
## 160    21   251   632 3162 12:00:00
## 161    39   199   896 2899 12:00:00
## 162    39   199   896 2899 12:00:00
## 163    56   260   508 4022 12:00:00
## 164    38   178   576 3934 12:00:00
## 165    19   258  1020 3013 12:00:00
## 166    14   267   648 3061 12:00:00
## 167    18   256   858 2954 12:00:00
## 168     0   196   787 2113 12:00:00
## 169     0   194   840 2095 12:00:00
## 170     0   231   717 2194 12:00:00
## 171     0   350   711 2496 12:00:00
## 172     0   225   716 2180 12:00:00
## 173     0   114  1219 1933 12:00:00
## 174     0   121   895 1954 12:00:00
## 175     0   137   841 1974 12:00:00
## 176     0   215   756 2150 12:00:00
## 177     0   317   706 2432 12:00:00
## 178     0   179   916 2070 12:00:00
## 179     1   180   839 2291 12:00:00
## 180     1   194   839 2361 12:00:00
## 181     0   236   762 2203 12:00:00
## 182     0   226  1106 2196 12:00:00
## 183     0   290   797 2363 12:00:00
## 184     0   240   741 2246 12:00:00
## 185     4   200   667 2336 12:00:00
## 186     2   233   725 2421 12:00:00
## 187     0   180   897 2070 12:00:00
## 188     6   185   734 2120 12:00:00
## 189     0   229   809 2211 12:00:00
## 190     4   108   866 2123 12:00:00
## 191     8   308   733 2423 12:00:00
## 192     0   266   641 2281 12:00:00
## 193     0   231   783 2181 12:00:00
## 194    22   232   622 2499 12:00:00
## 195     0    58   380 1212 12:00:00
## 196    21   432   844 2486 12:00:00
## 197    41   283  1062 2223 12:00:00
## 198    29   197  1096 1918 12:00:00
## 199     0   190  1121 1692 12:00:00
## 200    35   238  1019 2666 12:00:00
## 201     0   263   718 2947 12:00:00
## 202     0   258   777 2898 12:00:00
## 203     0   271   772 2984 12:00:00
## 204     8   256   944 2896 12:00:00
## 205    24   335   556 3328 12:00:00
## 206    66   302   437 3394 12:00:00
## 207    30   191   890 3013 12:00:00
## 208     8   179   757 2812 12:00:00
## 209    29   260   717 3061 12:00:00
## 210    41   144   901 2729 12:00:00
```

```
## 211      66      408      469     3691 12:00:00
## 212      95      281      542     3538 12:00:00
## 213      15      270      730     3064 12:00:00
## 214       8      216      765     2784 12:00:00
## 215      16      238      733     2908 12:00:00
## 216       9      232      738     3033 12:00:00
## 217      19      267      692     3165 12:00:00
## 218      36      263      728     3115 12:00:00
## 219       0      313      729     3145 12:00:00
## 220      15      251      757     3004 12:00:00
## 221       5      241      745     3006 12:00:00
## 222      16      207      682     2859 12:00:00
## 223      46      439      577     3683 12:00:00
## 224      46      439      577     3683 12:00:00
## 225      12      253      746     2990 12:00:00
## 226      37      262      701     3172 12:00:00
## 227      41      235      784     3069 12:00:00
## 228       0       68      241     1240 12:00:00
## 229      13      277      767     2026 12:00:00
## 230       0      226      647     1718 12:00:00
## 231      41      256      693     2324 12:00:00
## 232      38      239      689     2254 12:00:00
## 233       0      288      521     1831 12:00:00
## 234       0       46      943     1397 12:00:00
## 235       0      206      622     1683 12:00:00
## 236      28      249      756     2284 12:00:00
## 237       0      148      598     1570 12:00:00
## 238      42      177      801     2066 12:00:00
## 239      16      270      781     2105 12:00:00
## 240       0      272      443     1776 12:00:00
## 241       0      104      582     1507 12:00:00
## 242      11      201      732     2033 12:00:00
## 243      18      238      750     2093 12:00:00
## 244      16      206      745     1922 12:00:00
## 245      13      165      727     1999 12:00:00
## 246      15      270      709     2169 12:00:00
## 247       0       84      506     1463 12:00:00
## 248       0      237      436     1747 12:00:00
## 249       9      227      724     1996 12:00:00
## 250      29      247      812     2116 12:00:00
## 251       0      224      651     1698 12:00:00
## 252      29      241      692     2156 12:00:00
## 253       9      229      761     1916 12:00:00
## 254       0       96      902     1494 12:00:00
## 255       8      210      505     1762 12:00:00
## 256      22      251      667     2272 12:00:00
## 257      40      265      707     2335 12:00:00
## 258       0      195      628     1693 12:00:00
## 259       6       48      222      741 12:00:00
## 260      16      140      728     3405 12:00:00
## 261      11      144      776     2551 12:00:00
## 262      30      176      662     4022 12:00:00
## 263      54      199      695     4005 12:00:00
## 264      56      158      472     4274 12:00:00
```

```
## 265    37    159    525    4552 12:00:00
## 266    32    130    623    3625 12:00:00
## 267    23    111    733    3501 12:00:00
## 268    16    113    773    3192 12:00:00
## 269    74    175    670    4018 12:00:00
## 270    30    200    823    3329 12:00:00
## 271    24    223    627    3152 12:00:00
## 272    65    141    425    4392 12:00:00
## 273    38    214    743    3374 12:00:00
## 274    32    181    759    3088 12:00:00
## 275    16    190    773    3294 12:00:00
## 276    51    141    692    3580 12:00:00
## 277    36    165    739    3544 12:00:00
## 278    45    163    621    4501 12:00:00
## 279    72    178    499    4546 12:00:00
## 280    20    235    732    3014 12:00:00
## 281     8    212    580    3795 12:00:00
## 282     9    141    631    2755 12:00:00
## 283    21    143   1153    3004 12:00:00
## 284    37    194    639    3841 12:00:00
## 285    15     63    257    1665 12:00:00
## 286    15    518    502    2828 12:00:00
## 287     0    312    702    2225 12:00:00
## 288     0    241    759    2018 12:00:00
## 289     0    480    425    2606 12:00:00
## 290    10    349    587    2536 12:00:00
## 291    19    294    579    4900 12:00:00
## 292     0    402    413    2409 12:00:00
## 293     0    512    468    2651 12:00:00
## 294     0    362    711    2305 12:00:00
## 295     0    458    417    2576 12:00:00
## 296     0    141    758    1879 12:00:00
## 297     0    461    479    2560 12:00:00
## 298     0    397    525    2361 12:00:00
## 299     0    487    479    2636 12:00:00
## 300     0    133    673    1838 12:00:00
## 301     0    412    456    2469 12:00:00
## 302     0    318    517    2250 12:00:00
## 303     0    197    125    1248 12:00:00
## 304    18     85   1053    2400 12:00:00
## 305    24    105    863    2507 12:00:00
## 306     0     58    976    2127 12:00:00
## 307    14    189    796    1994 12:00:00
## 308    24    142    548    1718 12:00:00
## 309     0     86    862    1466 12:00:00
## 310     0    217    837    1756 12:00:00
## 311     3    280    741    2173 12:00:00
## 312    13    295    634    2027 12:00:00
## 313    42    238    689    2039 12:00:00
## 314    41    195    659    2046 12:00:00
## 315     4    297    639    2174 12:00:00
## 316    27    214    708    2179 12:00:00
## 317    33    240    659    2086 12:00:00
## 318    41    347    484    2571 12:00:00
```

```
## 319     0   199   720  1705 12:00:00
## 320    31   282   637  2194 12:00:00
## 321     7   254   680  2012 12:00:00
## 322    38   279   697  2034 12:00:00
## 323     8   288   621  2182 12:00:00
## 324    15   369   645  2254 12:00:00
## 325    16   237   731  2002 12:00:00
## 326     0   215   722  1740 12:00:00
## 327    39   313   655  2162 12:00:00
## 328    36   267   654  2072 12:00:00
## 329    36   284   683  2086 12:00:00
## 330    22   305   591  2066 12:00:00
## 331     0   299   717  1850 12:00:00
## 332     0   328   745  1947 12:00:00
## 333    14   151   709  1659 12:00:00
## 334    21   231   607  2105 12:00:00
## 335    34   275   626  2361 12:00:00
## 336     7   199   709  1855 12:00:00
## 337     8   105   127   928 12:00:00
## 338     0   203  1155  2076 12:00:00
## 339     0   237  1142  2225 12:00:00
## 340     6   153   745  2772 12:00:00
## 341    26   155   744  2516 12:00:00
## 342    32   189   787  2734 12:00:00
## 343    21   139   864  2395 12:00:00
## 344    69   124   671  2944 12:00:00
## 345    13   145   797  2997 12:00:00
## 346     6   206   758  2463 12:00:00
## 347    59   153   762  2846 12:00:00
## 348     0   125   566  2049 12:00:00
## 349    39   129   706  2752 12:00:00
## 350    33   132   726  2781 12:00:00
## 351     6   145   829  2693 12:00:00
## 352    48   161   810  2862 12:00:00
## 353    17   308   584  2995 12:00:00
## 354    15   258   685  2730 12:00:00
## 355    26   139   737  2754 12:00:00
## 356    36   152   761  2754 12:00:00
## 357    12   135   843  2655 12:00:00
## 358    35   154   834  2924 12:00:00
## 359    42   209   621  2739 12:00:00
## 360    27   147   695  2534 12:00:00
## 361    50   171   743  2960 12:00:00
## 362    40   128   757  2735 12:00:00
## 363     4    58   343  1199 12:00:00
## 364     5   158   695  3043 12:00:00
## 365    14   223   741  3554 12:00:00
## 366    20   148  1076  3331 12:00:00
## 367    15   156   723  3635 12:00:00
## 368    14   169   680  4079 12:00:00
## 369    21   174   699  4163 12:00:00
## 370    23   190   729  3666 12:00:00
## 371    21   142   563  3363 12:00:00
## 372     0    93   599  2572 12:00:00
```

```
## 373                 10                 174             720     4157 12:00:00
## 374                 19                 154             737     4092 12:00:00
## 375                  8                 169             763     3787 12:00:00
## 376                 16                 145             677     4236 12:00:00
## 377                 12                 159             769     4044 12:00:00
## 378                 10                 136             740     2908 12:00:00
## 379                  0                 135             734     2741 12:00:00
## 380                 16                 141             692     4005 12:00:00
## 381                 16                 141             692     4005 12:00:00
## 382                 18                 161             593     3763 12:00:00
## 383                  4                 192             676     3061 12:00:00
## 384                 10                 139             711     2884 12:00:00
## 385                  7                 172             767     2982 12:00:00
## 386                  0                 121             780     2660 12:00:00
## 387                 10                 127             669     3369 12:00:00
## 388                  4                 142             802     3491 12:00:00
## 389                 20                 195             822     3784 12:00:00
## 390                 10                 167             680     3110 12:00:00
## 391                  3                 214             764     3783 12:00:00
## 392                  5                 166             831     3644 12:00:00
## 393                  0                 158             851     2799 12:00:00
## 394                  0                 139             621     2685 12:00:00
## 395                 13                 171             772     3721 12:00:00
## 396                 13                 152             840     3586 12:00:00
## 397                 10                 184             763     3788 12:00:00
## 398                  6                 102             433     1976 12:00:00
## 399                  0                 116             831     2044 12:00:00
## 400                  0                  82             806     1934 12:00:00
## 401                  0                  84             853     1963 12:00:00
## 402                  0                 126             937     2009 12:00:00
## 403                 10                 139             744     2188 12:00:00
## 404                 20                 195             817     2419 12:00:00
## 405                 45                 232             795     2748 12:00:00
## 406                  0                 112             900     2067 12:00:00
## 407                  0                 310             714     2780 12:00:00
## 408                 14                 380             634     3101 12:00:00
## 409                 20                 301             749     2896 12:00:00
## 410                  0                  79             834     1962 12:00:00
## 411                  0                 101             916     2015 12:00:00
## 412                  0                 156             739     2297 12:00:00
## 413                  0                 129             848     2067 12:00:00
##     TotalSleepRecords TotalMinutesAsleep TotalTimeInBed
## 1                   1                327            346
## 2                   2                384            407
## 3                   1                412            442
## 4                   2                340            367
## 5                   1                700            712
## 6                   1                304            320
## 7                   1                360            377
## 8                   1                325            364
## 9                   1                361            384
## 10                  1                430            449
## 11                  1                277            323
## 12                  1                245            274
```

```
## 13                1              366              393
## 14                1              341              354
## 15                1              404              425
## 16                1              369              396
## 17                1              277              309
## 18                1              273              296
## 19                1              247              264
## 20                1              334              367
## 21                1              331              349
## 22                1              594              611
## 23                1              338              342
## 24                1              383              403
## 25                1              285              306
## 26                1              119              127
## 27                1              124              142
## 28                1              796              961
## 29                1              137              154
## 30                1              644              961
## 31                1              722              961
## 32                1              590              961
## 33                3              750              775
## 34                1              398              422
## 35                2              475              499
## 36                1              296              315
## 37                1              166              178
## 38                1              503              546
## 39                1              531              565
## 40                1              545              568
## 41                1              523              573
## 42                1              524              567
## 43                1              437              498
## 44                1              498              540
## 45                1              461              510
## 46                1              477              514
## 47                1              520              545
## 48                1              522              554
## 49                1              555              591
## 50                1              506              531
## 51                1              508              545
## 52                1              513              545
## 53                1              490              510
## 54                1              573              607
## 55                1              527              546
## 56                1              511              543
## 57                1              538              560
## 58                1              468              485
## 59                1              524              548
## 60                1              511              521
## 61                1              541              568
## 62                1              531              556
## 63                1              357              380
## 64                1              523              553
## 65                1              456              485
## 66                1               61               69
```

```
## 67                1              467              531
## 68                1              445              489
## 69                1              452              504
## 70                1              556              602
## 71                1              500              557
## 72                1              465              514
## 73                1              460              484
## 74                1              405              461
## 75                1              374              386
## 76                1              442              459
## 77                1              433              471
## 78                1              436              490
## 79                1              448              499
## 80                1              408              450
## 81                1              411              473
## 82                1              274              469
## 83                2              295              456
## 84                1              291              397
## 85                1              424              556
## 86                1              283              510
## 87                1              381              566
## 88                2              412              522
## 89                1              219              395
## 90                2              152              305
## 91                1              332              512
## 92                1              355              476
## 93                1              235              372
## 94                1              310              526
## 95                1              262              467
## 96                1              250              371
## 97                1              349              540
## 98                1              261              423
## 99                1              333              478
## 100               1              237              382
## 101               1              383              626
## 102               1              230              384
## 103               1              292              500
## 104               1              213              336
## 105               1              318              480
## 106               1              323              512
## 107               1              237              443
## 108               2              259              456
## 109               1              312              452
## 110               1              501              541
## 111               1               77               77
## 112               1              322              332
## 113               1              478              536
## 114               1              226              248
## 115               1              385              408
## 116               1              364              402
## 117               1              442              494
## 118               1              535              557
## 119               1              465              491
## 120               1              506              522
```

```
## 121                1              515              551
## 122                2              461              498
## 123                1              523              543
## 124                1               59               65
## 125                1              533              550
## 126                1              692              722
## 127                1              467              501
## 128                1              488              506
## 129                1              505              516
## 130                1              286              307
## 131                1              497              522
## 132                1              523              546
## 133                1              490              516
## 134                1              484              500
## 135                1              478              506
## 136                1              474              512
## 137                1              450              491
## 138                1              507              530
## 139                1              602              638
## 140                1              535              565
## 141                1              487              517
## 142                1              529              558
## 143                1              302              321
## 144                1              499              526
## 145                2              426              448
## 146                2              619              641
## 147                1               99              104
## 148                1              329              338
## 149                1              421              451
## 150                1              442              458
## 151                1               82               85
## 152                1              478              501
## 153                3              552              595
## 154                1              319              346
## 155                1              439              500
## 156                1              428              458
## 157                2              409              430
## 158                1              547              597
## 159                2              368              376
## 160                1              390              414
## 161                1              471              495
## 162                1              471              495
## 163                1              472              496
## 164                2              529              541
## 165                1               62               65
## 166                1              354              375
## 167                1              469              494
## 168                2              429              457
## 169                2              370              406
## 170                1              441              492
## 171                2              337              379
## 172                1              462              499
## 173                1               98              107
## 174                2              388              424
```

```
## 175                1               439               462
## 176                1               436               469
## 177                1               388               417
## 178                1               328               345
## 179                2               353               391
## 180                1               332               374
## 181                1               419               442
## 182                1               106               108
## 183                1               322               353
## 184                2               439               459
## 185                1               502               542
## 186                2               417               450
## 187                2               337               363
## 188                2               462               513
## 189                2               374               402
## 190                2               401               436
## 191                1               361               391
## 192                1               457               533
## 193                1               405               426
## 194                1               499               530
## 195                1               483               501
## 196                1               126               137
## 197                1               103               121
## 198                1               171               179
## 199                1               115               129
## 200                1               123               134
## 201                1               425               439
## 202                2               400               430
## 203                1               384               415
## 204                1               253               257
## 205                2               382               406
## 206                1               591               612
## 207                1               293               312
## 208                1               457               487
## 209                1               454               468
## 210                1               425               434
## 211                1               465               475
## 212                1               480               506
## 213                1               370               380
## 214                1               421               429
## 215                1               432               449
## 216                1               442               461
## 217                1               433               447
## 218                1               479               501
## 219                1               327               373
## 220                1               412               434
## 221                1               414               428
## 222                1               404               449
## 223                1               520               543
## 224                1               520               543
## 225                1               435               458
## 226                1               416               431
## 227                1               354               366
## 228                1               404               442
```

```
## 229              1              441            464
## 230              2              455            488
## 231              1              357            418
## 232              1              377            409
## 233              2              651            686
## 234              1              350            402
## 235              2              520            541
## 236              1              357            410
## 237              1              658            678
## 238              1              399            431
## 239              1              322            353
## 240              2              631            725
## 241              2              553            640
## 242              1              433            468
## 243              1              412            453
## 244              1              347            391
## 245              1              421            457
## 246              1              450            495
## 247              2              775            843
## 248              2              622            686
## 249              1              409            471
## 250              1              380            429
## 251              1              447            470
## 252              1              419            464
## 253              1              400            434
## 254              1              442            470
## 255              1              568            608
## 256              1              453            494
## 257              1              418            443
## 258              1              463            486
## 259              1              438            475
## 260              1              419            438
## 261              1              432            458
## 262              1              477            497
## 263              1              392            413
## 264              1              406            445
## 265              1              549            583
## 266              1              527            553
## 267              1              449            465
## 268              1              447            480
## 269              1              414            437
## 270              1              338            366
## 271              1              384            402
## 272              1              543            615
## 273              1              421            461
## 274              1              354            377
## 275              1              424            452
## 276              1              361            372
## 277              1              459            485
## 278              1              412            433
## 279              1              379            398
## 280              2              525            553
## 281              1              508            543
## 282              1              603            634
```

```
## 283                1                  74                  78
## 284                1                 504                 562
## 285                1                 431                 476
## 286                1                 380                 398
## 287                2                 336                 350
## 288                2                 493                 510
## 289                1                 465                 492
## 290                1                 474                 502
## 291                1                 508                 550
## 292                1                 480                 546
## 293                1                 492                 539
## 294                1                 353                 367
## 295                1                 542                 557
## 296                1                 393                 416
## 297                1                 600                 636
## 298                1                 507                 575
## 299                1                 392                 415
## 300                2                 658                 698
## 301                2                 498                 507
## 302                1                 555                 603
## 303                1                 492                 522
## 304                1                 235                 260
## 305                1                 423                 441
## 306                1                 391                 406
## 307                1                 366                 387
## 308                3                 630                 679
## 309                2                 508                 535
## 310                1                 370                 386
## 311                1                 357                 366
## 312                1                 427                 446
## 313                1                 442                 458
## 314                1                 476                 535
## 315                1                 418                 424
## 316                1                 451                 457
## 317                1                 425                 435
## 318                1                 528                 546
## 319                1                 511                 514
## 320                1                 400                 415
## 321                1                 441                 446
## 322                1                 455                 467
## 323                1                 440                 453
## 324                1                 433                 447
## 325                1                 422                 424
## 326                1                 411                 426
## 327                1                 466                 482
## 328                1                 394                 418
## 329                1                 442                 455
## 330                1                 467                 491
## 331                1                 443                 462
## 332                1                 298                 334
## 333                1                 541                 569
## 334                1                 489                 497
## 335                1                 469                 481
## 336                1                 452                 480
```

```
## 337                1            516            535
## 338                1             79             82
## 339                1             58             61
## 340                1            514            525
## 341                1            451            465
## 342                1            472            476
## 343                1            377            386
## 344                1            472            483
## 345                1            492            502
## 346                1            390            411
## 347                1            428            448
## 348                1            681            704
## 349                1            446            447
## 350                1            485            500
## 351                1            469            479
## 352                1            354            367
## 353                1            485            489
## 354                1            388            407
## 355                1            440            459
## 356                1            456            461
## 357                1            420            436
## 358                1            322            333
## 359                1            530            548
## 360                1            481            510
## 361                1            427            438
## 362                1            451            463
## 363                1            444            457
## 364                1            486            493
## 365                1            331            337
## 366                1             74             75
## 367                1            338            356
## 368                2            447            487
## 369                1            424            455
## 370                1            513            533
## 371                2            611            689
## 372                2            525            591
## 373                1            398            451
## 374                1            387            421
## 375                1            381            409
## 376                1            396            417
## 377                1            441            469
## 378                1            565            591
## 379                1            458            492
## 380                1            388            402
## 381                1            388            402
## 382                1            550            584
## 383                1            531            600
## 384                1            506            556
## 385                1            527            562
## 386                1            468            555
## 387                1            475            539
## 388                1            351            385
## 389                1            405            429
## 390                1            441            477
```

```
## 391                 1                381            417
## 392                 1                323            355
## 393                 2                459            513
## 394                 1                545            606
## 395                 1                359            399
## 396                 1                342            391
## 397                 1                368            387
## 398                 1                496            546
## 399                 1                458            493
## 400                 1                531            552
## 401                 1                486            503
## 402                 1                363            377
## 403                 1                528            547
## 404                 1                391            407
## 405                 1                339            360
## 406                 1                423            428
## 407                 1                402            416
## 408                 1                398            406
## 409                 1                343            360
## 410                 1                503            527
## 411                 1                415            423
## 412                 1                516            545
## 413                 1                439            463
```

Creating a new dataframe for mean heart beat rate

```
mean_heart_rate = heartnew_df %>%
  group_by(Id, ActivityDate) %>%
  summarise(Mean_Heartrate = mean(Value))
```

```
## `summarise()` has grouped output by 'Id'. You can override using the `.groups`
## argument.
```

```
mean_heart_rate
```

```
## # A tibble: 334 x 3
## # Groups:   Id [14]
##            Id ActivityDate Mean_Heartrate
##         <dbl> <chr>                 <dbl>
##  1 2022484408 2016-04-12             75.8
##  2 2022484408 2016-04-13             80.3
##  3 2022484408 2016-04-14             72.6
##  4 2022484408 2016-04-15             80.4
##  5 2022484408 2016-04-16             76.0
##  6 2022484408 2016-04-17             83.9
##  7 2022484408 2016-04-18             82.7
##  8 2022484408 2016-04-19             82.0
##  9 2022484408 2016-04-20             83.4
## 10 2022484408 2016-04-21             86.4
## # i 324 more rows
```

Merging the new data frame with final

```
final = merge(final, mean_heart_rate, by = c('Id', 'ActivityDate'))
final
```

```
##            Id ActivityDate TotalSteps TotalDistance TrackerDistance
## 1   2026352035   2016-04-17        838          0.52            0.52
## 2   2026352035   2016-04-25       6017          3.73            3.73
## 3   2026352035   2016-05-02       7018          4.35            4.35
## 4   2026352035   2016-05-09      10685          6.62            6.62
## 5   2347167796   2016-04-13      10352          7.01            7.01
## 6   2347167796   2016-04-14      10129          6.70            6.70
## 7   2347167796   2016-04-15      10465          6.92            6.92
## 8   2347167796   2016-04-17       5472          3.62            3.62
## 9   2347167796   2016-04-18       8247          5.45            5.45
## 10  2347167796   2016-04-19       6711          4.44            4.44
## 11  2347167796   2016-04-21      10080          6.75            6.75
## 12  2347167796   2016-04-22       7804          5.16            5.16
## 13  2347167796   2016-04-23      16901         11.37           11.37
## 14  2347167796   2016-04-24       9471          6.26            6.26
## 15  2347167796   2016-04-25       9482          6.38            6.38
## 16  2347167796   2016-04-26       5980          3.95            3.95
## 17  2347167796   2016-04-27      11423          7.58            7.58
## 18  2347167796   2016-04-28       5439          3.60            3.60
## 19  2347167796   2016-04-29         42          0.03            0.03
## 20  4020332650   2016-04-12       8539          6.12            6.12
## 21  4020332650   2016-04-16       1982          1.42            1.42
## 22  4020332650   2016-05-03       4496          3.22            3.22
## 23  4020332650   2016-05-04      10252          7.35            7.35
## 24  4020332650   2016-05-05      11728          8.43            8.43
## 25  4020332650   2016-05-06       4369          3.13            3.13
## 26  4020332650   2016-05-08       5862          4.20            4.20
## 27  4020332650   2016-05-10       5546          3.98            3.98
## 28  4388161847   2016-04-15       8758          6.73            6.73
## 29  4388161847   2016-04-16       6580          5.06            5.06
## 30  4388161847   2016-04-17       4660          3.58            3.58
## 31  4388161847   2016-04-18      11009          9.10            9.10
## 32  4388161847   2016-04-19      10181          7.83            7.83
## 33  4388161847   2016-04-20      10553          8.12            8.12
## 34  4388161847   2016-04-21      10055          7.73            7.73
## 35  4388161847   2016-04-22      12139          9.34            9.34
## 36  4388161847   2016-04-23      13236         10.18           10.18
## 37  4388161847   2016-04-24      10243          7.88            7.88
## 38  4388161847   2016-04-26       9461          7.28            7.28
## 39  4388161847   2016-04-27      11193          8.61            8.61
## 40  4388161847   2016-04-28      10074          7.75            7.75
## 41  4388161847   2016-04-30      12533          9.64            9.64
## 42  4388161847   2016-05-01      10255          7.89            7.89
## 43  4388161847   2016-05-02      10096          8.40            8.40
## 44  4388161847   2016-05-04      12375          9.52            9.52
## 45  4388161847   2016-05-05       9603          7.38            7.38
## 46  4388161847   2016-05-05       9603          7.38            7.38
## 47  4388161847   2016-05-07      22770         17.54           17.54
## 48  4388161847   2016-05-08      17298         14.38           14.38
## 49  4388161847   2016-05-09      10218          7.86            7.86
## 50  4388161847   2016-05-10      10299          7.92            7.92
## 51  4388161847   2016-05-11      10201          7.84            7.84
## 52  4558609924   2016-04-21      13743          9.08            9.08
## 53  4558609924   2016-04-26       9148          6.05            6.05
```

```
## 54  4558609924   2016-04-29       7833          5.18          5.18
## 55  4558609924   2016-05-01       3428          2.27          2.27
## 56  4558609924   2016-05-08       6543          4.33          4.33
## 57  5553957443   2016-04-12      11596          7.57          7.57
## 58  5553957443   2016-04-13       4832          3.16          3.16
## 59  5553957443   2016-04-14      17022         11.12         11.12
## 60  5553957443   2016-04-15      16556         10.86         10.86
## 61  5553957443   2016-04-16       5771          3.77          3.77
## 62  5553957443   2016-04-17        655          0.43          0.43
## 63  5553957443   2016-04-18       3727          2.43          2.43
## 64  5553957443   2016-04-19      15482         10.11         10.11
## 65  5553957443   2016-04-20       2713          1.77          1.77
## 66  5553957443   2016-04-21      12346          8.06          8.06
## 67  5553957443   2016-04-22      11682          7.63          7.63
## 68  5553957443   2016-04-23       4112          2.69          2.69
## 69  5553957443   2016-04-24       1807          1.18          1.18
## 70  5553957443   2016-04-25      10946          7.19          7.19
## 71  5553957443   2016-04-26      11886          7.76          7.76
## 72  5553957443   2016-04-27      10538          6.88          6.88
## 73  5553957443   2016-04-28      11393          7.63          7.63
## 74  5553957443   2016-04-29      12764          8.33          8.33
## 75  5553957443   2016-04-30       1202          0.78          0.78
## 76  5553957443   2016-05-01       5164          3.37          3.37
## 77  5553957443   2016-05-02       9769          6.38          6.38
## 78  5553957443   2016-05-03      12848          8.39          8.39
## 79  5553957443   2016-05-04       4249          2.77          2.77
## 80  5553957443   2016-05-05      14331          9.51          9.51
## 81  5553957443   2016-05-06       9632          6.29          6.29
## 82  5553957443   2016-05-07       1868          1.22          1.22
## 83  5553957443   2016-05-08       6083          4.00          4.00
## 84  5553957443   2016-05-09      11611          7.58          7.58
## 85  5553957443   2016-05-10      16358         10.71         10.71
## 86  5553957443   2016-05-11       4926          3.22          3.22
## 87  5553957443   2016-05-12       3121          2.04          2.04
## 88  5577150313   2016-04-12       8135          6.08          6.08
## 89  5577150313   2016-04-13       5077          3.79          3.79
## 90  5577150313   2016-04-14       8596          6.42          6.42
## 91  5577150313   2016-04-15      12087          9.08          9.08
## 92  5577150313   2016-04-16      14269         10.66         10.66
## 93  5577150313   2016-04-17      12231          9.14          9.14
## 94  5577150313   2016-04-18       9893          7.39          7.39
## 95  5577150313   2016-04-19      12574          9.42          9.42
## 96  5577150313   2016-04-20       8330          6.22          6.22
## 97  5577150313   2016-04-21      10830          8.09          8.09
## 98  5577150313   2016-04-22       9172          6.85          6.85
## 99  5577150313   2016-04-23       7638          5.71          5.71
## 100 5577150313   2016-04-24      15764         11.78         11.78
## 101 5577150313   2016-04-25       6393          4.78          4.78
## 102 5577150313   2016-04-26       5325          3.98          3.98
## 103 5577150313   2016-04-27       6805          5.14          5.14
## 104 5577150313   2016-04-28       9841          7.43          7.43
## 105 5577150313   2016-04-29       7924          5.92          5.92
## 106 5577150313   2016-04-30      12363          9.24          9.24
## 107 5577150313   2016-05-01      13368          9.99          9.99
```

```
## 108 5577150313   2016-05-02       7439         5.56          5.56
## 109 5577150313   2016-05-03      11045         8.25          8.25
## 110 5577150313   2016-05-04       5206         3.89          3.89
## 111 5577150313   2016-05-05       7550         5.64          5.64
## 112 5577150313   2016-05-10       8869         6.65          6.65
## 113 5577150313   2016-05-11       4038         3.04          3.04
## 114 6117666160   2016-04-16      14450        10.91         10.91
## 115 6117666160   2016-04-17       7150         5.40          5.40
## 116 6117666160   2016-04-18       5153         3.91          3.91
## 117 6117666160   2016-04-19      11135         8.41          8.41
## 118 6117666160   2016-04-20      10449         8.02          8.02
## 119 6117666160   2016-04-21      19542        15.01         15.01
## 120 6117666160   2016-04-22       8206         6.20          6.20
## 121 6117666160   2016-04-23      11495         8.68          8.68
## 122 6117666160   2016-04-24       7623         5.76          5.76
## 123 6117666160   2016-04-27       9411         7.11          7.11
## 124 6117666160   2016-04-28       3403         2.60          2.60
## 125 6117666160   2016-04-29       9592         7.24          7.24
## 126 6117666160   2016-05-01       8915         6.73          6.73
## 127 6117666160   2016-05-05       9799         7.40          7.40
## 128 6117666160   2016-05-06       3365         2.68          2.68
## 129 6117666160   2016-05-07       7336         5.54          5.54
## 130 6117666160   2016-05-08       7328         5.53          5.53
## 131 6117666160   2016-05-09       4477         3.38          3.38
## 132 6775888955   2016-04-13       4053         2.91          2.91
## 133 6775888955   2016-04-14       5162         3.70          3.70
## 134 6775888955   2016-04-15       1282         0.92          0.92
## 135 6962181067   2016-04-12      10199         6.74          6.74
## 136 6962181067   2016-04-13       5652         3.74          3.74
## 137 6962181067   2016-04-14       1551         1.03          1.03
## 138 6962181067   2016-04-15       5563         3.68          3.68
## 139 6962181067   2016-04-16      13217         8.74          8.74
## 140 6962181067   2016-04-17      10145         6.71          6.71
## 141 6962181067   2016-04-18      11404         7.54          7.54
## 142 6962181067   2016-04-19      10742         7.10          7.10
## 143 6962181067   2016-04-20      13928         9.55          9.55
## 144 6962181067   2016-04-21      11835         9.71          7.88
## 145 6962181067   2016-04-22      10725         7.09          7.09
## 146 6962181067   2016-04-23      20031        13.24         13.24
## 147 6962181067   2016-04-24       5029         3.32          3.32
## 148 6962181067   2016-04-25      13239         9.27          9.08
## 149 6962181067   2016-04-26      10433         6.90          6.90
## 150 6962181067   2016-04-27      10320         6.82          6.82
## 151 6962181067   2016-04-28      12627         8.35          8.35
## 152 6962181067   2016-04-29      10762         7.11          7.11
## 153 6962181067   2016-04-30      10081         6.66          6.66
## 154 6962181067   2016-05-01       5454         3.61          3.61
## 155 6962181067   2016-05-02      12912         8.54          8.54
## 156 6962181067   2016-05-03      12109         8.12          8.12
## 157 6962181067   2016-05-04      10147         6.71          6.71
## 158 6962181067   2016-05-05      10524         6.96          6.96
## 159 6962181067   2016-05-06       5908         3.91          3.91
## 160 6962181067   2016-05-07       6815         4.50          4.50
## 161 6962181067   2016-05-08       4188         2.77          2.77
```

```
## 162 6962181067   2016-05-09      12342          8.72           8.68
## 163 6962181067   2016-05-10      15448         10.21          10.21
## 164 6962181067   2016-05-11       6722          4.44           4.44
## 165 6962181067   2016-05-12       3587          2.37           2.37
## 166 7007744171   2016-04-16       4631          3.10           3.10
## 167 7007744171   2016-05-01       5600          3.75           3.75
## 168 8792009665   2016-04-12       2564          1.64           1.64
## 169 8792009665   2016-04-13       1320          0.84           0.84
## 170 8792009665   2016-04-14       1219          0.78           0.78
## 171 8792009665   2016-04-15       2483          1.59           1.59
## 172 8792009665   2016-04-20       3147          2.01           2.01
## 173 8792009665   2016-04-22       4068          2.60           2.60
## 174 8792009665   2016-04-23       5245          3.36           3.36
## 175 8792009665   2016-04-27       1758          1.13           1.13
## 176 8792009665   2016-04-28       6157          3.94           3.94
## 177 8792009665   2016-04-29       8360          5.35           5.35
## 178 8792009665   2016-04-30       7174          4.59           4.59
## 179 8792009665   2016-05-01       1619          1.04           1.04
## 180 8792009665   2016-05-02       1831          1.17           1.17
## 181 8792009665   2016-05-03       2421          1.55           1.55
## 182 8792009665   2016-05-04       2283          1.46           1.46
##     LoggedActivitiesDistance VeryActiveDistance ModeratelyActiveDistance
## 1                   0.000000              0.00                     0.00
## 2                   0.000000              0.00                     0.00
## 3                   0.000000              0.00                     0.00
## 4                   0.000000              0.00                     0.00
## 5                   0.000000              1.66                     1.94
## 6                   0.000000              0.02                     2.74
## 7                   0.000000              0.07                     1.42
## 8                   0.000000              0.08                     0.28
## 9                   0.000000              0.79                     0.86
## 10                  0.000000              0.00                     0.00
## 11                  0.000000              1.85                     1.53
## 12                  0.000000              0.56                     1.68
## 13                  0.000000              2.78                     1.45
## 14                  0.000000              0.00                     0.00
## 15                  0.000000              1.27                     0.52
## 16                  0.000000              0.00                     0.00
## 17                  0.000000              1.86                     0.40
## 18                  0.000000              0.00                     0.00
## 19                  0.000000              0.00                     0.00
## 20                  0.000000              0.15                     0.24
## 21                  0.000000              0.45                     0.37
## 22                  0.000000              0.00                     0.00
## 23                  0.000000              0.67                     1.04
## 24                  0.000000              2.62                     1.68
## 25                  0.000000              0.00                     0.00
## 26                  0.000000              0.00                     0.00
## 27                  0.000000              0.00                     0.00
## 28                  0.000000              0.00                     0.00
## 29                  0.000000              0.21                     0.40
## 30                  0.000000              0.00                     0.00
## 31                  0.000000              3.56                     0.40
## 32                  0.000000              1.37                     0.69
```

```
## 33          0.000000        1.10            1.72
## 34          0.000000        0.37            0.39
## 35          0.000000        3.30            1.11
## 36          0.000000        4.50            0.32
## 37          0.000000        1.08            0.51
## 38          0.000000        0.94            1.06
## 39          0.000000        0.70            2.51
## 40          0.000000        1.29            0.43
## 41          0.000000        0.70            2.00
## 42          0.000000        1.01            0.68
## 43          0.000000        3.77            0.08
## 44          0.000000        2.79            0.93
## 45          0.000000        0.63            1.67
## 46          0.000000        0.63            1.67
## 47          0.000000        9.45            2.77
## 48          0.000000        9.89            1.26
## 49          0.000000        0.34            0.73
## 50          0.000000        0.81            0.65
## 51          0.000000        0.53            0.79
## 52          0.000000        0.42            0.97
## 53          0.000000        0.43            2.03
## 54          0.000000        1.02            1.85
## 55          0.000000        0.00            0.00
## 56          0.000000        1.80            0.50
## 57          0.000000        1.37            0.79
## 58          0.000000        0.00            0.00
## 59          0.000000        4.00            2.45
## 60          0.000000        4.16            1.98
## 61          0.000000        0.00            0.00
## 62          0.000000        0.00            0.00
## 63          0.000000        0.00            0.00
## 64          0.000000        4.28            1.66
## 65          0.000000        0.00            0.00
## 66          0.000000        2.95            2.16
## 67          0.000000        1.38            0.63
## 68          0.000000        0.00            0.00
## 69          0.000000        0.00            0.00
## 70          0.000000        2.93            0.57
## 71          0.000000        2.37            0.93
## 72          0.000000        1.14            1.00
## 73          0.000000        3.71            0.75
## 74          0.000000        2.79            0.64
## 75          0.000000        0.00            0.00
## 76          0.000000        0.00            0.00
## 77          0.000000        1.06            0.41
## 78          0.000000        1.50            1.20
## 79          0.000000        0.00            0.00
## 80          0.000000        3.43            1.66
## 81          0.000000        1.52            0.54
## 82          0.000000        0.00            0.00
## 83          0.000000        0.22            0.47
## 84          0.000000        2.13            0.89
## 85          0.000000        3.87            1.61
## 86          0.000000        0.00            0.00
```

```
## 87          0.000000        0.58            0.40
## 88          0.000000        3.60            0.38
## 89          0.000000        0.32            0.22
## 90          0.000000        3.33            0.31
## 91          0.000000        3.92            1.60
## 92          0.000000        6.64            1.28
## 93          0.000000        5.98            0.83
## 94          0.000000        4.86            0.72
## 95          0.000000        7.02            0.64
## 96          0.000000        4.12            0.34
## 97          0.000000        3.65            1.66
## 98          0.000000        2.42            0.79
## 99          0.000000        1.21            0.36
## 100         0.000000        7.65            2.15
## 101         0.000000        1.35            0.67
## 102         0.000000        0.85            0.65
## 103         0.000000        1.81            0.40
## 104         0.000000        3.25            1.17
## 105         0.000000        2.84            0.61
## 106         0.000000        5.83            0.79
## 107         0.000000        5.31            1.44
## 108         0.000000        1.12            0.35
## 109         0.000000        4.52            0.15
## 110         0.000000        1.56            0.25
## 111         0.000000        2.50            0.47
## 112         0.000000        2.56            0.75
## 113         0.000000        1.83            0.30
## 114         0.000000        0.58            0.85
## 115         0.000000        0.00            0.00
## 116         0.000000        0.00            0.00
## 117         0.000000        0.00            0.00
## 118         0.000000        2.03            0.48
## 119         0.000000        0.98            0.40
## 120         0.000000        0.00            0.00
## 121         0.000000        0.00            0.00
## 122         0.000000        0.00            0.00
## 123         0.000000        0.00            0.00
## 124         0.000000        0.00            0.00
## 125         0.000000        0.00            0.00
## 126         0.000000        0.00            0.00
## 127         0.000000        0.00            0.00
## 128         0.000000        0.00            0.00
## 129         0.000000        0.00            0.00
## 130         0.000000        0.00            0.00
## 131         0.000000        0.00            0.00
## 132         0.000000        1.11            0.58
## 133         0.000000        0.87            0.86
## 134         0.000000        0.00            0.00
## 135         0.000000        3.40            0.83
## 136         0.000000        0.57            1.21
## 137         0.000000        0.00            0.00
## 138         0.000000        0.00            0.00
## 139         0.000000        3.66            0.19
## 140         0.000000        0.33            0.68
```

```
## 141                0.000000                0.83                2.39
## 142                0.000000                2.10                2.13
## 143                0.000000                4.28                0.19
## 144                4.081692                3.99                2.10
## 145                0.000000                1.77                1.55
## 146                0.000000                4.20                2.00
## 147                0.000000                0.00                0.00
## 148                2.785175                3.02                1.68
## 149                0.000000                2.58                0.42
## 150                0.000000                0.55                2.02
## 151                0.000000                2.51                0.24
## 152                0.000000                0.82                0.48
## 153                0.000000                2.24                0.76
## 154                0.000000                0.00                0.00
## 155                0.000000                1.20                2.00
## 156                0.000000                1.74                2.04
## 157                0.000000                0.47                1.68
## 158                0.000000                0.99                1.16
## 159                0.000000                0.00                0.00
## 160                0.000000                0.00                0.00
## 161                0.000000                0.00                0.52
## 162                3.167822                3.90                1.18
## 163                0.000000                3.47                1.75
## 164                0.000000                1.49                0.31
## 165                0.000000                0.00                0.25
## 166                0.000000                0.00                0.00
## 167                0.000000                0.00                0.00
## 168                0.000000                0.00                0.00
## 169                0.000000                0.00                0.00
## 170                0.000000                0.00                0.00
## 171                0.000000                0.00                0.00
## 172                0.000000                0.00                0.28
## 173                0.000000                0.05                0.28
## 174                0.000000                0.16                0.44
## 175                0.000000                0.00                0.00
## 176                0.000000                0.00                0.00
## 177                0.000000                0.14                0.28
## 178                0.000000                0.33                0.36
## 179                0.000000                0.00                0.00
## 180                0.000000                0.00                0.00
## 181                0.000000                0.00                0.00
## 182                0.000000                0.00                0.00
##     LightActiveDistance SedentaryActiveDistance VeryActiveMinutes
## 1                  0.52                    0.00                 0
## 2                  3.73                    0.00                 0
## 3                  4.35                    0.00                 0
## 4                  6.60                    0.00                 0
## 5                  3.41                    0.00                19
## 6                  3.94                    0.00                 1
## 7                  5.43                    0.00                 1
## 8                  3.26                    0.00                 1
## 9                  3.79                    0.00                11
## 10                 4.44                    0.00                 0
## 11                 3.38                    0.00                23
```

```
## 12          2.92            0.00             9
## 13          7.15            0.00            32
## 14          6.26            0.00             0
## 15          4.60            0.00            15
## 16          3.95            0.00             0
## 17          5.32            0.00            26
## 18          3.60            0.00             0
## 19          0.03            0.00             0
## 20          5.68            0.00             4
## 21          0.59            0.00            65
## 22          3.15            0.05             0
## 23          5.58            0.00            13
## 24          4.04            0.07            38
## 25          3.10            0.01             0
## 26          4.15            0.00             0
## 27          3.87            0.04             0
## 28          6.73            0.00             0
## 29          4.45            0.00             6
## 30          3.58            0.00             0
## 31          5.14            0.00            27
## 32          5.77            0.00            20
## 33          5.29            0.00            19
## 34          6.98            0.00             7
## 35          4.92            0.00            77
## 36          5.35            0.00            58
## 37          6.30            0.00            14
## 38          5.27            0.00            14
## 39          5.39            0.00            11
## 40          6.03            0.00            19
## 41          6.94            0.00            14
## 42          6.20            0.00            12
## 43          4.55            0.00            33
## 44          5.80            0.00            35
## 45          5.09            0.00            12
## 46          5.09            0.00            12
## 47          5.33            0.00           120
## 48          3.23            0.00           107
## 49          6.79            0.00             6
## 50          6.46            0.00            13
## 51          6.53            0.00             8
## 52          7.70            0.00             6
## 53          3.59            0.00            12
## 54          2.31            0.00            15
## 55          2.27            0.00             0
## 56          2.02            0.00            66
## 57          5.41            0.00            19
## 58          3.16            0.00             0
## 59          4.67            0.00            61
## 60          4.71            0.00            58
## 61          3.77            0.00             0
## 62          0.43            0.00             0
## 63          2.43            0.00             0
## 64          4.18            0.00            69
## 65          1.77            0.00             0
```

```
## 66              2.96            0.00            47
## 67              5.60            0.00            25
## 68              2.68            0.00             0
## 69              1.18            0.00             0
## 70              3.69            0.00            51
## 71              4.46            0.00            40
## 72              4.74            0.00            16
## 73              3.17            0.00            49
## 74              4.91            0.00            46
## 75              0.78            0.00             0
## 76              3.37            0.00             0
## 77              4.90            0.00            23
## 78              5.68            0.00            26
## 79              2.77            0.00             0
## 80              4.43            0.00            44
## 81              4.23            0.00            21
## 82              1.22            0.00             0
## 83              3.30            0.00             3
## 84              4.56            0.00            59
## 85              5.20            0.00            61
## 86              3.22            0.00             0
## 87              1.06            0.00             8
## 88              2.10            0.00            86
## 89              3.25            0.00            15
## 90              2.78            0.00           118
## 91              3.56            0.00           115
## 92              2.73            0.00           184
## 93              2.32            0.00           200
## 94              1.82            0.00           114
## 95              1.76            0.00           108
## 96              1.76            0.00            87
## 97              2.78            0.00           110
## 98              3.30            0.00            62
## 99              4.14            0.00            24
## 100             1.98            0.00           210
## 101             2.76            0.00            61
## 102             2.47            0.00            38
## 103             2.93            0.00            63
## 104             3.01            0.00            99
## 105             2.47            0.00            97
## 106             2.61            0.00           207
## 107             3.24            0.00           194
## 108             4.07            0.00            37
## 109             3.57            0.00            97
## 110             2.08            0.00            25
## 111             2.67            0.00            45
## 112             3.35            0.00           104
## 113             0.89            0.00            45
## 114             9.48            0.00             7
## 115             5.40            0.00             0
## 116             3.89            0.00             0
## 117             8.41            0.00             0
## 118             5.52            0.00            26
## 119             5.62            0.00            11
```

```
## 120              6.20              0.00               0
## 121              8.68              0.00               0
## 122              5.76              0.00               0
## 123              7.11              0.00               0
## 124              2.60              0.00               0
## 125              7.24              0.00               0
## 126              6.73              0.00               0
## 127              7.40              0.00               0
## 128              2.68              0.00               0
## 129              5.54              0.00               0
## 130              5.53              0.00               0
## 131              3.38              0.00               0
## 132              1.22              0.00              17
## 133              1.97              0.00              14
## 134              0.92              0.00               0
## 135              2.51              0.00              50
## 136              1.96              0.00               8
## 137              1.03              0.00               0
## 138              3.68              0.00               0
## 139              4.88              0.00              50
## 140              5.69              0.00               5
## 141              4.32              0.00              13
## 142              2.87              0.00              35
## 143              5.09              0.00              48
## 144              3.51              0.11              53
## 145              3.77              0.00              30
## 146              7.04              0.00              58
## 147              3.32              0.00               0
## 148              4.46              0.10              35
## 149              3.90              0.00              36
## 150              4.25              0.00               7
## 151              5.59              0.00              38
## 152              5.81              0.00              12
## 153              3.67              0.00              32
## 154              3.61              0.00               0
## 155              5.34              0.00              18
## 156              4.33              0.00              21
## 157              4.55              0.00              15
## 158              4.81              0.00              14
## 159              3.91              0.00               0
## 160              4.50              0.00               0
## 161              2.25              0.00               0
## 162              3.65              0.00              43
## 163              4.99              0.00              62
## 164              2.65              0.00              24
## 165              2.11              0.00               0
## 166              3.10              0.00               0
## 167              3.75              0.00               0
## 168              1.64              0.00               0
## 169              0.84              0.00               0
## 170              0.78              0.00               0
## 171              1.59              0.00               0
## 172              1.74              0.00               0
## 173              2.27              0.00               1
```

```
## 174               2.75                  0.00               8
## 175               1.13                  0.00               0
## 176               3.94                  0.00               0
## 177               4.93                  0.00               6
## 178               3.91                  0.00              10
## 179               1.04                  0.00               0
## 180               1.17                  0.00               0
## 181               1.55                  0.00               0
## 182               1.46                  0.00               0
##     FairlyActiveMinutes LightlyActiveMinutes SedentaryMinutes Calories     Time
## 1                     0                   60             1053     1214 12:00:00
## 2                     0                  260              821     1576 12:00:00
## 3                     0                  355              716     1690 12:00:00
## 4                     0                  401              543     1869 12:00:00
## 5                    32                  195              676     2038 12:00:00
## 6                    48                  206              705     2010 12:00:00
## 7                    24                  284              720     2133 12:00:00
## 8                     7                  249              508     1882 12:00:00
## 9                    16                  206              678     1944 12:00:00
## 10                    7                  382              648     2346 12:00:00
## 11                   26                  208              761     2048 12:00:00
## 12                   27                  206              781     1946 12:00:00
## 13                   35                  360              591     2629 12:00:00
## 14                    0                  360              584     2187 12:00:00
## 15                   11                  277              653     2095 12:00:00
## 16                    0                  227              732     1861 12:00:00
## 17                    9                  295              623     2194 12:00:00
## 18                    0                  229              764     1854 12:00:00
## 19                    0                    4                2      403 12:00:00
## 20                   15                  331              712     3654 12:00:00
## 21                   21                   55             1222     3051 12:00:00
## 22                    0                  174              950     2828 12:00:00
## 23                   46                  346              531     3879 12:00:00
## 24                   42                  196              916     3429 12:00:00
## 25                    0                  177              855     2704 12:00:00
## 26                    0                  263              775     3089 12:00:00
## 27                    0                  206              774     2926 12:00:00
## 28                    0                  299              837     3066 12:00:00
## 29                    9                  253              609     3073 12:00:00
## 30                    0                  201              721     2572 12:00:00
## 31                    8                  239             1017     3274 12:00:00
## 32                   16                  249              704     3015 12:00:00
## 33                   42                  228              696     3083 12:00:00
## 34                   12                  272              853     3069 12:00:00
## 35                   25                  220              945     3544 12:00:00
## 36                    5                  215              749     3306 12:00:00
## 37                    8                  239              584     2885 12:00:00
## 38                   23                  224              673     2929 12:00:00
## 39                   48                  241              684     3074 12:00:00
## 40                    9                  234              878     2969 12:00:00
## 41                   43                  300              537     3283 12:00:00
## 42                   15                  241              579     2926 12:00:00
## 43                    4                  204              935     3147 12:00:00
## 44                   21                  251              632     3162 12:00:00
```

```
## 45          39          199          896     2899 12:00:00
## 46          39          199          896     2899 12:00:00
## 47          56          260          508     4022 12:00:00
## 48          38          178          576     3934 12:00:00
## 49          19          258         1020     3013 12:00:00
## 50          14          267          648     3061 12:00:00
## 51          18          256          858     2954 12:00:00
## 52          21          432          844     2486 12:00:00
## 53          41          283         1062     2223 12:00:00
## 54          29          197         1096     1918 12:00:00
## 55           0          190         1121     1692 12:00:00
## 56          35          238         1019     2666 12:00:00
## 57          13          277          767     2026 12:00:00
## 58           0          226          647     1718 12:00:00
## 59          41          256          693     2324 12:00:00
## 60          38          239          689     2254 12:00:00
## 61           0          288          521     1831 12:00:00
## 62           0           46          943     1397 12:00:00
## 63           0          206          622     1683 12:00:00
## 64          28          249          756     2284 12:00:00
## 65           0          148          598     1570 12:00:00
## 66          42          177          801     2066 12:00:00
## 67          16          270          781     2105 12:00:00
## 68           0          272          443     1776 12:00:00
## 69           0          104          582     1507 12:00:00
## 70          11          201          732     2033 12:00:00
## 71          18          238          750     2093 12:00:00
## 72          16          206          745     1922 12:00:00
## 73          13          165          727     1999 12:00:00
## 74          15          270          709     2169 12:00:00
## 75           0           84          506     1463 12:00:00
## 76           0          237          436     1747 12:00:00
## 77           9          227          724     1996 12:00:00
## 78          29          247          812     2116 12:00:00
## 79           0          224          651     1698 12:00:00
## 80          29          241          692     2156 12:00:00
## 81           9          229          761     1916 12:00:00
## 82           0           96          902     1494 12:00:00
## 83           8          210          505     1762 12:00:00
## 84          22          251          667     2272 12:00:00
## 85          40          265          707     2335 12:00:00
## 86           0          195          628     1693 12:00:00
## 87           6           48          222      741 12:00:00
## 88          16          140          728     3405 12:00:00
## 89          11          144          776     2551 12:00:00
## 90          30          176          662     4022 12:00:00
## 91          54          199          695     4005 12:00:00
## 92          56          158          472     4274 12:00:00
## 93          37          159          525     4552 12:00:00
## 94          32          130          623     3625 12:00:00
## 95          23          111          733     3501 12:00:00
## 96          16          113          773     3192 12:00:00
## 97          74          175          670     4018 12:00:00
## 98          30          200          823     3329 12:00:00
```

```
## 99          24          223          627     3152 12:00:00
## 100         65          141          425     4392 12:00:00
## 101         38          214          743     3374 12:00:00
## 102         32          181          759     3088 12:00:00
## 103         16          190          773     3294 12:00:00
## 104         51          141          692     3580 12:00:00
## 105         36          165          739     3544 12:00:00
## 106         45          163          621     4501 12:00:00
## 107         72          178          499     4546 12:00:00
## 108         20          235          732     3014 12:00:00
## 109          8          212          580     3795 12:00:00
## 110          9          141          631     2755 12:00:00
## 111         21          143         1153     3004 12:00:00
## 112         37          194          639     3841 12:00:00
## 113         15           63          257     1665 12:00:00
## 114         15          518          502     2828 12:00:00
## 115          0          312          702     2225 12:00:00
## 116          0          241          759     2018 12:00:00
## 117          0          480          425     2606 12:00:00
## 118         10          349          587     2536 12:00:00
## 119         19          294          579     4900 12:00:00
## 120          0          402          413     2409 12:00:00
## 121          0          512          468     2651 12:00:00
## 122          0          362          711     2305 12:00:00
## 123          0          458          417     2576 12:00:00
## 124          0          141          758     1879 12:00:00
## 125          0          461          479     2560 12:00:00
## 126          0          397          525     2361 12:00:00
## 127          0          487          479     2636 12:00:00
## 128          0          133          673     1838 12:00:00
## 129          0          412          456     2469 12:00:00
## 130          0          318          517     2250 12:00:00
## 131          0          197          125     1248 12:00:00
## 132         18           85         1053     2400 12:00:00
## 133         24          105          863     2507 12:00:00
## 134          0           58          976     2127 12:00:00
## 135         14          189          796     1994 12:00:00
## 136         24          142          548     1718 12:00:00
## 137          0           86          862     1466 12:00:00
## 138          0          217          837     1756 12:00:00
## 139          3          280          741     2173 12:00:00
## 140         13          295          634     2027 12:00:00
## 141         42          238          689     2039 12:00:00
## 142         41          195          659     2046 12:00:00
## 143          4          297          639     2174 12:00:00
## 144         27          214          708     2179 12:00:00
## 145         33          240          659     2086 12:00:00
## 146         41          347          484     2571 12:00:00
## 147          0          199          720     1705 12:00:00
## 148         31          282          637     2194 12:00:00
## 149          7          254          680     2012 12:00:00
## 150         38          279          697     2034 12:00:00
## 151          8          288          621     2182 12:00:00
## 152         15          369          645     2254 12:00:00
```

```
## 153                16                237              731     2002 12:00:00
## 154                 0                215              722     1740 12:00:00
## 155                39                313              655     2162 12:00:00
## 156                36                267              654     2072 12:00:00
## 157                36                284              683     2086 12:00:00
## 158                22                305              591     2066 12:00:00
## 159                 0                299              717     1850 12:00:00
## 160                 0                328              745     1947 12:00:00
## 161                14                151              709     1659 12:00:00
## 162                21                231              607     2105 12:00:00
## 163                34                275              626     2361 12:00:00
## 164                 7                199              709     1855 12:00:00
## 165                 8                105              127      928 12:00:00
## 166                 0                203             1155     2076 12:00:00
## 167                 0                237             1142     2225 12:00:00
## 168                 0                116              831     2044 12:00:00
## 169                 0                 82              806     1934 12:00:00
## 170                 0                 84              853     1963 12:00:00
## 171                 0                126              937     2009 12:00:00
## 172                10                139              744     2188 12:00:00
## 173                20                195              817     2419 12:00:00
## 174                45                232              795     2748 12:00:00
## 175                 0                112              900     2067 12:00:00
## 176                 0                310              714     2780 12:00:00
## 177                14                380              634     3101 12:00:00
## 178                20                301              749     2896 12:00:00
## 179                 0                 79              834     1962 12:00:00
## 180                 0                101              916     2015 12:00:00
## 181                 0                156              739     2297 12:00:00
## 182                 0                129              848     2067 12:00:00
##     TotalSleepRecords TotalMinutesAsleep TotalTimeInBed Mean_Heartrate
## 1                   1                437            498       68.65625
## 2                   1                506            531       99.50581
## 3                   1                511            543       84.13457
## 4                   1                531            556       98.23390
## 5                   1                467            531       73.81290
## 6                   1                445            489       72.57948
## 7                   1                452            504       75.68526
## 8                   1                556            602       75.36218
## 9                   1                500            557       71.23214
## 10                  1                465            514       81.30100
## 11                  1                460            484       73.41425
## 12                  1                405            461       71.99640
## 13                  1                374            386       83.43309
## 14                  1                442            459       77.57597
## 15                  1                433            471       73.86136
## 16                  1                436            490       71.73180
## 17                  1                448            499       75.19362
## 18                  1                408            450       73.40854
## 19                  1                411            473       62.86971
## 20                  1                501            541       83.49901
## 21                  1                 77             77      100.90332
## 22                  1                322            332       77.87701
## 23                  1                478            536       83.45617
```

```
## 24          1         226         248       85.57474
## 25          1         385         408       75.64283
## 26          1         364         402       78.04106
## 27          1         442         494       72.61970
## 28          1         499         526       67.47094
## 29          2         426         448       75.47659
## 30          2         619         641       66.39135
## 31          1          99         104       81.49099
## 32          1         329         338       65.53246
## 33          1         421         451       65.40126
## 34          1         442         458       63.09928
## 35          1          82          85       73.27720
## 36          1         478         501       67.08074
## 37          3         552         595       62.10170
## 38          1         319         346       62.51360
## 39          1         439         500       62.12052
## 40          1         428         458       62.32648
## 41          2         409         430       64.22769
## 42          1         547         597       60.02218
## 43          2         368         376       66.39496
## 44          1         390         414       61.94767
## 45          1         471         495       61.04130
## 46          1         471         495       61.04130
## 47          1         472         496       66.62712
## 48          2         529         541       76.78011
## 49          1          62          65       64.05172
## 50          1         354         375       61.22122
## 51          1         469         494       59.97197
## 52          1         126         137       85.66239
## 53          1         103         121       91.33540
## 54          1         171         179       80.55509
## 55          1         115         129       70.84190
## 56          1         123         134      104.87147
## 57          1         441         464       64.36511
## 58          2         455         488       61.48342
## 59          1         357         418       72.56047
## 60          1         377         409       69.02003
## 61          2         651         686       66.02136
## 62          1         350         402       59.37717
## 63          2         520         541       65.38440
## 64          1         357         410       74.88753
## 65          1         658         678       60.04042
## 66          1         399         431       71.33225
## 67          1         322         353       70.42848
## 68          2         631         725       67.07408
## 69          2         553         640       63.97276
## 70          1         433         468       72.04626
## 71          1         412         453       73.01322
## 72          1         347         391       65.07076
## 73          1         421         457       71.07165
## 74          1         450         495       73.07417
## 75          2         775         843       65.78000
## 76          2         622         686       66.54345
## 77          1         409         471       72.59143
```

```
## 78              1             380             429       69.95312
## 79              1             447             470       61.67218
## 80              1             419             464       69.40142
## 81              1             400             434       63.16520
## 82              1             442             470       63.02644
## 83              1             568             608       65.56944
## 84              1             453             494       76.65613
## 85              1             418             443       76.83269
## 86              1             463             486       65.40051
## 87              1             438             475       64.19532
## 88              1             419             438       65.65607
## 89              1             432             458       59.70358
## 90              1             477             497       76.83571
## 91              1             392             413       73.68220
## 92              1             406             445       69.84255
## 93              1             549             583       71.11754
## 94              1             527             553       68.64909
## 95              1             449             465       70.46025
## 96              1             447             480       69.17307
## 97              1             414             437       72.31130
## 98              1             338             366       64.64849
## 99              1             384             402       65.07900
## 100             1             543             615       72.26865
## 101             1             421             461       67.54545
## 102             1             354             377       65.35988
## 103             1             424             452       66.42828
## 104             1             361             372       70.68771
## 105             1             459             485       66.26641
## 106             1             412             433       71.55549
## 107             1             379             398       73.70358
## 108             2             525             553       64.60947
## 109             1             508             543       70.00069
## 110             1             603             634       62.24588
## 111             1              74              78       72.21058
## 112             1             504             562       75.29285
## 113             1             431             476       67.04068
## 114             1             380             398       87.02746
## 115             2             336             350       85.35302
## 116             2             493             510       82.91442
## 117             1             465             492       83.50813
## 118             1             474             502       85.50436
## 119             1             508             550       79.40156
## 120             1             480             546       81.70206
## 121             1             492             539       81.79524
## 122             1             353             367       84.20597
## 123             1             542             557       83.14904
## 124             1             393             416       80.09523
## 125             1             600             636       82.16242
## 126             1             507             575       77.43914
## 127             1             392             415       84.71879
## 128             2             658             698       76.57278
## 129             2             498             507       83.87948
## 130             1             555             603       81.14074
## 131             1             492             522       76.46606
```

```
## 132          1          235          260       82.71974
## 133          1          423          441       79.26808
## 134          1          391          406       80.59450
## 135          1          366          387       85.03632
## 136          3          630          679       80.51960
## 137          2          508          535       70.12622
## 138          1          370          386       72.99198
## 139          1          357          366       82.04018
## 140          1          427          446       76.66449
## 141          1          442          458       76.91699
## 142          1          476          535       77.42859
## 143          1          418          424       74.90601
## 144          1          451          457       83.47130
## 145          1          425          435       79.11627
## 146          1          528          546       84.64590
## 147          1          511          514       68.82344
## 148          1          400          415       73.98988
## 149          1          441          446       77.07536
## 150          1          455          467       72.99697
## 151          1          440          453       82.07527
## 152          1          433          447       80.96352
## 153          1          422          424       80.16266
## 154          1          411          426       73.29039
## 155          1          466          482       79.67409
## 156          1          394          418       75.40436
## 157          1          442          455       79.47459
## 158          1          467          491       76.64476
## 159          1          443          462       72.33437
## 160          1          298          334       76.97600
## 161          1          541          569       74.99710
## 162          1          489          497       77.01763
## 163          1          469          481       83.32208
## 164          1          452          480       79.25104
## 165          1          516          535       75.71574
## 166          1           79           82       79.95248
## 167          1           58           61       84.96455
## 168          1          458          493       68.92158
## 169          1          531          552       68.50609
## 170          1          486          503       69.08940
## 171          1          363          377       66.86352
## 172          1          528          547       69.61816
## 173          1          391          407       70.26148
## 174          1          339          360       77.82584
## 175          1          423          428       68.79205
## 176          1          402          416       76.70162
## 177          1          398          406       80.91153
## 178          1          343          360       81.46464
## 179          1          503          527       67.81017
## 180          1          415          423       67.40392
## 181          1          516          545       74.37194
## 182          1          439          463       74.97815
```

Creating data frames for mean steps and calories burnt

```
daybasedsteps = dailyActivity_merged %>%
  group_by(ActivityDate) %>%
  drop_na() %>%
  summarise(Mean_Steps = mean(TotalSteps), Mean_Calories_Burnt = mean(Calories))

daybasedsteps
```

```
## # A tibble: 31 x 3
##    ActivityDate Mean_Steps Mean_Calories_Burnt
##    <date>            <dbl>               <dbl>
##  1 2016-04-12        8237.               2391.
##  2 2016-04-13        7199.               2287.
##  3 2016-04-14        7744.               2356.
##  4 2016-04-15        7534.               2355.
##  5 2016-04-16        8679.               2393.
##  6 2016-04-17        6409.               2231.
##  7 2016-04-18        7897.               2333.
##  8 2016-04-19        8049.               2359.
##  9 2016-04-20        8163.               2395.
## 10 2016-04-21        8244.               2422.
## # i 21 more rows
```

Combining Heart rate and Weight log info datasets

```
heartandweight = merge(weightnew_df, heartnew_df, by = c('Id', 'ActivityDate', 'Time'))
heartandweight
```

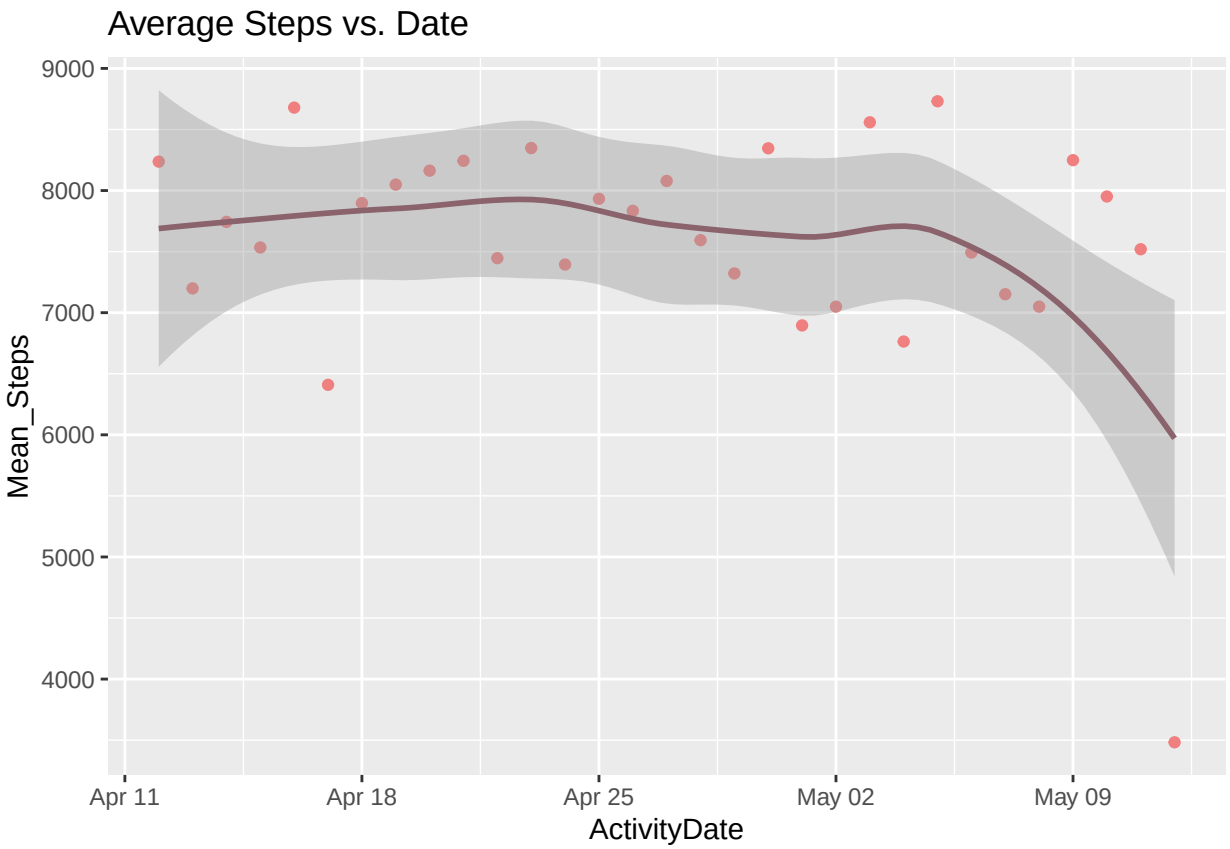
```
##           Id ActivityDate     Time WeightKg WeightPounds Fat   BMI
## 1 5577150313   2016-04-17 09:17:55     90.7     199.9593  NA 28.00
## 2 8877689391   2016-04-14 06:48:43     84.5     186.2906  NA 25.31
## 3 8877689391   2016-04-16 01:39:25     85.5     188.4952  NA 25.59
## 4 8877689391   2016-04-25 06:40:16     85.4     188.2748  NA 25.56
## 5 8877689391   2016-05-11 06:51:47     85.4     188.2748  NA 25.56
##   IsManualReport        LogId Value
## 1          FALSE 1.460885e+12   111
## 2          FALSE 1.460617e+12    87
## 3          FALSE 1.460814e+12    84
## 4          FALSE 1.461566e+12   122
## 5          FALSE 1.462950e+12    83
```

Not a good enough dataset to perform analysis.

PLOTS

```
ggplot(daybasedsteps, mapping=aes(x=ActivityDate, y=Mean_Steps))+geom_point(color="lightcoral")+geom_sm
```

```
## `geom_smooth()` using formula = 'y ~ x'
```

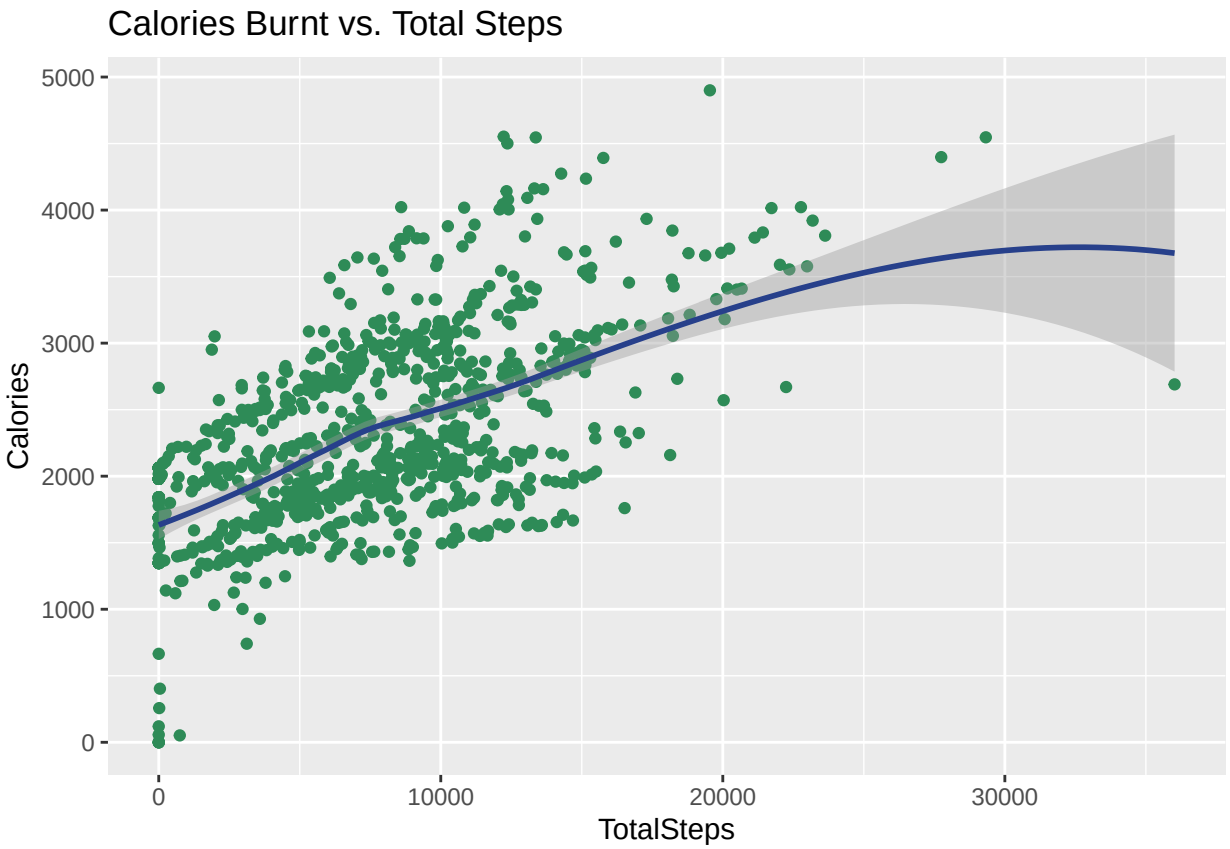


The intention behind this plot was to identify if we could find weekday-weekend patterns with respect to the number of steps walked in a day.

However, there is no specific pattern that can be deduced from the plot.

```
ggplot(dailyActivity_merged, mapping=aes(x=TotalSteps, y=Calories))+geom_point(color="seagreen")+geom_sm
```

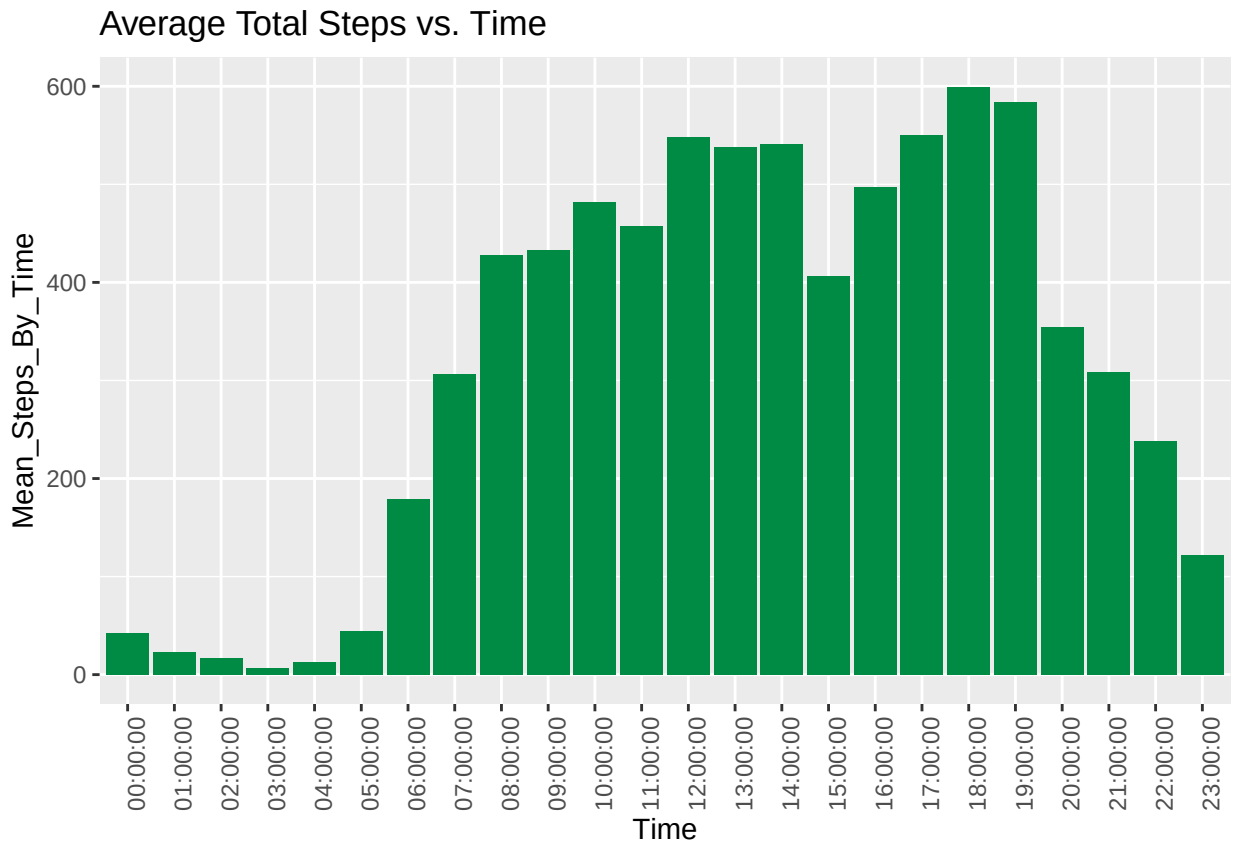
```
## `geom_smooth()` using method = 'loess' and formula = 'y ~ x'
```



Here, it is clear that with the higher number of steps, the subject also loses more calories. Hence, there is a positive relationship.

As a suggestion to Bellabeat, to faciliate more activity amongst the users, a rewards/points program could be introduced based on thr total steps count per day, rather than just relying on a default appreciation message.

```
stepsplot = stepsnew_df %>%
  group_by(Time) %>%
  drop_na() %>%
  summarise(Mean_Steps_By_Time = mean(StepTotal))
ggplot(stepsplot, aes(x=Time, y=Mean_Steps_By_Time)) + geom_bar(stat = "identity", fill= "springgreen4"
theme(axis.text.x = element_text(angle = 90)) + labs(title="Average Total Steps vs. Time")
```



The above visual shows a plot of average total steps against time.

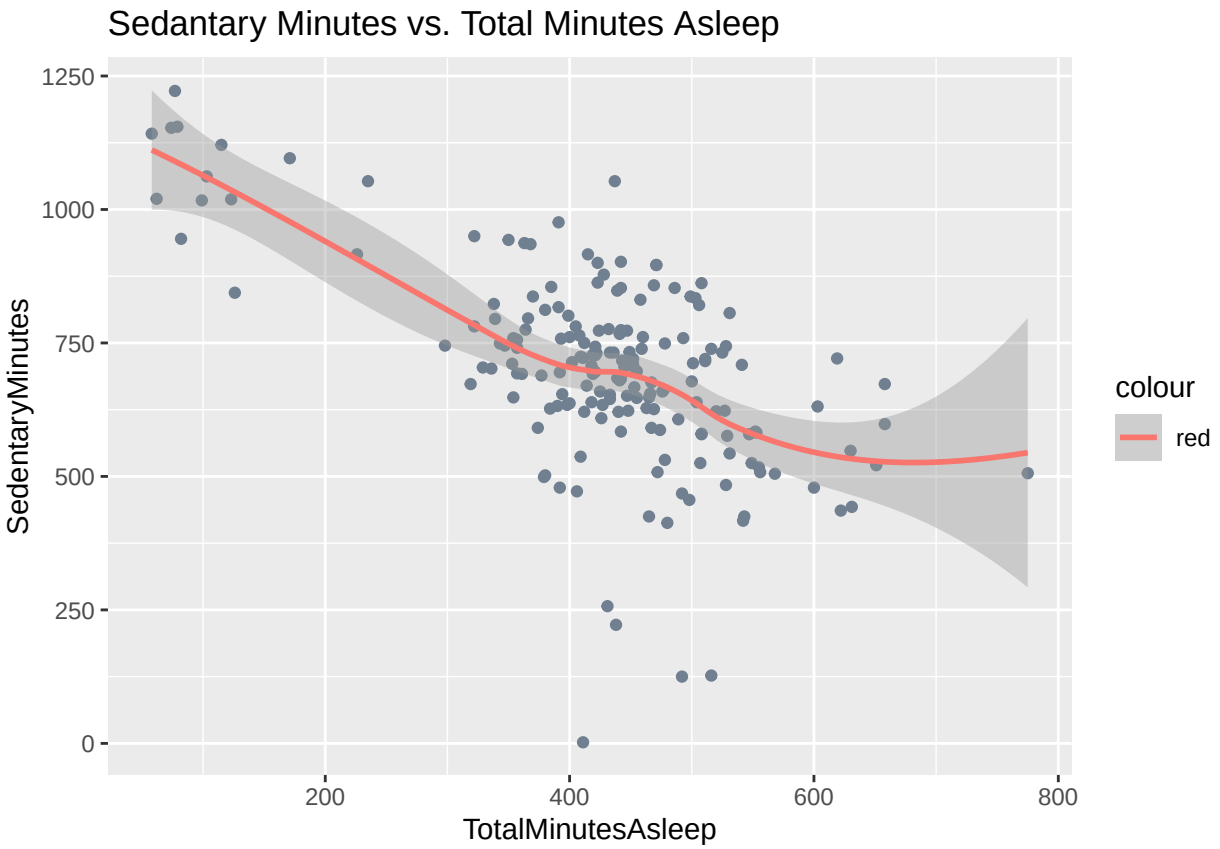
It is noticed that activity is least from 12 AM to 4 AM. From 5 AM, the value goes on increasing almost perfectly.

The number goes down at 3 PM, which may be assumed as lunch time for some or nap/rest time for others.

Bellabeat can introduce a mid day report system, for the users to know how they have fared for the past half day and what else they can do meet the acceptable quota for the remaining half of the day.

```
ggplot(final, mapping=aes(x=TotalMinutesAsleep, y=SedentaryMinutes))+geom_point(color="slategray")+geom
```

```
## `geom_smooth()` using method = 'loess' and formula = 'y ~ x'
```

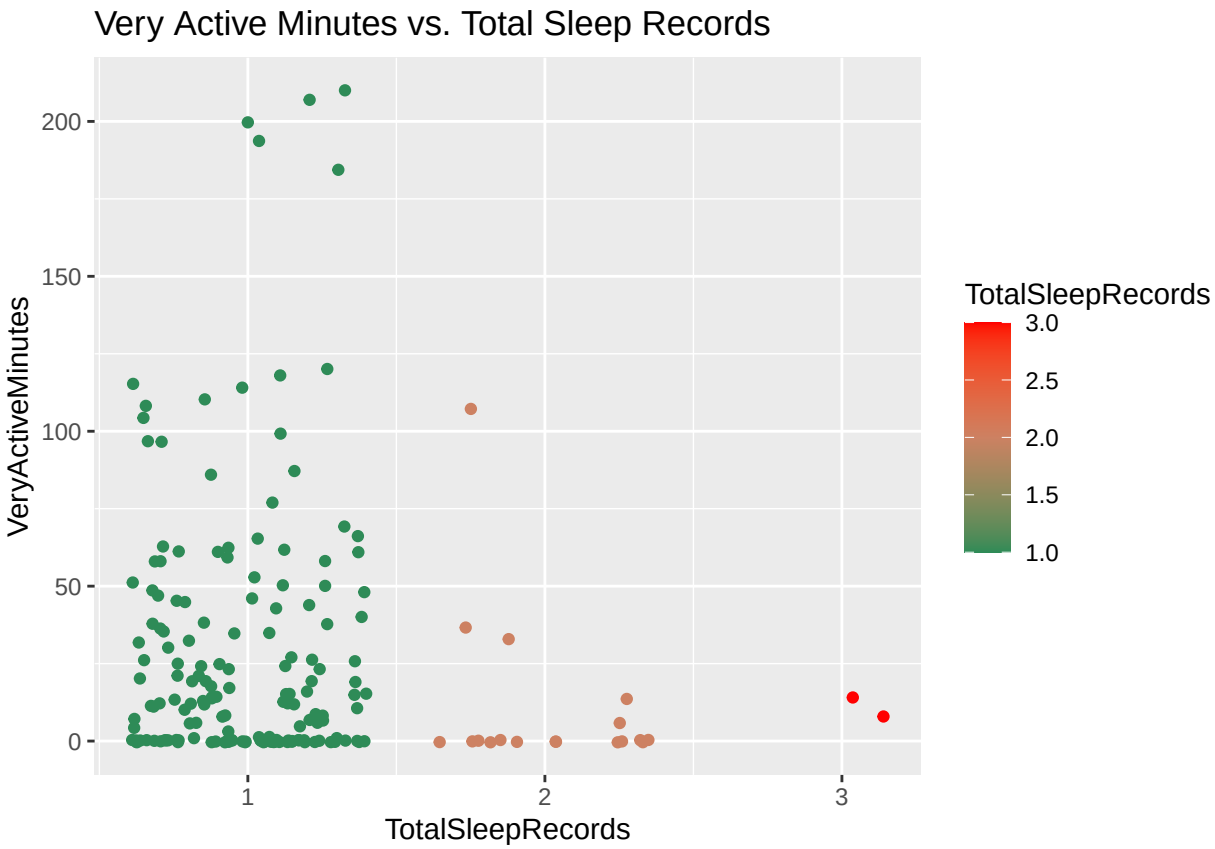


This plot shows how sedentary minutes is inversely proportional to the total minutes asleep.

In this case, Bellabeat can set an alarm for the users on their devices when their sedentary minutes have crossed a certain threshold and thus help the users focus better on getting a good sleep.

Sedentary Minutes can be calculated for a person based on BMR (Basal metabolic Rate), which is the number of calories our body burns to stay alive. To calculate this, parameters like height, weight and age are required which are missing in the datasets.

```
ggplot(final, mapping=aes(x=TotalSleepRecords,y=VeryActiveMinutes,color=TotalSleepRecords))+geom_jitter
```



Despite not being a regular direct or inverse relationship, it can be noticed here that a number of users who indulge in about one sleep session in a day have a higher value for very active minutes, while for approximately 2 sleep sessions, some users have a moderate value of very active minutes, while for three and above, the value is very low.

As a suggestion to Bellabeat, a reminder could be set up in case the user crosses 2 sleep sessions in a day, to avoid lethargy amongst them.

```
ggplot(heartandweight, mapping=aes(x=BMI,y=Value))+geom_jitter(color="red3")+geom_smooth()+ labs(title=
```

```
## `geom_smooth()` using method = 'loess' and formula = 'y ~ x'
```

```
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric = parametric,
## : span too small.  fewer data values than degrees of freedom.
```

```
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric = parametric,
## : pseudoinverse used at 25.297
```

```
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric = parametric,
## : neighborhood radius 0.26345
```

```
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric = parametric,
## : reciprocal condition number 0
```

```
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric = parametric,
## : There are other near singularities as well. 6.0194
```

```
## Warning in predLoess(object$y, object$x, newx = if (is.null(newdata)) object$x
## else if (is.data.frame(newdata))
```

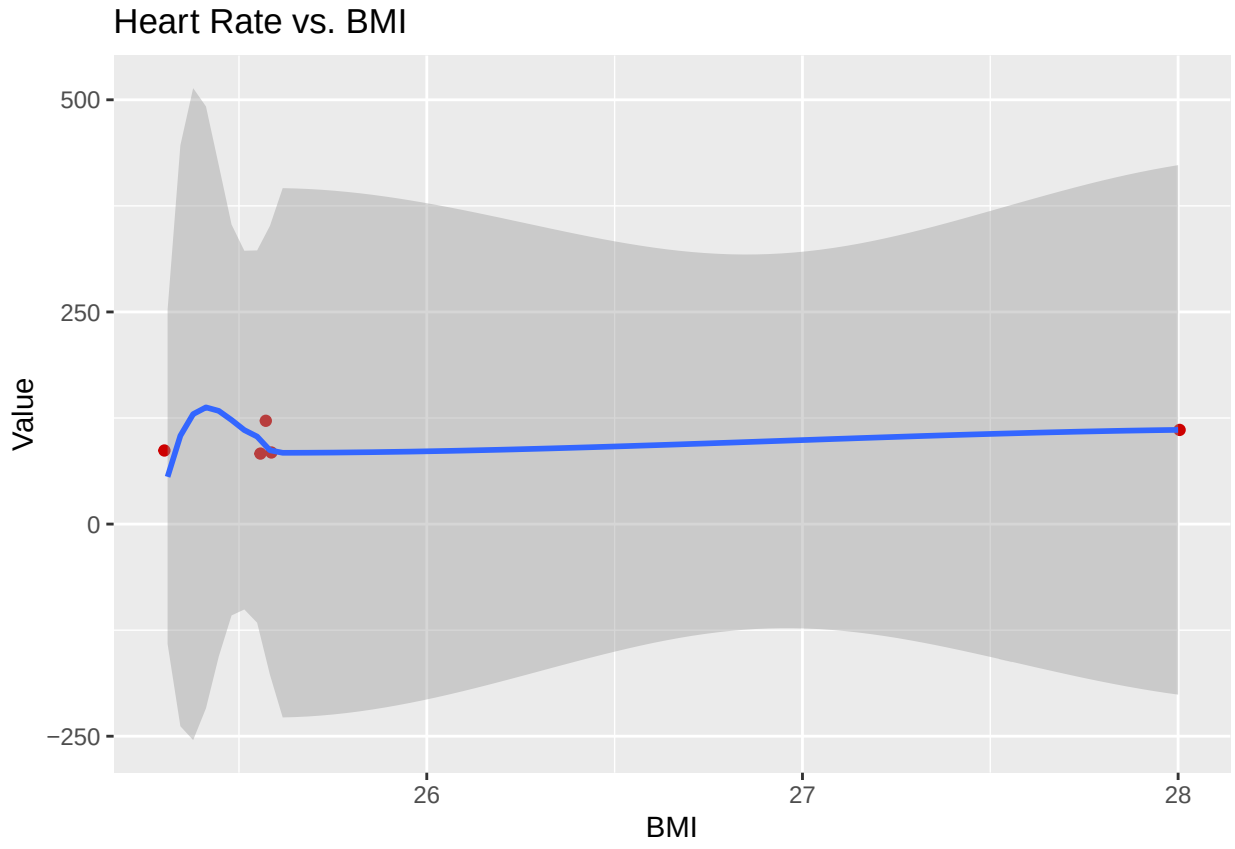
```
## as.matrix(model.frame(delete.response(terms(object)), : span too small.  fewer
## data values than degrees of freedom.
```

```
## Warning in predLoess(object$y, object$x, newx = if (is.null(newdata)) object$x
## else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object)), : pseudoinverse used at
## 25.297
```

```
## Warning in predLoess(object$y, object$x, newx = if (is.null(newdata)) object$x
## else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object)), : neighborhood radius
## 0.26345
```

```
## Warning in predLoess(object$y, object$x, newx = if (is.null(newdata)) object$x
## else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object)), : reciprocal condition
## number 0
```

```
## Warning in predLoess(object$y, object$x, newx = if (is.null(newdata)) object$x
## else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object)), : There are other near
## singularities as well. 6.0194
```



Unable to identify any pattern for heart rate and BMI.

There was high scope for identifying patterns by combining weight log and heart rate data, as we could deduce multiple relationships. However, the data is minimal, and there are plenty of null values that cannot be ignored or replaced with a mean value.

Also, combining the two datasets only provides around 10 rows which is very little data to perform further analysis. This is due to the weight log dataset being very minimal.

Hence, more data needs to be collected on weight and mass index.