BellabeatPDF

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Google Data Analytics Professional Certificate Capstone project. Case Study - Bellabeat

Background

The Google Data Analytics Professional certificate is a professional Certificate offered by coursera. It is an introductory certificate aimed at delivering foundation skills to persons who are willing to start or pursue a career in data analytics. This certificate is broken into eight courses. Though optional there is a Capstone project which makeup one of the eight courses. The Capstone is expected to test ones newly learned skill while experimenting using a real world data related scenario. This particular case study is on a company, bellabeat. Bellabeat, is a high-tech manufacturer of health-focused products for women, the company was established in 2013. The co-founder and Chief Creative Officer, Urška Sršen is confident that an analysis of non-Bellebeat consumer data (ie. FitBit fitness tracker usage data) would reveal more opportunities for growth. In this capstone project we will be analyzing a company's datasets With the aim to achieving;

Business Task:

Analyze FitBit fitness tracker data to gain insights into how consumers are using the FitBit app and discover trends for Bellabeat marketing strategy.

Business Objectives:

```
What are the trends identified?
How could these trends apply to Bellabeat customers?
How could these trends help influence Bellabeat marketing strategy?
```

Deliverables:

```
A clear summary of the business task
A description of all data sources used
Documentation of any cleaning or manipulation of data
A summary of analysis
Supporting visualizations and key findings
High-level content recommendations based on the analysis
```

Notable Stakeholders:

```
Urška Sršen: Bellabeat's cofounder and Chief Creative Officer
Sando Mur: Mathematician, Bellabeat's cofounder and key member of the Bellabeat executive team
Bellabeat marketing analytics team: A team of data analysts guiding Bellabeat's marketing strategy.
```

Work Breakdown Structure (WBS) of the capstone project - Bellabeat

The WBS process is largely categorized into the six steps of data analytics defined by the Google data analytics professional certificate. Ask, Prepare, Process, Analyse, Share & Act.

Step One -Ask In this phase of the process relevant questions are asked to define the major parameters of the project. Also, to enable us define subsets of the entire project. This is achievable by doing a quick company review to gain insight into the company's philosophy, policies, goals etc. Hence, the following questions?

```
A   What is my role/position (i.e., how do I come in?)
B   What is the aim and objective of the company (what exactly is the company trying to achieve)
C   What are the company's expectations
D   Who are the main stake-holders
```

Step Two - Prepare

```
In this phase, we will be identifying the resources available for the project.

A Identify the location of the data
B Telescope the data (i.e., look through it, a broad overview of the dataset)
C Apply ROCCC to check for any bias or credibility.
```

Note: To do a Telescope of our data.

Step Three - Process

```
Here we will set up our working tools and work environments to enable us process
our data to suit the project targets.

A Explore data for further observations
B Check for missing values and outliers
C Wrangle data further to suit our goal
```

Step Four - Analyse

```
Here we do the actual analysis. This process will include but not limited to the following;

A Aggregate our data
B Organize and re-organize our data
C Mathematical computations (statistical analysis/summaries)
D Identify trends and relationships (Employ data viz tools)
E Summarize the analysis
```

Note: Here we will drill down by doing a microscopic view of our data. Microscope the data.

Step Five - Share

```
Here we will communicate our insights to the stakeholders.
```

Step Six - Act

```
Take appropriate steps to implement the gained insights.
```

Working with R studio.

Load packages. Tidyverse is a group of packages that will be used for data cleaning and wrangling in this case. lubricate will be used for any date manipulation and or formatting. Other packages will be installed as required.

```
install.packages("tidyverse")   # skip this if previously installed "tidyverse" into R
install.packages("lubridate")   # skip this if previously installed "lubridate" into R
```

Load packages. Upon successful installation of the packages into R, we will be calling out the packages into our current R session.

```
library(tidyverse)
library(lubridate)
```

```
library(tidyverse)
```

```
## -- Attaching packages --------------------------------------- tidyverse 1.3.1 --

## v ggplot2 3.3.6     v purrr   0.3.4
## v tibble  3.1.7     v dplyr   1.0.9
## v tidyr   1.2.0     v stringr 1.4.0
## v readr   2.1.2     v forcats 0.5.1

## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

```
library(lubridate)
```

```
##
## Attaching package: 'lubridate'

## The following objects are masked from 'package:base':
##
##     date, intersect, setdiff, union
```

Importing datasets

```
dailyactivity <- read.csv("dailyActivity_merged.csv")
dailycalories <- read.csv("dailyCalories_merged.csv")
dailyintensities <- read.csv("dailyIntensities_merged.csv")
dailysteps <- read.csv ("dailySteps_merged.csv")
```

daily

```
hourlycalories <- read.csv ("hourlyCalories_merged.csv")
hourlyintensities <- read.csv ("hourlyIntensities_merged.csv")
hourlysteps <- read.csv ("hourlySteps_merged.csv")
```

hourly

```
mcaloriesn <- read.csv ("minuteCaloriesNarrow_merged.csv")
mcaloriesw <- read.csv ("minuteCaloriesWide_merged.csv")
mintensitiesn <- read.csv ("minuteIntensitiesNarrow_merged.csv")
mintensitiesw <- read.csv ("minuteIntensitiesWide_merged.csv")
msleep <- read.csv ("minuteSleep_merged.csv")
mstepsn <- read.csv ("minuteStepsNarrow_merged.csv")
mstepsw <- read.csv ("minuteStepsWide_merged.csv")
```

minutes

```
mmetsn <- read.csv ("minuteMETsNarrow_merged.csv")
secheartrate <- read.csv ("heartrate_seconds_merged.csv")
sleepday <- read.csv ("sleepDay_merged.csv")
weightinfo <- read.csv ("weightLogInfo_merged.csv")
```

others

Looking through your dataset daily activity

```
dailyactivity <- read.csv("dailyActivity_merged.csv")

dim(dailyactivity)
```

```
## [1] 940  15
```

```
class(dailyactivity)
```

```
## [1] "data.frame"
```

```
colnames(dailyactivity)
```

```
##  [1] "Id"                       "ActivityDate"
##  [3] "TotalSteps"               "TotalDistance"
##  [5] "TrackerDistance"          "LoggedActivitiesDistance"
##  [7] "VeryActiveDistance"       "ModeratelyActiveDistance"
##  [9] "LightActiveDistance"      "SedentaryActiveDistance"
## [11] "VeryActiveMinutes"        "FairlyActiveMinutes"
## [13] "LightlyActiveMinutes"     "SedentaryMinutes"
## [15] "Calories"
```

```
head(dailyactivity)
```

```
##           Id ActivityDate TotalSteps TotalDistance TrackerDistance
## 1 1503960366    4/12/2016      13162          8.50            8.50
## 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
##   LoggedActivitiesDistance VeryActiveDistance ModeratelyActiveDistance
## 1                        0               1.88                     0.55
## 2                        0               1.57                     0.69
## 3                        0               2.44                     0.40
## 4                        0               2.14                     1.26
## 5                        0               2.71                     0.41
## 6                        0               3.19                     0.78
##   LightActiveDistance SedentaryActiveDistance VeryActiveMinutes
## 1                6.06                       0                25
## 2                4.71                       0                21
## 3                3.91                       0                30
## 4                2.83                       0                29
## 5                5.04                       0                36
## 6                2.51                       0                38
##   FairlyActiveMinutes LightlyActiveMinutes SedentaryMinutes Calories
## 1                  13                  328              728     1985
## 2                  19                  217              776     1797
## 3                  11                  181             1218     1776
## 4                  34                  209              726     1745
## 5                  10                  221              773     1863
## 6                  20                  164              539     1728
```

```
tail(dailyactivity)
```

```
##             Id ActivityDate TotalSteps TotalDistance TrackerDistance
## 935 8877689391     5/7/2016      12332          8.13            8.13
## 936 8877689391     5/8/2016      10686          8.11            8.11
## 937 8877689391     5/9/2016      20226         18.25           18.25
## 938 8877689391    5/10/2016      10733          8.15            8.15
## 939 8877689391    5/11/2016      21420         19.56           19.56
## 940 8877689391    5/12/2016       8064          6.12            6.12
##     LoggedActivitiesDistance VeryActiveDistance ModeratelyActiveDistance
## 935                        0              0.08                     0.96
## 936                        0              1.08                     0.20
## 937                        0             11.10                     0.80
## 938                        0              1.35                     0.46
## 939                        0             13.22                     0.41
## 940                        0              1.82                     0.04
##     LightActiveDistance SedentaryActiveDistance VeryActiveMinutes
## 935                6.99                    0.00                105
## 936                6.80                    0.00                 17
## 937                6.24                    0.05                 73
## 938                6.28                    0.00                 18
## 939                5.89                    0.00                 88
## 940                4.25                    0.00                 23
##     FairlyActiveMinutes LightlyActiveMinutes SedentaryMinutes Calories
## 935                  28                 271             1036     4142
## 936                   4                 245             1174     2847
## 937                  19                 217             1131     3710
## 938                  11                 224             1187     2832
## 939                  12                 213             1127     3832
## 940                   1                 137              770     1849
```

```
glimpse(dailyactivity)
```

```
## Rows: 940
## Columns: 15
## $ Id                       <dbl> 1503960366, 1503960366, 1503960366, 150396036~
## $ ActivityDate             <chr> "4/12/2016", "4/13/2016", "4/14/2016", "4/15/~
## $ TotalSteps               <int> 13162, 10735, 10460, 9762, 12669, 9705, 13019~
## $ TotalDistance            <dbl> 8.50, 6.97, 6.74, 6.28, 8.16, 6.48, 8.59, 9.8~
## $ TrackerDistance          <dbl> 8.50, 6.97, 6.74, 6.28, 8.16, 6.48, 8.59, 9.8~
## $ LoggedActivitiesDistance <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, ~
## $ VeryActiveDistance       <dbl> 1.88, 1.57, 2.44, 2.14, 2.71, 3.19, 3.25, 3.5~
## $ ModeratelyActiveDistance <dbl> 0.55, 0.69, 0.40, 1.26, 0.41, 0.78, 0.64, 1.3~
## $ LightActiveDistance      <dbl> 6.06, 4.71, 3.91, 2.83, 5.04, 2.51, 4.71, 5.0~
## $ SedentaryActiveDistance  <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, ~
## $ VeryActiveMinutes        <int> 25, 21, 30, 29, 36, 38, 42, 50, 28, 19, 66, 4~
## $ FairlyActiveMinutes      <int> 13, 19, 11, 34, 10, 20, 16, 31, 12, 8, 27, 21~
## $ LightlyActiveMinutes     <int> 328, 217, 181, 209, 221, 164, 233, 264, 205, ~
## $ SedentaryMinutes         <int> 728, 776, 1218, 726, 773, 539, 1149, 775, 818~
## $ Calories                 <int> 1985, 1797, 1776, 1745, 1863, 1728, 1921, 203~
```

```
str(dailyactivity)
```

```
## 'data.frame':    940 obs. of  15 variables:
##  $ Id                       : num  1.5e+09 1.5e+09 1.5e+09 1.5e+09 1.5e+09 ...
##  $ ActivityDate             : chr  "4/12/2016" "4/13/2016" "4/14/2016" "4/15/2016" ...
##  $ TotalSteps               : int  13162 10735 10460 9762 12669 9705 13019 15506 10544 9819 ...
##  $ TotalDistance            : num  8.5 6.97 6.74 6.28 8.16 ...
##  $ TrackerDistance          : num  8.5 6.97 6.74 6.28 8.16 ...
##  $ LoggedActivitiesDistance: num  0 0 0 0 0 0 0 0 0 0 ...
##  $ VeryActiveDistance       : num  1.88 1.57 2.44 2.14 2.71 ...
##  $ ModeratelyActiveDistance: num  0.55 0.69 0.4 1.26 0.41 ...
##  $ LightActiveDistance      : num  6.06 4.71 3.91 2.83 5.04 ...
##  $ SedentaryActiveDistance : num  0 0 0 0 0 0 0 0 0 0 ...
##  $ VeryActiveMinutes        : int  25 21 30 29 36 38 42 50 28 19 ...
##  $ FairlyActiveMinutes      : int  13 19 11 34 10 20 16 31 12 8 ...
##  $ LightlyActiveMinutes     : int  328 217 181 209 221 164 233 264 205 211 ...
##  $ SedentaryMinutes         : int  728 776 1218 726 773 539 1149 775 818 838 ...
##  $ Calories                 : int  1985 1797 1776 1745 1863 1728 1921 2035 1786 1775 ...
```

```
view(dailyactivity) # not rendered in the rmd file but gives a tabular view of data.frame in rstudio.
```

daily calories

```
dailycalories <- read.csv("dailyCalories_merged.csv")

dim(dailycalories)
```

```
## [1] 940   3
```

```
class(dailycalories)
```

```
## [1] "data.frame"
```

```
colnames(dailycalories)
```

```
## [1] "Id"          "ActivityDay" "Calories"
```

```
head(dailycalories)
```

```
##           Id ActivityDay Calories
## 1 1503960366   4/12/2016     1985
## 2 1503960366   4/13/2016     1797
## 3 1503960366   4/14/2016     1776
## 4 1503960366   4/15/2016     1745
## 5 1503960366   4/16/2016     1863
## 6 1503960366   4/17/2016     1728
```

```
tail(dailycalories)
```

```
##             Id ActivityDay Calories
## 935 8877689391    5/7/2016     4142
## 936 8877689391    5/8/2016     2847
## 937 8877689391    5/9/2016     3710
## 938 8877689391   5/10/2016     2832
## 939 8877689391   5/11/2016     3832
## 940 8877689391   5/12/2016     1849
```

```
glimpse(dailycalories)
```

```
## Rows: 940
## Columns: 3
## $ Id          <dbl> 1503960366, 1503960366, 1503960366, 1503960366, 1503960366~
## $ ActivityDay <chr> "4/12/2016", "4/13/2016", "4/14/2016", "4/15/2016", "4/16/~
## $ Calories    <int> 1985, 1797, 1776, 1745, 1863, 1728, 1921, 2035, 1786, 1775~
```

```
str(dailycalories)
```

```
## 'data.frame':    940 obs. of  3 variables:
##  $ Id         : num  1.5e+09 1.5e+09 1.5e+09 1.5e+09 1.5e+09 ...
##  $ ActivityDay: chr  "4/12/2016" "4/13/2016" "4/14/2016" "4/15/2016" ...
##  $ Calories   : int  1985 1797 1776 1745 1863 1728 1921 2035 1786 1775 ...
```

```
view(dailycalories) # not rendered in the rmd file but gives a tabular view of data.frame in rstudio.
```

dailyintensities

```
dailyintensities <- read.csv("dailyIntensities_merged.csv")

dim(dailyintensities)
```

```
## [1] 940  10
```

```
class(dailyintensities)
```

```
## [1] "data.frame"
```

```
colnames(dailyintensities)
```

```
##  [1] "Id"                       "ActivityDay"
##  [3] "SedentaryMinutes"         "LightlyActiveMinutes"
##  [5] "FairlyActiveMinutes"      "VeryActiveMinutes"
##  [7] "SedentaryActiveDistance"  "LightActiveDistance"
##  [9] "ModeratelyActiveDistance" "VeryActiveDistance"
```

```
head(dailyintensities)
```

```
##           Id ActivityDay SedentaryMinutes LightlyActiveMinutes
## 1 1503960366   4/12/2016              728                  328
## 2 1503960366   4/13/2016              776                  217
## 3 1503960366   4/14/2016             1218                  181
## 4 1503960366   4/15/2016              726                  209
## 5 1503960366   4/16/2016              773                  221
## 6 1503960366   4/17/2016              539                  164
##   FairlyActiveMinutes VeryActiveMinutes SedentaryActiveDistance
## 1                  13                25                       0
## 2                  19                21                       0
## 3                  11                30                       0
## 4                  34                29                       0
## 5                  10                36                       0
## 6                  20                38                       0
##   LightActiveDistance ModeratelyActiveDistance VeryActiveDistance
## 1                6.06                     0.55               1.88
## 2                4.71                     0.69               1.57
## 3                3.91                     0.40               2.44
## 4                2.83                     1.26               2.14
## 5                5.04                     0.41               2.71
## 6                2.51                     0.78               3.19
```

```
tail(dailyintensities)
```

```
##             Id ActivityDay SedentaryMinutes LightlyActiveMinutes
## 935 8877689391    5/7/2016             1036                  271
## 936 8877689391    5/8/2016             1174                  245
## 937 8877689391    5/9/2016             1131                  217
## 938 8877689391   5/10/2016             1187                  224
## 939 8877689391   5/11/2016             1127                  213
## 940 8877689391   5/12/2016              770                  137
##     FairlyActiveMinutes VeryActiveMinutes SedentaryActiveDistance
## 935                  28               105                    0.00
## 936                   4                17                    0.00
## 937                  19                73                    0.05
## 938                  11                18                    0.00
## 939                  12                88                    0.00
## 940                   1                23                    0.00
##     LightActiveDistance ModeratelyActiveDistance VeryActiveDistance
## 935                6.99                     0.96               0.08
## 936                6.80                     0.20               1.08
## 937                6.24                     0.80              11.10
## 938                6.28                     0.46               1.35
## 939                5.89                     0.41              13.22
## 940                4.25                     0.04               1.82
```

```
glimpse(dailyintensities)
```

```
## Rows: 940
```

```
## Columns: 10
## $ Id                       <dbl> 1503960366, 1503960366, 1503960366, 150396036~
## $ ActivityDay              <chr> "4/12/2016", "4/13/2016", "4/14/2016", "4/15/~
## $ SedentaryMinutes         <int> 728, 776, 1218, 726, 773, 539, 1149, 775, 818~
## $ LightlyActiveMinutes     <int> 328, 217, 181, 209, 221, 164, 233, 264, 205, ~
## $ FairlyActiveMinutes      <int> 13, 19, 11, 34, 10, 20, 16, 31, 12, 8, 27, 21~
## $ VeryActiveMinutes        <int> 25, 21, 30, 29, 36, 38, 42, 50, 28, 19, 66, 4~
## $ SedentaryActiveDistance  <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, ~
## $ LightActiveDistance      <dbl> 6.06, 4.71, 3.91, 2.83, 5.04, 2.51, 4.71, 5.0~
## $ ModeratelyActiveDistance <dbl> 0.55, 0.69, 0.40, 1.26, 0.41, 0.78, 0.64, 1.3~
## $ VeryActiveDistance       <dbl> 1.88, 1.57, 2.44, 2.14, 2.71, 3.19, 3.25, 3.5~
```

```
str(dailyintensities)
```

```
## 'data.frame':    940 obs. of  10 variables:
##  $ Id                       : num  1.5e+09 1.5e+09 1.5e+09 1.5e+09 1.5e+09 ...
##  $ ActivityDay              : chr  "4/12/2016" "4/13/2016" "4/14/2016" "4/15/2016" ...
##  $ SedentaryMinutes         : int  728 776 1218 726 773 539 1149 775 818 838 ...
##  $ LightlyActiveMinutes     : int  328 217 181 209 221 164 233 264 205 211 ...
##  $ FairlyActiveMinutes      : int  13 19 11 34 10 20 16 31 12 8 ...
##  $ VeryActiveMinutes        : int  25 21 30 29 36 38 42 50 28 19 ...
##  $ SedentaryActiveDistance : num  0 0 0 0 0 0 0 0 0 0 ...
##  $ LightActiveDistance      : num  6.06 4.71 3.91 2.83 5.04 ...
##  $ ModeratelyActiveDistance: num  0.55 0.69 0.4 1.26 0.41 ...
##  $ VeryActiveDistance       : num  1.88 1.57 2.44 2.14 2.71 ...
```

```
view(dailyintensities) # not rendered in the rmd file but gives a tabular view of data.frame in rstudio
```

dailysteps

```
dailysteps <- read.csv ("dailySteps_merged.csv")

dim(dailysteps)
```

```
## [1] 940   3
```

```
class(dailysteps)
```

```
## [1] "data.frame"
```

```
colnames(dailysteps)
```

```
## [1] "Id"          "ActivityDay" "StepTotal"
```

```
head(dailysteps)
```

```
##           Id ActivityDay StepTotal
## 1 1503960366   4/12/2016     13162
## 2 1503960366   4/13/2016     10735
## 3 1503960366   4/14/2016     10460
## 4 1503960366   4/15/2016      9762
## 5 1503960366   4/16/2016     12669
## 6 1503960366   4/17/2016      9705
```

```
tail(dailysteps)
```

```
##             Id ActivityDay StepTotal
## 935 8877689391    5/7/2016     12332
## 936 8877689391    5/8/2016     10686
## 937 8877689391    5/9/2016     20226
## 938 8877689391   5/10/2016     10733
## 939 8877689391   5/11/2016     21420
## 940 8877689391   5/12/2016      8064
```

```
glimpse(dailysteps)
```

```
## Rows: 940
## Columns: 3
## $ Id          <dbl> 1503960366, 1503960366, 1503960366, 1503960366, 1503960366~
## $ ActivityDay <chr> "4/12/2016", "4/13/2016", "4/14/2016", "4/15/2016", "4/16/~
## $ StepTotal   <int> 13162, 10735, 10460, 9762, 12669, 9705, 13019, 15506, 1054~
```

```
str(dailysteps)
```

```
## 'data.frame':    940 obs. of  3 variables:
##  $ Id         : num  1.5e+09 1.5e+09 1.5e+09 1.5e+09 1.5e+09 ...
##  $ ActivityDay: chr  "4/12/2016" "4/13/2016" "4/14/2016" "4/15/2016" ...
##  $ StepTotal  : int  13162 10735 10460 9762 12669 9705 13019 15506 10544 9819 ...
```

```
view(dailysteps) # not rendered in the rmd file but gives a tabular view of data.frame in rstudio.
```

hourlycalories

```
hourlycalories <- read.csv ("hourlyCalories_merged.csv")

dim(hourlycalories)
```

```
## [1] 22099     3
```

```
class(hourlycalories)
```

```
## [1] "data.frame"
```

```
colnames(hourlycalories)
```

```
## [1] "Id"           "ActivityHour" "Calories"
```

```
head(hourlycalories)
```

```
##           Id          ActivityHour Calories
## 1 1503960366 4/12/2016 12:00:00 AM       81
## 2 1503960366  4/12/2016 1:00:00 AM       61
## 3 1503960366  4/12/2016 2:00:00 AM       59
## 4 1503960366  4/12/2016 3:00:00 AM       47
## 5 1503960366  4/12/2016 4:00:00 AM       48
## 6 1503960366  4/12/2016 5:00:00 AM       48
```

```
tail(hourlycalories)
```

```
##               Id          ActivityHour Calories
## 22094 8877689391  5/12/2016 9:00:00 AM       88
## 22095 8877689391 5/12/2016 10:00:00 AM      126
## 22096 8877689391 5/12/2016 11:00:00 AM      192
## 22097 8877689391 5/12/2016 12:00:00 PM      321
## 22098 8877689391  5/12/2016 1:00:00 PM      101
## 22099 8877689391  5/12/2016 2:00:00 PM      113
```

```
glimpse(hourlycalories)
```

```
## Rows: 22,099
## Columns: 3
## $ Id           <dbl> 1503960366, 1503960366, 1503960366, 1503960366, 150396036~
## $ ActivityHour <chr> "4/12/2016 12:00:00 AM", "4/12/2016 1:00:00 AM", "4/12/20~
## $ Calories     <int> 81, 61, 59, 47, 48, 48, 48, 47, 68, 141, 99, 76, 73, 66, ~
```

```
str(hourlycalories)
```

```
## 'data.frame':    22099 obs. of  3 variables:
##  $ Id          : num  1.5e+09 1.5e+09 1.5e+09 1.5e+09 1.5e+09 ...
##  $ ActivityHour: chr  "4/12/2016 12:00:00 AM" "4/12/2016 1:00:00 AM" "4/12/2016 2:00:00 AM" "4/12/201
##  $ Calories    : int  81 61 59 47 48 48 48 47 68 141 ...
```

```
view(hourlycalories) # not rendered in the rmd file but gives a tabular view of data.frame in rstudio.
```

hourlyintensities

```
hourlyintensities <- read.csv ("hourlyIntensities_merged.csv")

dim(hourlyintensities)
```

```
## [1] 22099     4
```

```
class(hourlyintensities)
```

```
## [1] "data.frame"
```

```
colnames(hourlyintensities)
```

```
## [1] "Id"               "ActivityHour"     "TotalIntensity"   "AverageIntensity"
```

```
head(hourlyintensities)
```

```
##           Id          ActivityHour TotalIntensity AverageIntensity
## 1 1503960366 4/12/2016 12:00:00 AM             20         0.333333
## 2 1503960366  4/12/2016 1:00:00 AM              8         0.133333
## 3 1503960366  4/12/2016 2:00:00 AM              7         0.116667
## 4 1503960366  4/12/2016 3:00:00 AM              0         0.000000
## 5 1503960366  4/12/2016 4:00:00 AM              0         0.000000
## 6 1503960366  4/12/2016 5:00:00 AM              0         0.000000
```

```
tail(hourlyintensities)
```

```
##               Id          ActivityHour TotalIntensity AverageIntensity
## 22094 8877689391  5/12/2016 9:00:00 AM              4         0.066667
## 22095 8877689391 5/12/2016 10:00:00 AM             12         0.200000
## 22096 8877689391 5/12/2016 11:00:00 AM             29         0.483333
## 22097 8877689391 5/12/2016 12:00:00 PM             93         1.550000
## 22098 8877689391  5/12/2016 1:00:00 PM              6         0.100000
## 22099 8877689391  5/12/2016 2:00:00 PM              9         0.150000
```

```
glimpse(hourlyintensities)
```

```
## Rows: 22,099
## Columns: 4
## $ Id               <dbl> 1503960366, 1503960366, 1503960366, 1503960366, 15039~
## $ ActivityHour     <chr> "4/12/2016 12:00:00 AM", "4/12/2016 1:00:00 AM", "4/1~
## $ TotalIntensity   <int> 20, 8, 7, 0, 0, 0, 0, 0, 13, 30, 29, 12, 11, 6, 36, 5~
## $ AverageIntensity <dbl> 0.333333, 0.133333, 0.116667, 0.000000, 0.000000, 0.0~
```

```
str(hourlyintensities)
```

```
## 'data.frame':    22099 obs. of  4 variables:
##  $ Id              : num  1.5e+09 1.5e+09 1.5e+09 1.5e+09 1.5e+09 ...
##  $ ActivityHour    : chr  "4/12/2016 12:00:00 AM" "4/12/2016 1:00:00 AM" "4/12/2016 2:00:00 AM" "4/1
##  $ TotalIntensity  : int  20 8 7 0 0 0 0 0 13 30 ...
##  $ AverageIntensity: num  0.333 0.133 0.117 0 0 ...
```

```
view(hourlyintensities) # not rendered in the rmd file but gives a tabular view of data.frame in rstudi
```

hourlysteps

```
hourlysteps <- read.csv ("hourlySteps_merged.csv")

dim(hourlysteps)
```

```
## [1] 22099     3
```

```
class(hourlysteps)
```

```
## [1] "data.frame"
```

```
colnames(hourlysteps)
```

```
## [1] "Id"           "ActivityHour" "StepTotal"
```

```
head(hourlysteps)
```

```
##           Id          ActivityHour StepTotal
## 1 1503960366 4/12/2016 12:00:00 AM       373
## 2 1503960366  4/12/2016 1:00:00 AM       160
## 3 1503960366  4/12/2016 2:00:00 AM       151
## 4 1503960366  4/12/2016 3:00:00 AM         0
## 5 1503960366  4/12/2016 4:00:00 AM         0
## 6 1503960366  4/12/2016 5:00:00 AM         0
```

```
tail(hourlysteps)
```

```
##               Id          ActivityHour StepTotal
## 22094 8877689391  5/12/2016 9:00:00 AM       164
## 22095 8877689391 5/12/2016 10:00:00 AM       514
## 22096 8877689391 5/12/2016 11:00:00 AM      1407
## 22097 8877689391 5/12/2016 12:00:00 PM      3135
## 22098 8877689391  5/12/2016 1:00:00 PM       307
## 22099 8877689391  5/12/2016 2:00:00 PM       457
```

```
glimpse(hourlysteps)
```

```
## Rows: 22,099
## Columns: 3
## $ Id           <dbl> 1503960366, 1503960366, 1503960366, 1503960366, 150396036~
## $ ActivityHour <chr> "4/12/2016 12:00:00 AM", "4/12/2016 1:00:00 AM", "4/12/20~
## $ StepTotal    <int> 373, 160, 151, 0, 0, 0, 0, 0, 250, 1864, 676, 360, 253, 2~
```

```
str(hourlysteps)
```

```
## 'data.frame':    22099 obs. of  3 variables:
##  $ Id          : num  1.5e+09 1.5e+09 1.5e+09 1.5e+09 1.5e+09 ...
##  $ ActivityHour: chr  "4/12/2016 12:00:00 AM" "4/12/2016 1:00:00 AM" "4/12/2016 2:00:00 AM" "4/12/201
##  $ StepTotal   : int  373 160 151 0 0 0 0 0 250 1864 ...
```

```
view(hourlysteps) # not rendered in the rmd file but gives a tabular view of data.frame in rstudio.
```

mcaloriesn

```
mcaloriesn <- read.csv ("minuteCaloriesNarrow_merged.csv")

dim(mcaloriesn)
```

```
## [1] 1325580       3
```

```
class(mcaloriesn)
```

```
## [1] "data.frame"
```

```
colnames(mcaloriesn)
```

```
## [1] "Id"             "ActivityMinute" "Calories"
```

```
head(mcaloriesn)
```

```
##           Id        ActivityMinute Calories
## 1 1503960366 4/12/2016 12:00:00 AM   0.7865
## 2 1503960366 4/12/2016 12:01:00 AM   0.7865
## 3 1503960366 4/12/2016 12:02:00 AM   0.7865
## 4 1503960366 4/12/2016 12:03:00 AM   0.7865
## 5 1503960366 4/12/2016 12:04:00 AM   0.7865
## 6 1503960366 4/12/2016 12:05:00 AM   0.9438
```

```
tail(mcaloriesn)
```

```
##                 Id       ActivityMinute Calories
## 1325575 8877689391 5/12/2016 1:54:00 PM  1.33353
## 1325576 8877689391 5/12/2016 1:55:00 PM  1.33353
## 1325577 8877689391 5/12/2016 1:56:00 PM  1.33353
## 1325578 8877689391 5/12/2016 1:57:00 PM  1.33353
## 1325579 8877689391 5/12/2016 1:58:00 PM  1.33353
## 1325580 8877689391 5/12/2016 1:59:00 PM  1.33353
```

```
glimpse(mcaloriesn)
```

```
## Rows: 1,325,580
## Columns: 3
## $ Id             <dbl> 1503960366, 1503960366, 1503960366, 1503960366, 1503960~
## $ ActivityMinute <chr> "4/12/2016 12:00:00 AM", "4/12/2016 12:01:00 AM", "4/12~
## $ Calories       <dbl> 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.9438, 0.9438,~
```

```
str(mcaloriesn)
```

```
## 'data.frame':    1325580 obs. of  3 variables:
##  $ Id            : num  1.5e+09 1.5e+09 1.5e+09 1.5e+09 1.5e+09 ...
##  $ ActivityMinute: chr  "4/12/2016 12:00:00 AM" "4/12/2016 12:01:00 AM" "4/12/2016 12:02:00 AM" "4/11
##  $ Calories      : num  0.786 0.786 0.786 0.786 0.786 ...
```

```
view(mcaloriesn) # not rendered in the rmd file but gives a tabular view of data.frame in rstudio.
```

mcaloriesw

```
mcaloriesw <- read.csv ("minuteCaloriesWide_merged.csv")

dim(mcaloriesw)
```

```
## [1] 21645    62
```

```
class(mcaloriesw)
```

```
## [1] "data.frame"
```

```
colnames(mcaloriesw)
```

```
##  [1] "Id"           "ActivityHour" "Calories00"   "Calories01"   "Calories02"
##  [6] "Calories03"   "Calories04"   "Calories05"   "Calories06"   "Calories07"
## [11] "Calories08"   "Calories09"   "Calories10"   "Calories11"   "Calories12"
## [16] "Calories13"   "Calories14"   "Calories15"   "Calories16"   "Calories17"
## [21] "Calories18"   "Calories19"   "Calories20"   "Calories21"   "Calories22"
## [26] "Calories23"   "Calories24"   "Calories25"   "Calories26"   "Calories27"
## [31] "Calories28"   "Calories29"   "Calories30"   "Calories31"   "Calories32"
## [36] "Calories33"   "Calories34"   "Calories35"   "Calories36"   "Calories37"
## [41] "Calories38"   "Calories39"   "Calories40"   "Calories41"   "Calories42"
## [46] "Calories43"   "Calories44"   "Calories45"   "Calories46"   "Calories47"
## [51] "Calories48"   "Calories49"   "Calories50"   "Calories51"   "Calories52"
## [56] "Calories53"   "Calories54"   "Calories55"   "Calories56"   "Calories57"
## [61] "Calories58"   "Calories59"
```

```
head(mcaloriesw)
```

```
##           Id          ActivityHour Calories00 Calories01 Calories02 Calories03
## 1 1503960366 4/13/2016 12:00:00 AM     1.8876     2.2022     0.9438     0.9438
## 2 1503960366  4/13/2016 1:00:00 AM     0.7865     0.7865     0.7865     0.7865
## 3 1503960366  4/13/2016 2:00:00 AM     0.7865     0.7865     0.7865     0.7865
## 4 1503960366  4/13/2016 3:00:00 AM     0.7865     0.7865     0.7865     0.7865
## 5 1503960366  4/13/2016 4:00:00 AM     0.7865     0.7865     0.7865     0.7865
## 6 1503960366  4/13/2016 5:00:00 AM     0.7865     0.7865     0.7865     0.7865
##   Calories04 Calories05 Calories06 Calories07 Calories08 Calories09 Calories10
## 1     0.9438     2.0449     0.9438     2.2022     0.9438     0.7865     0.9438
## 2     0.9438     0.9438     0.9438     0.7865     0.9438     0.7865     0.9438
## 3     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865
## 4     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865
## 5     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865
## 6     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865
##   Calories11 Calories12 Calories13 Calories14 Calories15 Calories16 Calories17
## 1     0.7865     0.7865     0.7865     0.7865     0.9438     0.9438     0.7865
## 2     0.7865     0.9438     0.7865     0.7865     0.7865     0.7865     0.7865
## 3     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865
## 4     2.0449     0.9438     0.7865     0.7865     0.9438     0.7865     0.9438
## 5     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865
## 6     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865
##   Calories18 Calories19 Calories20 Calories21 Calories22 Calories23 Calories24
## 1     0.7865     0.7865     1.8876     0.9438     0.9438     0.9438     0.9438
## 2     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865
## 3     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865
## 4     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865
## 5     0.7865     0.9438     0.7865     0.7865     0.7865     0.7865     0.7865
## 6     0.7865     0.9438     0.7865     0.7865     0.7865     0.7865     0.7865
##   Calories25 Calories26 Calories27 Calories28 Calories29 Calories30 Calories31
## 1     2.0449     2.3595     0.9438     2.0449     0.9438     0.9438     0.9438
## 2     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865
## 3     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865
## 4     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865
## 5     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865
## 6     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865
```

```
##   Calories32 Calories33 Calories34 Calories35 Calories36 Calories37 Calories38
## 1     2.0449     1.8876     0.9438     0.7865     0.7865     0.7865     0.7865
## 2     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865
## 3     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865
## 4     0.7865     0.9438     2.0449     2.0449     1.8876     0.7865     0.7865
## 5     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865
## 6     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865
##   Calories39 Calories40 Calories41 Calories42 Calories43 Calories44 Calories45
## 1     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865
## 2     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865
## 3     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865
## 4     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865
## 5     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865
## 6     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865
##   Calories46 Calories47 Calories48 Calories49 Calories50 Calories51 Calories52
## 1     0.7865     0.7865     0.7865     0.7865     0.9438     2.0449     2.0449
## 2     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865
## 3     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865
## 4     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865
## 5     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865
## 6     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865
##   Calories53 Calories54 Calories55 Calories56 Calories57 Calories58 Calories59
## 1     0.9438     2.3595     1.8876     0.9438     0.9438     0.9438     0.9438
## 2     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865
## 3     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865
## 4     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865
## 5     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865
## 6     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865     0.7865
```

```
tail(mcaloriesw)
```

```
##               Id         ActivityHour Calories00 Calories01 Calories02
## 21640 8877689391 5/13/2016 2:00:00 AM     1.2170     1.2170     1.2170
## 21641 8877689391 5/13/2016 3:00:00 AM     1.2170     1.2170     1.2170
## 21642 8877689391 5/13/2016 4:00:00 AM     1.2170     1.2170     1.2170
## 21643 8877689391 5/13/2016 5:00:00 AM     1.2170     1.2170     1.2170
## 21644 8877689391 5/13/2016 6:00:00 AM     1.2170     1.2170     1.2170
## 21645 8877689391 5/13/2016 7:00:00 AM     4.6246     4.1378     4.3812
##       Calories03 Calories04 Calories05 Calories06 Calories07 Calories08
## 21640     1.2170     1.2170     1.2170     1.2170     1.2170     1.2170
## 21641     1.2170     1.2170     1.2170     1.2170     1.2170     1.2170
## 21642     1.2170     1.2170     1.2170     1.2170     1.2170     1.2170
## 21643     1.2170     1.2170     1.2170     1.2170     1.2170     1.2170
## 21644     1.2170     1.2170     1.2170     1.2170     1.2170     1.2170
## 21645     1.8255     3.1642     1.5821     1.5821     1.5821     1.5821
##       Calories09 Calories10 Calories11 Calories12 Calories13 Calories14
## 21640     1.2170     1.2170     1.2170     1.2170     1.2170     1.2170
## 21641     1.2170     1.2170     1.2170     1.2170     1.2170     1.2170
## 21642     1.2170     1.2170     1.2170     1.2170     1.2170     1.2170
## 21643     1.2170     1.2170     1.2170     1.2170     1.2170     1.2170
## 21644     1.2170     1.2170     1.2170     1.2170     1.2170     1.2170
## 21645     1.4604     1.5821     1.5821     1.5821     1.5821     3.1642
##       Calories15 Calories16 Calories17 Calories18 Calories19 Calories20
## 21640      1.217      1.217     1.2170      1.217     1.2170     1.2170
```

```
## 21641      1.217      1.217     1.2170      1.217     1.2170     1.2170
## 21642      1.217      1.217     1.2170      1.217     1.2170     1.2170
## 21643      1.217      1.217     1.2170      1.217     1.2170     1.2170
## 21644      1.217      1.217     1.2170      1.217     1.2170     1.2170
## 21645      6.085      4.868     4.3812      6.085     4.1378     1.5821
##       Calories21 Calories22 Calories23 Calories24 Calories25 Calories26
## 21640     1.2170     1.2170     1.2170     1.2170     1.2170     1.2170
## 21641     1.2170     1.2170     1.2170     1.2170     1.2170     1.2170
## 21642     1.2170     1.2170     1.2170     1.2170     1.2170     1.2170
## 21643     1.2170     1.2170     1.2170     1.2170     1.2170     1.2170
## 21644     1.2170     1.2170     1.2170     1.2170     1.2170     1.2170
## 21645     1.5821     1.5821     1.5821     1.5821     3.1642     1.5821
##       Calories27 Calories28 Calories29 Calories30 Calories31 Calories32
## 21640     1.2170     1.2170     1.2170     1.2170     1.2170     1.2170
## 21641     1.2170     1.2170     1.2170     1.2170     1.2170     1.2170
## 21642     1.2170     1.2170     1.2170     1.2170     1.2170     1.2170
## 21643     1.2170     1.2170     1.2170     1.2170     1.2170     1.2170
## 21644     1.2170     1.2170     1.2170     1.2170     1.2170     1.2170
## 21645     1.5821     1.5821     1.5821     1.4604     1.5821     3.1642
##       Calories33 Calories34 Calories35 Calories36 Calories37 Calories38
## 21640     1.2170     1.2170     1.2170     1.2170     1.2170     1.2170
## 21641     1.2170     1.2170     1.2170     1.2170     1.2170     1.2170
## 21642     1.2170     1.2170     1.2170     1.2170     1.2170     1.2170
## 21643     1.2170     1.2170     1.2170     1.2170     1.2170     1.2170
## 21644     1.2170     1.2170     1.2170     1.2170     1.2170     1.2170
## 21645     6.3284     5.1114     5.1114     8.0322     4.6246     1.5821
##       Calories39 Calories40 Calories41 Calories42 Calories43 Calories44
## 21640     1.2170     1.2170      1.217     1.2170     1.2170     1.2170
## 21641     1.2170     1.2170      1.217     1.2170     1.2170     1.2170
## 21642     1.2170     1.2170      1.217     1.2170     1.2170     1.2170
## 21643     1.2170     1.2170      1.217     1.2170     1.2170     1.2170
## 21644     1.2170     1.2170      1.217     1.2170     1.2170     1.2170
## 21645     3.1642     4.6246      4.868     4.6246     6.5718     1.5821
##       Calories45 Calories46 Calories47 Calories48 Calories49 Calories50
## 21640     1.2170     1.2170     1.2170     1.2170     1.2170     1.2170
## 21641     1.2170     1.2170     1.2170     1.2170     1.2170     1.2170
## 21642     1.2170     1.2170     1.2170     1.2170     1.2170     1.2170
## 21643     1.2170     1.2170     1.2170     1.2170     1.2170     1.2170
## 21644     1.2170     1.2170     1.2170     1.2170     1.2170     4.6246
## 21645     1.5821     1.3387     2.9208     1.5821     1.5821     1.5821
##       Calories51 Calories52 Calories53 Calories54 Calories55 Calories56
## 21640     1.2170     1.2170     1.2170     1.2170     1.2170     1.2170
## 21641     1.2170     1.2170     1.2170     1.2170     1.2170     1.2170
## 21642     1.2170     1.2170     1.2170     1.2170     1.2170     1.2170
## 21643     1.2170     1.2170     1.2170     1.2170     1.2170     1.2170
## 21644     4.6246     4.8680     4.3812     4.3812     1.5821     1.5821
## 21645     1.3387     1.5821     1.5821     1.3387     1.3387     1.5821
##       Calories57 Calories58 Calories59
## 21640     1.2170     1.2170     1.2170
## 21641     1.2170     1.2170     1.2170
## 21642     1.2170     1.2170     1.2170
## 21643     1.2170     1.2170     1.2170
## 21644     3.8944     4.6246     3.8944
## 21645     1.3387     1.3387     1.3387
```

```
glimpse(mcaloriesw)
```

```
## Rows: 21,645
## Columns: 62
## $ Id           <dbl> 1503960366, 1503960366, 1503960366, 1503960366, 150396036~
## $ ActivityHour <chr> "4/13/2016 12:00:00 AM", "4/13/2016 1:00:00 AM", "4/13/20~
## $ Calories00   <dbl> 1.8876, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0~
## $ Calories01   <dbl> 2.2022, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0~
## $ Calories02   <dbl> 0.9438, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0~
## $ Calories03   <dbl> 0.9438, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0~
## $ Calories04   <dbl> 0.9438, 0.9438, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0~
## $ Calories05   <dbl> 2.0449, 0.9438, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0~
## $ Calories06   <dbl> 0.9438, 0.9438, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0~
## $ Calories07   <dbl> 2.2022, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0~
## $ Calories08   <dbl> 0.9438, 0.9438, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0~
## $ Calories09   <dbl> 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0~
## $ Calories10   <dbl> 0.9438, 0.9438, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0~
## $ Calories11   <dbl> 0.78650, 0.78650, 0.78650, 2.04490, 0.78650, 0.78650, 0.7~
## $ Calories12   <dbl> 0.78650, 0.94380, 0.78650, 0.94380, 0.78650, 0.78650, 0.7~
## $ Calories13   <dbl> 0.78650, 0.78650, 0.78650, 0.78650, 0.78650, 0.78650, 0.7~
## $ Calories14   <dbl> 0.78650, 0.78650, 0.78650, 0.78650, 0.78650, 0.78650, 0.7~
## $ Calories15   <dbl> 0.9438, 0.7865, 0.7865, 0.9438, 0.7865, 0.7865, 0.7865, 0~
## $ Calories16   <dbl> 0.9438, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0~
## $ Calories17   <dbl> 0.7865, 0.7865, 0.7865, 0.9438, 0.7865, 0.7865, 0.7865, 0~
## $ Calories18   <dbl> 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0~
## $ Calories19   <dbl> 0.7865, 0.7865, 0.7865, 0.7865, 0.9438, 0.9438, 0.7865, 0~
## $ Calories20   <dbl> 1.88760, 0.78650, 0.78650, 0.78650, 0.78650, 0.78650, 0.7~
## $ Calories21   <dbl> 0.94380, 0.78650, 0.78650, 0.78650, 0.78650, 0.78650, 0.7~
## $ Calories22   <dbl> 0.94380, 0.78650, 0.78650, 0.78650, 0.78650, 0.78650, 0.7~
## $ Calories23   <dbl> 0.9438, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0~
## $ Calories24   <dbl> 0.9438, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0~
## $ Calories25   <dbl> 2.0449, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 2~
## $ Calories26   <dbl> 2.3595, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 2~
## $ Calories27   <dbl> 0.9438, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0~
## $ Calories28   <dbl> 2.0449, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0~
## $ Calories29   <dbl> 0.9438, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0~
## $ Calories30   <dbl> 0.9438, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0~
## $ Calories31   <dbl> 0.9438, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 2~
## $ Calories32   <dbl> 2.0449, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0~
## $ Calories33   <dbl> 1.8876, 0.7865, 0.7865, 0.9438, 0.7865, 0.7865, 0.7865, 0~
## $ Calories34   <dbl> 0.9438, 0.7865, 0.7865, 2.0449, 0.7865, 0.7865, 0.7865, 0~
## $ Calories35   <dbl> 0.7865, 0.7865, 0.7865, 2.0449, 0.7865, 0.7865, 0.7865, 0~
## $ Calories36   <dbl> 0.7865, 0.7865, 0.7865, 1.8876, 0.7865, 0.7865, 0.7865, 0~
## $ Calories37   <dbl> 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0~
## $ Calories38   <dbl> 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0~
## $ Calories39   <dbl> 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0~
## $ Calories40   <dbl> 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.9438, 0~
## $ Calories41   <dbl> 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.9438, 2~
## $ Calories42   <dbl> 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 2~
## $ Calories43   <dbl> 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.9438, 0~
## $ Calories44   <dbl> 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0~
## $ Calories45   <dbl> 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0~
## $ Calories46   <dbl> 0.78650, 0.78650, 0.78650, 0.78650, 0.78650, 0.78650, 0.7~
```

```
## $ Calories47   <dbl> 0.78650, 0.78650, 0.78650, 0.78650, 0.78650, 0.78650, 0.7~
## $ Calories48   <dbl> 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.9438, 0~
## $ Calories49   <dbl> 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0~
## $ Calories50   <dbl> 0.9438, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 2~
## $ Calories51   <dbl> 2.0449, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 2~
## $ Calories52   <dbl> 2.0449, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0~
## $ Calories53   <dbl> 0.9438, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0~
## $ Calories54   <dbl> 2.3595, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0~
## $ Calories55   <dbl> 1.8876, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0~
## $ Calories56   <dbl> 0.9438, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0~
## $ Calories57   <dbl> 0.9438, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0~
## $ Calories58   <dbl> 0.9438, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0~
## $ Calories59   <dbl> 0.9438, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 0.7865, 2~
```

```
str(mcaloriesw)
```

```
## 'data.frame':    21645 obs. of  62 variables:
##  $ Id          : num  1.5e+09 1.5e+09 1.5e+09 1.5e+09 1.5e+09 ...
##  $ ActivityHour: chr  "4/13/2016 12:00:00 AM" "4/13/2016 1:00:00 AM" "4/13/2016 2:00:00 AM" "4/13/20
##  $ Calories00  : num  1.888 0.786 0.786 0.786 0.786 ...
##  $ Calories01  : num  2.202 0.786 0.786 0.786 0.786 ...
##  $ Calories02  : num  0.944 0.786 0.786 0.786 0.786 ...
##  $ Calories03  : num  0.944 0.786 0.786 0.786 0.786 ...
##  $ Calories04  : num  0.944 0.944 0.786 0.786 0.786 ...
##  $ Calories05  : num  2.045 0.944 0.786 0.786 0.786 ...
##  $ Calories06  : num  0.944 0.944 0.786 0.786 0.786 ...
##  $ Calories07  : num  2.202 0.786 0.786 0.786 0.786 ...
##  $ Calories08  : num  0.944 0.944 0.786 0.786 0.786 ...
##  $ Calories09  : num  0.786 0.786 0.786 0.786 0.786 ...
##  $ Calories10  : num  0.944 0.944 0.786 0.786 0.786 ...
##  $ Calories11  : num  0.786 0.786 0.786 2.045 0.786 ...
##  $ Calories12  : num  0.786 0.944 0.786 0.944 0.786 ...
##  $ Calories13  : num  0.786 0.786 0.786 0.786 0.786 ...
##  $ Calories14  : num  0.786 0.786 0.786 0.786 0.786 ...
##  $ Calories15  : num  0.944 0.786 0.786 0.944 0.786 ...
##  $ Calories16  : num  0.944 0.786 0.786 0.786 0.786 ...
##  $ Calories17  : num  0.786 0.786 0.786 0.944 0.786 ...
##  $ Calories18  : num  0.786 0.786 0.786 0.786 0.786 ...
##  $ Calories19  : num  0.786 0.786 0.786 0.786 0.944 ...
##  $ Calories20  : num  1.888 0.786 0.786 0.786 0.786 ...
##  $ Calories21  : num  0.944 0.786 0.786 0.786 0.786 ...
##  $ Calories22  : num  0.944 0.786 0.786 0.786 0.786 ...
##  $ Calories23  : num  0.944 0.786 0.786 0.786 0.786 ...
##  $ Calories24  : num  0.944 0.786 0.786 0.786 0.786 ...
##  $ Calories25  : num  2.045 0.786 0.786 0.786 0.786 ...
##  $ Calories26  : num  2.359 0.786 0.786 0.786 0.786 ...
##  $ Calories27  : num  0.944 0.786 0.786 0.786 0.786 ...
##  $ Calories28  : num  2.045 0.786 0.786 0.786 0.786 ...
##  $ Calories29  : num  0.944 0.786 0.786 0.786 0.786 ...
##  $ Calories30  : num  0.944 0.786 0.786 0.786 0.786 ...
##  $ Calories31  : num  0.944 0.786 0.786 0.786 0.786 ...
##  $ Calories32  : num  2.045 0.786 0.786 0.786 0.786 ...
##  $ Calories33  : num  1.888 0.786 0.786 0.944 0.786 ...
##  $ Calories34  : num  0.944 0.786 0.786 2.045 0.786 ...
```

```
##  $ Calories35  : num  0.786 0.786 0.786 2.045 0.786 ...
##  $ Calories36  : num  0.786 0.786 0.786 1.888 0.786 ...
##  $ Calories37  : num  0.786 0.786 0.786 0.786 0.786 ...
##  $ Calories38  : num  0.786 0.786 0.786 0.786 0.786 ...
##  $ Calories39  : num  0.786 0.786 0.786 0.786 0.786 ...
##  $ Calories40  : num  0.786 0.786 0.786 0.786 0.786 ...
##  $ Calories41  : num  0.786 0.786 0.786 0.786 0.786 ...
##  $ Calories42  : num  0.786 0.786 0.786 0.786 0.786 ...
##  $ Calories43  : num  0.786 0.786 0.786 0.786 0.786 ...
##  $ Calories44  : num  0.786 0.786 0.786 0.786 0.786 ...
##  $ Calories45  : num  0.786 0.786 0.786 0.786 0.786 ...
##  $ Calories46  : num  0.786 0.786 0.786 0.786 0.786 ...
##  $ Calories47  : num  0.786 0.786 0.786 0.786 0.786 ...
##  $ Calories48  : num  0.786 0.786 0.786 0.786 0.786 ...
##  $ Calories49  : num  0.786 0.786 0.786 0.786 0.786 ...
##  $ Calories50  : num  0.944 0.786 0.786 0.786 0.786 ...
##  $ Calories51  : num  2.045 0.786 0.786 0.786 0.786 ...
##  $ Calories52  : num  2.045 0.786 0.786 0.786 0.786 ...
##  $ Calories53  : num  0.944 0.786 0.786 0.786 0.786 ...
##  $ Calories54  : num  2.359 0.786 0.786 0.786 0.786 ...
##  $ Calories55  : num  1.888 0.786 0.786 0.786 0.786 ...
##  $ Calories56  : num  0.944 0.786 0.786 0.786 0.786 ...
##  $ Calories57  : num  0.944 0.786 0.786 0.786 0.786 ...
##  $ Calories58  : num  0.944 0.786 0.786 0.786 0.786 ...
##  $ Calories59  : num  0.944 0.786 0.786 0.786 0.786 ...
```

```
view(mcaloriesw) # not rendered in the rmd file but gives a tabular view of data.frame in rstudio.
```

mintensitiesn

```
mintensitiesn <- read.csv ("minuteIntensitiesNarrow_merged.csv")

dim(mintensitiesn)
```

```
## [1] 1325580       3
```

```
class(mintensitiesn)
```

```
## [1] "data.frame"
```

```
colnames(mintensitiesn)
```

```
## [1] "Id"             "ActivityMinute" "Intensity"
```

```
head(mintensitiesn)
```

```
##           Id        ActivityMinute Intensity
## 1 1503960366 4/12/2016 12:00:00 AM         0
## 2 1503960366 4/12/2016 12:01:00 AM         0
## 3 1503960366 4/12/2016 12:02:00 AM         0
## 4 1503960366 4/12/2016 12:03:00 AM         0
## 5 1503960366 4/12/2016 12:04:00 AM         0
## 6 1503960366 4/12/2016 12:05:00 AM         0
```

```
tail(mintensitiesn)
```

```
##                 Id       ActivityMinute Intensity
## 1325575 8877689391 5/12/2016 1:54:00 PM         0
## 1325576 8877689391 5/12/2016 1:55:00 PM         0
## 1325577 8877689391 5/12/2016 1:56:00 PM         0
## 1325578 8877689391 5/12/2016 1:57:00 PM         0
## 1325579 8877689391 5/12/2016 1:58:00 PM         0
## 1325580 8877689391 5/12/2016 1:59:00 PM         0
```

```
glimpse(mintensitiesn)
```

```
## Rows: 1,325,580
## Columns: 3
## $ Id             <dbl> 1503960366, 1503960366, 1503960366, 1503960366, 1503960~
## $ ActivityMinute <chr> "4/12/2016 12:00:00 AM", "4/12/2016 12:01:00 AM", "4/12~
## $ Intensity      <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0~
```

```
str(mintensitiesn)
```

```
## 'data.frame':    1325580 obs. of  3 variables:
##  $ Id            : num  1.5e+09 1.5e+09 1.5e+09 1.5e+09 1.5e+09 ...
##  $ ActivityMinute: chr  "4/12/2016 12:00:00 AM" "4/12/2016 12:01:00 AM" "4/12/2016 12:02:00 AM" "4/1
##  $ Intensity     : int  0 0 0 0 0 0 0 0 0 0 ...
```

```
view(mintensitiesn) # not rendered in the rmd file but gives a tabular view of data.frame in rstudio.
```

mintensitiesw

```
mintensitiesw <- read.csv ("minuteIntensitiesWide_merged.csv")

dim(mintensitiesw)
```

```
## [1] 21645    62
```

```
class(mintensitiesw)
```

```
## [1] "data.frame"
```

```
colnames(mintensitiesw)
```

```
##  [1] "Id"           "ActivityHour" "Intensity00"  "Intensity01"  "Intensity02"
##  [6] "Intensity03"  "Intensity04"  "Intensity05"  "Intensity06"  "Intensity07"
## [11] "Intensity08"  "Intensity09"  "Intensity10"  "Intensity11"  "Intensity12"
## [16] "Intensity13"  "Intensity14"  "Intensity15"  "Intensity16"  "Intensity17"
## [21] "Intensity18"  "Intensity19"  "Intensity20"  "Intensity21"  "Intensity22"
## [26] "Intensity23"  "Intensity24"  "Intensity25"  "Intensity26"  "Intensity27"
## [31] "Intensity28"  "Intensity29"  "Intensity30"  "Intensity31"  "Intensity32"
## [36] "Intensity33"  "Intensity34"  "Intensity35"  "Intensity36"  "Intensity37"
```

```
## [41] "Intensity38"  "Intensity39"  "Intensity40"  "Intensity41"  "Intensity42"
## [46] "Intensity43"  "Intensity44"  "Intensity45"  "Intensity46"  "Intensity47"
## [51] "Intensity48"  "Intensity49"  "Intensity50"  "Intensity51"  "Intensity52"
## [56] "Intensity53"  "Intensity54"  "Intensity55"  "Intensity56"  "Intensity57"
## [61] "Intensity58"  "Intensity59"
```

```
head(mintensitiesw)
```

```
##           Id          ActivityHour Intensity00 Intensity01 Intensity02
## 1 1503960366 4/13/2016 12:00:00 AM           1           1           0
## 2 1503960366  4/13/2016 1:00:00 AM           0           0           0
## 3 1503960366  4/13/2016 2:00:00 AM           0           0           0
## 4 1503960366  4/13/2016 3:00:00 AM           0           0           0
## 5 1503960366  4/13/2016 4:00:00 AM           0           0           0
## 6 1503960366  4/13/2016 5:00:00 AM           0           0           0
##   Intensity03 Intensity04 Intensity05 Intensity06 Intensity07 Intensity08
## 1           0           0           1           0           1           0
## 2           0           0           0           0           0           0
## 3           0           0           0           0           0           0
## 4           0           0           0           0           0           0
## 5           0           0           0           0           0           0
## 6           0           0           0           0           0           0
##   Intensity09 Intensity10 Intensity11 Intensity12 Intensity13 Intensity14
## 1           0           0           0           0           0           0
## 2           0           0           0           0           0           0
## 3           0           0           0           0           0           0
## 4           0           0           1           0           0           0
## 5           0           0           0           0           0           0
## 6           0           0           0           0           0           0
##   Intensity15 Intensity16 Intensity17 Intensity18 Intensity19 Intensity20
## 1           0           0           0           0           0           1
## 2           0           0           0           0           0           0
## 3           0           0           0           0           0           0
## 4           0           0           0           0           0           0
## 5           0           0           0           0           0           0
## 6           0           0           0           0           0           0
##   Intensity21 Intensity22 Intensity23 Intensity24 Intensity25 Intensity26
## 1           0           0           0           0           1           1
## 2           0           0           0           0           0           0
## 3           0           0           0           0           0           0
## 4           0           0           0           0           0           0
## 5           0           0           0           0           0           0
## 6           0           0           0           0           0           0
##   Intensity27 Intensity28 Intensity29 Intensity30 Intensity31 Intensity32
## 1           0           1           0           0           0           1
## 2           0           0           0           0           0           0
## 3           0           0           0           0           0           0
## 4           0           0           0           0           0           0
## 5           0           0           0           0           0           0
## 6           0           0           0           0           0           0
##   Intensity33 Intensity34 Intensity35 Intensity36 Intensity37 Intensity38
## 1           1           0           0           0           0           0
## 2           0           0           0           0           0           0
## 3           0           0           0           0           0           0
```

```
## 4           0           1           1           1           0           0
## 5           0           0           0           0           0           0
## 6           0           0           0           0           0           0
##   Intensity39 Intensity40 Intensity41 Intensity42 Intensity43 Intensity44
## 1           0           0           0           0           0           0
## 2           0           0           0           0           0           0
## 3           0           0           0           0           0           0
## 4           0           0           0           0           0           0
## 5           0           0           0           0           0           0
## 6           0           0           0           0           0           0
##   Intensity45 Intensity46 Intensity47 Intensity48 Intensity49 Intensity50
## 1           0           0           0           0           0           0
## 2           0           0           0           0           0           0
## 3           0           0           0           0           0           0
## 4           0           0           0           0           0           0
## 5           0           0           0           0           0           0
## 6           0           0           0           0           0           0
##   Intensity51 Intensity52 Intensity53 Intensity54 Intensity55 Intensity56
## 1           1           1           0           1           1           0
## 2           0           0           0           0           0           0
## 3           0           0           0           0           0           0
## 4           0           0           0           0           0           0
## 5           0           0           0           0           0           0
## 6           0           0           0           0           0           0
##   Intensity57 Intensity58 Intensity59
## 1           0           0           0
## 2           0           0           0
## 3           0           0           0
## 4           0           0           0
## 5           0           0           0
## 6           0           0           0
```

```
tail(mintensitiesw)
```

```
##               Id         ActivityHour Intensity00 Intensity01 Intensity02
## 21640 8877689391 5/13/2016 2:00:00 AM           0           0           0
## 21641 8877689391 5/13/2016 3:00:00 AM           0           0           0
## 21642 8877689391 5/13/2016 4:00:00 AM           0           0           0
## 21643 8877689391 5/13/2016 5:00:00 AM           0           0           0
## 21644 8877689391 5/13/2016 6:00:00 AM           0           0           0
## 21645 8877689391 5/13/2016 7:00:00 AM           1           1           1
##       Intensity03 Intensity04 Intensity05 Intensity06 Intensity07 Intensity08
## 21640           0           0           0           0           0           0
## 21641           0           0           0           0           0           0
## 21642           0           0           0           0           0           0
## 21643           0           0           0           0           0           0
## 21644           0           0           0           0           0           0
## 21645           0           1           0           0           0           0
##       Intensity09 Intensity10 Intensity11 Intensity12 Intensity13 Intensity14
## 21640           0           0           0           0           0           0
## 21641           0           0           0           0           0           0
## 21642           0           0           0           0           0           0
## 21643           0           0           0           0           0           0
## 21644           0           0           0           0           0           0
```

```
## 21645           0           0           0           0           0           1
##       Intensity15 Intensity16 Intensity17 Intensity18 Intensity19 Intensity20
## 21640           0           0           0           0           0           0
## 21641           0           0           0           0           0           0
## 21642           0           0           0           0           0           0
## 21643           0           0           0           0           0           0
## 21644           0           0           0           0           0           0
## 21645           1           1           1           1           1           0
##       Intensity21 Intensity22 Intensity23 Intensity24 Intensity25 Intensity26
## 21640           0           0           0           0           0           0
## 21641           0           0           0           0           0           0
## 21642           0           0           0           0           0           0
## 21643           0           0           0           0           0           0
## 21644           0           0           0           0           0           0
## 21645           0           0           0           0           1           0
##       Intensity27 Intensity28 Intensity29 Intensity30 Intensity31 Intensity32
## 21640           0           0           0           0           0           0
## 21641           0           0           0           0           0           0
## 21642           0           0           0           0           0           0
## 21643           0           0           0           0           0           0
## 21644           0           0           0           0           0           0
## 21645           0           0           0           0           0           1
##       Intensity33 Intensity34 Intensity35 Intensity36 Intensity37 Intensity38
## 21640           0           0           0           0           0           0
## 21641           0           0           0           0           0           0
## 21642           0           0           0           0           0           0
## 21643           0           0           0           0           0           0
## 21644           0           0           0           0           0           0
## 21645           1           1           1           1           1           0
##       Intensity39 Intensity40 Intensity41 Intensity42 Intensity43 Intensity44
## 21640           0           0           0           0           0           0
## 21641           0           0           0           0           0           0
## 21642           0           0           0           0           0           0
## 21643           0           0           0           0           0           0
## 21644           0           0           0           0           0           0
## 21645           1           1           1           1           1           0
##       Intensity45 Intensity46 Intensity47 Intensity48 Intensity49 Intensity50
## 21640           0           0           0           0           0           0
## 21641           0           0           0           0           0           0
## 21642           0           0           0           0           0           0
## 21643           0           0           0           0           0           0
## 21644           0           0           0           0           0           1
## 21645           0           0           1           0           0           0
##       Intensity51 Intensity52 Intensity53 Intensity54 Intensity55 Intensity56
## 21640           0           0           0           0           0           0
## 21641           0           0           0           0           0           0
## 21642           0           0           0           0           0           0
## 21643           0           0           0           0           0           0
## 21644           1           1           1           1           0           0
## 21645           0           0           0           0           0           0
##       Intensity57 Intensity58 Intensity59
## 21640           0           0           0
## 21641           0           0           0
## 21642           0           0           0
```

```
## 21643           0           0           0
## 21644           1           1           1
## 21645           0           0           0
```

```
glimpse(mintensitiesw)
```

```
## Rows: 21,645
## Columns: 62
## $ Id           <dbl> 1503960366, 1503960366, 1503960366, 1503960366, 150396036~
## $ ActivityHour <chr> "4/13/2016 12:00:00 AM", "4/13/2016 1:00:00 AM", "4/13/20~
## $ Intensity00  <int> 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 1, 0, 0, 0, 0, 0, 3, ~
## $ Intensity01  <int> 1, 0, 0, 0, 0, 0, 0, 0, 0, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, ~
## $ Intensity02  <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 1, 0, 0, 0, 1, 0, 0, 0, 0, ~
## $ Intensity03  <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 1, 0, 0, 0, 1, 0, 0, 0, 0, ~
## $ Intensity04  <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 1, 0, 0, 0, 0, 0, 0, ~
## $ Intensity05  <int> 1, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 1, ~
## $ Intensity06  <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 1, 0, 0, 1, 0, 0, ~
## $ Intensity07  <int> 1, 0, 0, 0, 0, 0, 0, 0, 0, 1, 1, 0, 0, 0, 0, 0, 1, 0, 0, ~
## $ Intensity08  <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 1, 0, 0, 1, 0, 0, 0, 0, 0, ~
## $ Intensity09  <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 1, 0, 0, 0, 0, 0, 0, ~
## $ Intensity10  <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 1, ~
## $ Intensity11  <int> 0, 0, 0, 1, 0, 0, 0, 0, 1, 1, 0, 0, 0, 0, 1, 0, 0, 0, 1, ~
## $ Intensity12  <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 1, 1, 0, 1, 0, 1, 0, 1, ~
## $ Intensity13  <int> 0, 0, 0, 0, 0, 0, 0, 0, 1, 1, 0, 0, 0, 0, 2, 0, 1, 0, 0, ~
## $ Intensity14  <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 1, 0, 0, 2, 0, 0, 0, 0, ~
## $ Intensity15  <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 1, 1, 0, 0, 0, 0, 0, 0, ~
## $ Intensity16  <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 1, 0, 1, 1, 0, 0, 0, 0, ~
## $ Intensity17  <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 1, 2, 1, 0, 0, 1, ~
## $ Intensity18  <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 1, 1, 0, 0, ~
## $ Intensity19  <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 2, 1, 0, 0, ~
## $ Intensity20  <int> 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 3, 1, 0, 0, 0, ~
## $ Intensity21  <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 1, 0, 1, 3, 1, 0, 0, 0, ~
## $ Intensity22  <int> 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 1, 0, 1, 3, 0, 0, 0, 0, ~
## $ Intensity23  <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 3, 0, 0, 0, 0, ~
## $ Intensity24  <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 1, 0, 0, 3, 0, 0, 0, 0, ~
## $ Intensity25  <int> 1, 0, 0, 0, 0, 0, 0, 1, 0, 0, 1, 1, 1, 0, 3, 0, 0, 0, 0, ~
## $ Intensity26  <int> 1, 0, 0, 0, 0, 0, 0, 1, 0, 0, 1, 0, 0, 1, 3, 0, 0, 0, 0, ~
## $ Intensity27  <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 3, 0, 0, 0, 0, ~
## $ Intensity28  <int> 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 3, 0, 0, 0, 0, ~
## $ Intensity29  <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 2, 0, 0, 0, 0, ~
## $ Intensity30  <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 2, 0, 1, 0, 0, ~
## $ Intensity31  <int> 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 1, 0, 1, 0, 0, ~
## $ Intensity32  <int> 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, ~
## $ Intensity33  <int> 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, ~
## $ Intensity34  <int> 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, ~
## $ Intensity35  <int> 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 1, 0, 1, 0, 0, 0, 0, 1, ~
## $ Intensity36  <int> 0, 0, 0, 1, 0, 0, 0, 0, 1, 1, 0, 1, 1, 0, 0, 0, 0, 0, 0, ~
## $ Intensity37  <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, ~
## $ Intensity38  <int> 0, 0, 0, 0, 0, 0, 0, 0, 1, 1, 0, 1, 0, 0, 0, 0, 0, 0, 0, ~
## $ Intensity39  <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 1, 0, 0, 0, 0, 0, 0, 0, ~
## $ Intensity40  <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, ~
## $ Intensity41  <int> 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 1, ~
## $ Intensity42  <int> 0, 0, 0, 0, 0, 0, 0, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, ~
## $ Intensity43  <int> 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, ~
```

```
## $ Intensity44  <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 1, ~
## $ Intensity45  <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 1, 0, 1, ~
## $ Intensity46  <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 1, 0, 0, 1, ~
## $ Intensity47  <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 1, 1, 1, 1, ~
## $ Intensity48  <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 1, 0, 1, 0, 0, 1, 1, 1, 1, ~
## $ Intensity49  <int> 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 1, 0, 1, 1, ~
## $ Intensity50  <int> 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, ~
## $ Intensity51  <int> 1, 0, 0, 0, 0, 0, 0, 1, 1, 1, 0, 0, 0, 0, 0, 1, 1, 2, 1, ~
## $ Intensity52  <int> 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 1, 1, ~
## $ Intensity53  <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 1, 0, 2, 1, ~
## $ Intensity54  <int> 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 1, 0, ~
## $ Intensity55  <int> 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 1, 0, 0, 0, 2, 1, ~
## $ Intensity56  <int> 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 1, 0, 0, 0, 0, 0, 2, 1, ~
## $ Intensity57  <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 3, 1, ~
## $ Intensity58  <int> 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 3, 1, ~
## $ Intensity59  <int> 0, 0, 0, 0, 0, 0, 0, 1, 1, 1, 0, 0, 1, 0, 0, 0, 0, 3, 0, ~
```

```
str(mintensitiesw)
```

```
## 'data.frame':    21645 obs. of  62 variables:
##  $ Id          : num  1.5e+09 1.5e+09 1.5e+09 1.5e+09 1.5e+09 ...
##  $ ActivityHour: chr  "4/13/2016 12:00:00 AM" "4/13/2016 1:00:00 AM" "4/13/2016 2:00:00 AM" "4/13/20
##  $ Intensity00 : int  1 0 0 0 0 0 0 0 0 0 ...
##  $ Intensity01 : int  1 0 0 0 0 0 0 0 0 1 ...
##  $ Intensity02 : int  0 0 0 0 0 0 0 0 0 1 ...
##  $ Intensity03 : int  0 0 0 0 0 0 0 0 0 1 ...
##  $ Intensity04 : int  0 0 0 0 0 0 0 0 0 1 ...
##  $ Intensity05 : int  1 0 0 0 0 0 0 0 0 1 ...
##  $ Intensity06 : int  0 0 0 0 0 0 0 0 0 1 ...
##  $ Intensity07 : int  1 0 0 0 0 0 0 0 0 1 ...
##  $ Intensity08 : int  0 0 0 0 0 0 0 0 0 1 ...
##  $ Intensity09 : int  0 0 0 0 0 0 0 0 0 1 ...
##  $ Intensity10 : int  0 0 0 0 0 0 0 0 0 1 ...
##  $ Intensity11 : int  0 0 0 1 0 0 0 0 1 1 ...
##  $ Intensity12 : int  0 0 0 0 0 0 0 0 0 1 ...
##  $ Intensity13 : int  0 0 0 0 0 0 0 0 1 1 ...
##  $ Intensity14 : int  0 0 0 0 0 0 0 0 0 1 ...
##  $ Intensity15 : int  0 0 0 0 0 0 0 0 0 1 ...
##  $ Intensity16 : int  0 0 0 0 0 0 0 0 0 1 ...
##  $ Intensity17 : int  0 0 0 0 0 0 0 0 0 0 ...
##  $ Intensity18 : int  0 0 0 0 0 0 0 0 0 0 ...
##  $ Intensity19 : int  0 0 0 0 0 0 0 0 0 0 ...
##  $ Intensity20 : int  1 0 0 0 0 0 0 0 0 0 ...
##  $ Intensity21 : int  0 0 0 0 0 0 0 0 0 0 ...
##  $ Intensity22 : int  0 0 0 0 0 0 0 0 1 0 ...
##  $ Intensity23 : int  0 0 0 0 0 0 0 0 0 0 ...
##  $ Intensity24 : int  0 0 0 0 0 0 0 0 0 0 ...
##  $ Intensity25 : int  1 0 0 0 0 0 0 1 0 0 ...
##  $ Intensity26 : int  1 0 0 0 0 0 0 1 0 0 ...
##  $ Intensity27 : int  0 0 0 0 0 0 0 0 0 0 ...
##  $ Intensity28 : int  1 0 0 0 0 0 0 0 0 0 ...
##  $ Intensity29 : int  0 0 0 0 0 0 0 0 0 0 ...
##  $ Intensity30 : int  0 0 0 0 0 0 0 0 0 0 ...
##  $ Intensity31 : int  0 0 0 0 0 0 0 1 0 0 ...
```

```
##  $ Intensity32 : int  1 0 0 0 0 0 0 0 0 0 ...
##  $ Intensity33 : int  1 0 0 0 0 0 0 0 0 0 ...
##  $ Intensity34 : int  0 0 0 1 0 0 0 0 0 0 ...
##  $ Intensity35 : int  0 0 0 1 0 0 0 0 0 0 ...
##  $ Intensity36 : int  0 0 0 1 0 0 0 0 1 1 ...
##  $ Intensity37 : int  0 0 0 0 0 0 0 0 0 1 ...
##  $ Intensity38 : int  0 0 0 0 0 0 0 0 1 1 ...
##  $ Intensity39 : int  0 0 0 0 0 0 0 0 0 1 ...
##  $ Intensity40 : int  0 0 0 0 0 0 0 0 0 1 ...
##  $ Intensity41 : int  0 0 0 0 0 0 0 1 0 0 ...
##  $ Intensity42 : int  0 0 0 0 0 0 0 1 1 0 ...
##  $ Intensity43 : int  0 0 0 0 0 0 0 0 1 0 ...
##  $ Intensity44 : int  0 0 0 0 0 0 0 0 0 0 ...
##  $ Intensity45 : int  0 0 0 0 0 0 0 0 0 1 ...
##  $ Intensity46 : int  0 0 0 0 0 0 0 0 0 1 ...
##  $ Intensity47 : int  0 0 0 0 0 0 0 0 0 1 ...
##  $ Intensity48 : int  0 0 0 0 0 0 0 0 0 1 ...
##  $ Intensity49 : int  0 0 0 0 0 0 0 0 1 0 ...
##  $ Intensity50 : int  0 0 0 0 0 0 0 1 0 0 ...
##  $ Intensity51 : int  1 0 0 0 0 0 0 1 1 1 ...
##  $ Intensity52 : int  1 0 0 0 0 0 0 0 0 0 ...
##  $ Intensity53 : int  0 0 0 0 0 0 0 0 0 0 ...
##  $ Intensity54 : int  1 0 0 0 0 0 0 0 0 0 ...
##  $ Intensity55 : int  1 0 0 0 0 0 0 0 0 0 ...
##  $ Intensity56 : int  0 0 0 0 0 0 0 0 1 0 ...
##  $ Intensity57 : int  0 0 0 0 0 0 0 0 0 0 ...
##  $ Intensity58 : int  0 0 0 0 0 0 0 0 1 0 ...
##  $ Intensity59 : int  0 0 0 0 0 0 0 1 1 1 ...
```

```
view(mintensitiesw) # not rendered in the rmd file but gives a tabular view of data.frame in rstudio.
```

msleep

```
msleep <- read.csv ("minuteSleep_merged.csv")

dim(msleep)
```

```
## [1] 188521      4
```

```
class(msleep)
```

```
## [1] "data.frame"
```

```
colnames(msleep)
```

```
## [1] "Id"    "date"  "value" "logId"
```

```
head(msleep)
```

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

```
## 1 1503960366 4/12/2016 2:47:30 AM     3 11380564589
## 2 1503960366 4/12/2016 2:48:30 AM     2 11380564589
## 3 1503960366 4/12/2016 2:49:30 AM     1 11380564589
## 4 1503960366 4/12/2016 2:50:30 AM     1 11380564589
## 5 1503960366 4/12/2016 2:51:30 AM     1 11380564589
## 6 1503960366 4/12/2016 2:52:30 AM     1 11380564589
```

```
tail(msleep)
```

```
##                Id                  date value       logId
## 188516 8792009665  5/4/2016 9:58:00 AM     1 11552534115
## 188517 8792009665  5/4/2016 9:59:00 AM     1 11552534115
## 188518 8792009665 5/4/2016 10:00:00 AM     1 11552534115
## 188519 8792009665 5/4/2016 10:01:00 AM     1 11552534115
## 188520 8792009665 5/4/2016 10:02:00 AM     1 11552534115
## 188521 8792009665 5/4/2016 10:03:00 AM     1 11552534115
```

```
glimpse(msleep)
```

```
## Rows: 188,521
## Columns: 4
## $ Id    <dbl> 1503960366, 1503960366, 1503960366, 1503960366, 1503960366, 1503~
## $ date  <chr> "4/12/2016 2:47:30 AM", "4/12/2016 2:48:30 AM", "4/12/2016 2:49:~
## $ value <int> 3, 2, 1, 1, 1, 1, 1, 2, 2, 2, 3, 3, 3, 3, 3, 2, 1, 1, 1, 1, 1, 1~
## $ logId <dbl> 11380564589, 11380564589, 11380564589, 11380564589, 11380564589,~
```

```
str(msleep)
```

```
## 'data.frame':    188521 obs. of  4 variables:
##  $ Id   : num  1.5e+09 1.5e+09 1.5e+09 1.5e+09 1.5e+09 ...
##  $ date : chr  "4/12/2016 2:47:30 AM" "4/12/2016 2:48:30 AM" "4/12/2016 2:49:30 AM" "4/12/2016 2:50:3
##  $ value: int  3 2 1 1 1 1 1 2 2 2 ...
##  $ logId: num  1.14e+10 1.14e+10 1.14e+10 1.14e+10 1.14e+10 ...
```

```
view(msleep) # not rendered in the rmd file but gives a tabular view of data.frame in rstudio.
```

mstepsn

```
mstepsn <- read.csv ("minuteStepsNarrow_merged.csv")

dim(mstepsn)
```

```
## [1] 1325580       3
```

```
class(mstepsn)
```

```
## [1] "data.frame"
```

```
colnames(mstepsn)
```

```
## [1] "Id"             "ActivityMinute" "Steps"
```

```
head(mstepsn)
```

```
##           Id        ActivityMinute Steps
## 1 1503960366 4/12/2016 12:00:00 AM     0
## 2 1503960366 4/12/2016 12:01:00 AM     0
## 3 1503960366 4/12/2016 12:02:00 AM     0
## 4 1503960366 4/12/2016 12:03:00 AM     0
## 5 1503960366 4/12/2016 12:04:00 AM     0
## 6 1503960366 4/12/2016 12:05:00 AM     0
```

```
tail(mstepsn)
```

```
##                 Id       ActivityMinute Steps
## 1325575 8877689391 5/12/2016 1:54:00 PM     0
## 1325576 8877689391 5/12/2016 1:55:00 PM     0
## 1325577 8877689391 5/12/2016 1:56:00 PM     0
## 1325578 8877689391 5/12/2016 1:57:00 PM     0
## 1325579 8877689391 5/12/2016 1:58:00 PM     0
## 1325580 8877689391 5/12/2016 1:59:00 PM     0
```

```
glimpse(mstepsn)
```

```
## Rows: 1,325,580
## Columns: 3
## $ Id             <dbl> 1503960366, 1503960366, 1503960366, 1503960366, 1503960~
## $ ActivityMinute <chr> "4/12/2016 12:00:00 AM", "4/12/2016 12:01:00 AM", "4/12~
## $ Steps          <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0~
```

```
str(mstepsn)
```

```
## 'data.frame':    1325580 obs. of  3 variables:
##  $ Id            : num  1.5e+09 1.5e+09 1.5e+09 1.5e+09 1.5e+09 ...
##  $ ActivityMinute: chr  "4/12/2016 12:00:00 AM" "4/12/2016 12:01:00 AM" "4/12/2016 12:02:00 AM" "4/1
##  $ Steps         : int  0 0 0 0 0 0 0 0 0 0 ...
```

```
view(mstepsn) # not rendered in the rmd file but gives a tabular view of data.frame in rstudio.
```

mstepsw

```
mstepsw <- read.csv ("minuteStepsWide_merged.csv")

dim(mstepsw)
```

```
## [1] 21645    62
```

```
class(mstepsw)
```

```
## [1] "data.frame"
```

```
colnames(mstepsw)
```

```
##  [1] "Id"           "ActivityHour" "Steps00"      "Steps01"      "Steps02"
##  [6] "Steps03"      "Steps04"      "Steps05"      "Steps06"      "Steps07"
## [11] "Steps08"      "Steps09"      "Steps10"      "Steps11"      "Steps12"
## [16] "Steps13"      "Steps14"      "Steps15"      "Steps16"      "Steps17"
## [21] "Steps18"      "Steps19"      "Steps20"      "Steps21"      "Steps22"
## [26] "Steps23"      "Steps24"      "Steps25"      "Steps26"      "Steps27"
## [31] "Steps28"      "Steps29"      "Steps30"      "Steps31"      "Steps32"
## [36] "Steps33"      "Steps34"      "Steps35"      "Steps36"      "Steps37"
## [41] "Steps38"      "Steps39"      "Steps40"      "Steps41"      "Steps42"
## [46] "Steps43"      "Steps44"      "Steps45"      "Steps46"      "Steps47"
## [51] "Steps48"      "Steps49"      "Steps50"      "Steps51"      "Steps52"
## [56] "Steps53"      "Steps54"      "Steps55"      "Steps56"      "Steps57"
## [61] "Steps58"      "Steps59"
```

```
head(mstepsw)
```

```
##           Id          ActivityHour Steps00 Steps01 Steps02 Steps03 Steps04
## 1 1503960366 4/13/2016 12:00:00 AM       4      16       0       0       0
## 2 1503960366  4/13/2016 1:00:00 AM       0       0       0       0       0
## 3 1503960366  4/13/2016 2:00:00 AM       0       0       0       0       0
## 4 1503960366  4/13/2016 3:00:00 AM       0       0       0       0       0
## 5 1503960366  4/13/2016 4:00:00 AM       0       0       0       0       0
## 6 1503960366  4/13/2016 5:00:00 AM       0       0       0       0       0
##   Steps05 Steps06 Steps07 Steps08 Steps09 Steps10 Steps11 Steps12 Steps13
## 1       9       0      17       0       0       0       0       0       0
## 2       0       0       0       0       0       0       0       0       0
## 3       0       0       0       0       0       0       0       0       0
## 4       0       0       0       0       0       0      10       0       0
## 5       0       0       0       0       0       0       0       0       0
## 6       0       0       0       0       0       0       0       0       0
##   Steps14 Steps15 Steps16 Steps17 Steps18 Steps19 Steps20 Steps21 Steps22
## 1       0       0       0       0       0       0       6       0       0
## 2       0       0       0       0       0       0       0       0       0
## 3       0       0       0       0       0       0       0       0       0
## 4       0       0       0       0       0       0       0       0       0
## 5       0       0       0       0       0       0       0       0       0
## 6       0       0       0       0       0       0       0       0       0
##   Steps23 Steps24 Steps25 Steps26 Steps27 Steps28 Steps29 Steps30 Steps31
## 1       0       0      11      21       0       8       0       0       0
## 2       0       0       0       0       0       0       0       0       0
## 3       0       0       0       0       0       0       0       0       0
## 4       0       0       0       0       0       0       0       0       0
## 5       0       0       0       0       0       0       0       0       0
## 6       0       0       0       0       0       0       0       0       0
##   Steps32 Steps33 Steps34 Steps35 Steps36 Steps37 Steps38 Steps39 Steps40
```

```
## 1       8       6       0       0       0       0       0       0       0
## 2       0       0       0       0       0       0       0       0       0
## 3       0       0       0       0       0       0       0       0       0
## 4       0       0      11       9       6       0       0       0       0
## 5       0       0       0       0       0       0       0       0       0
## 6       0       0       0       0       0       0       0       0       0
##   Steps41 Steps42 Steps43 Steps44 Steps45 Steps46 Steps47 Steps48 Steps49
## 1       0       0       0       0       0       0       0       0       0
## 2       0       0       0       0       0       0       0       0       0
## 3       0       0       0       0       0       0       0       0       0
## 4       0       0       0       0       0       0       0       0       0
## 5       0       0       0       0       0       0       0       0       0
## 6       0       0       0       0       0       0       0       0       0
##   Steps50 Steps51 Steps52 Steps53 Steps54 Steps55 Steps56 Steps57 Steps58
## 1       0       9       8       0      20       1       0       0       0
## 2       0       0       0       0       0       0       0       0       0
## 3       0       0       0       0       0       0       0       0       0
## 4       0       0       0       0       0       0       0       0       0
## 5       0       0       0       0       0       0       0       0       0
## 6       0       0       0       0       0       0       0       0       0
##   Steps59
## 1       0
## 2       0
## 3       0
## 4       0
## 5       0
## 6       0
```

```
tail(mstepsw)
```

```
##                Id         ActivityHour Steps00 Steps01 Steps02 Steps03 Steps04
## 21640 8877689391 5/13/2016 2:00:00 AM       0       0       0       0       0
## 21641 8877689391 5/13/2016 3:00:00 AM       0       0       0       0       0
## 21642 8877689391 5/13/2016 4:00:00 AM       0       0       0       0       0
## 21643 8877689391 5/13/2016 5:00:00 AM       0       0       0       0       0
## 21644 8877689391 5/13/2016 6:00:00 AM       0       0       0       0       0
## 21645 8877689391 5/13/2016 7:00:00 AM      35      21      44       0       6
##       Steps05 Steps06 Steps07 Steps08 Steps09 Steps10 Steps11 Steps12 Steps13
## 21640       0       0       0       0       0       0       0       0       0
## 21641       0       0       0       0       0       0       0       0       0
## 21642       0       0       0       0       0       0       0       0       0
## 21643       0       0       0       0       0       0       0       0       0
## 21644       0       0       0       0       0       0       0       0       0
## 21645       0       0       0       0       0       0       0       0       0
##       Steps14 Steps15 Steps16 Steps17 Steps18 Steps19 Steps20 Steps21 Steps22
## 21640       0       0       0       0       0       0       0       0       0
## 21641       0       0       0       0       0       0       0       0       0
## 21642       0       0       0       0       0       0       0       0       0
## 21643       0       0       0       0       0       0       0       0       0
## 21644       0       0       0       0       0       0       0       0       0
## 21645       6      78      43      44      70      22       0       0       0
##       Steps23 Steps24 Steps25 Steps26 Steps27 Steps28 Steps29 Steps30 Steps31
## 21640       0       0       0       0       0       0       0       0       0
## 21641       0       0       0       0       0       0       0       0       0
```

```
## 21642       0       0       0       0       0       0       0       0       0
## 21643       0       0       0       0       0       0       0       0       0
## 21644       0       0       0       0       0       0       0       0       0
## 21645       0       0       6       0       0       0       0       0       0
##       Steps32 Steps33 Steps34 Steps35 Steps36 Steps37 Steps38 Steps39 Steps40
## 21640       0       0       0       0       0       0       0       0       0
## 21641       0       0       0       0       0       0       0       0       0
## 21642       0       0       0       0       0       0       0       0       0
## 21643       0       0       0       0       0       0       0       0       0
## 21644       0       0       0       0       0       0       0       0       0
## 21645      11      78      51      59     113      45       0       8      50
##       Steps41 Steps42 Steps43 Steps44 Steps45 Steps46 Steps47 Steps48 Steps49
## 21640       0       0       0       0       0       0       0       0       0
## 21641       0       0       0       0       0       0       0       0       0
## 21642       0       0       0       0       0       0       0       0       0
## 21643       0       0       0       0       0       0       0       0       0
## 21644       0       0       0       0       0       0       0       0       0
## 21645      49      35      78       0       0       0       5       0       0
##       Steps50 Steps51 Steps52 Steps53 Steps54 Steps55 Steps56 Steps57 Steps58
## 21640       0       0       0       0       0       0       0       0       0
## 21641       0       0       0       0       0       0       0       0       0
## 21642       0       0       0       0       0       0       0       0       0
## 21643       0       0       0       0       0       0       0       0       0
## 21644      21      22      33      17      24       0       0      20      38
## 21645       0       0       0       0       0       0       0       0       0
##       Steps59
## 21640       0
## 21641       0
## 21642       0
## 21643       0
## 21644      16
## 21645       0
```

```
glimpse(mstepsw)
```

```
## Rows: 21,645
## Columns: 62
## $ Id           <dbl> 1503960366, 1503960366, 1503960366, 1503960366, 150396036~
## $ ActivityHour <chr> "4/13/2016 12:00:00 AM", "4/13/2016 1:00:00 AM", "4/13/20~
## $ Steps00      <int> 4, 0, 0, 0, 0, 0, 0, 0, 0, 0, 37, 0, 9, 0, 0, 0, 0, 0, 91~
## $ Steps01      <int> 16, 0, 0, 0, 0, 0, 0, 0, 0, 14, 11, 0, 0, 0, 0, 0, 0, 0, ~
## $ Steps02      <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 10, 30, 0, 0, 0, 64, 0, 0, 0, ~
## $ Steps03      <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 31, 51, 0, 0, 0, 22, 0, 0, 0, ~
## $ Steps04      <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 37, 0, 0, 24, 0, 0, 0, 0, 0, 0~
## $ Steps05      <int> 9, 0, 0, 0, 0, 0, 0, 0, 0, 17, 0, 0, 0, 0, 0, 0, 0, 0, 32~
## $ Steps06      <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 25, 0, 0, 0, 5, 0, 0, 30, 0, 0~
## $ Steps07      <int> 17, 0, 0, 0, 0, 0, 0, 0, 0, 12, 8, 0, 0, 0, 0, 0, 35, 0, ~
## $ Steps08      <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 6, 81, 0, 0, 4, 0, 0, 0, 0, 0,~
## $ Steps09      <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 30, 0, 0, 14, 0, 0, 0, 0, 0, 0~
## $ Steps10      <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 7, 0, 0, 0, 0, 0, 0, 0, 0, 81,~
## $ Steps11      <int> 0, 0, 0, 10, 0, 0, 0, 0, 6, 109, 0, 0, 0, 0, 14, 0, 0, 0,~
## $ Steps12      <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 140, 0, 29, 9, 0, 31, 0, 23, 0~
## $ Steps13      <int> 0, 0, 0, 0, 0, 0, 0, 0, 19, 145, 0, 0, 0, 0, 39, 0, 51, 0~
## $ Steps14      <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 152, 0, 15, 0, 0, 51, 0, 0, 0,~
```

```
## $ Steps15      <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 117, 0, 62, 6, 0, 0, 0, 0, 0, ~
## $ Steps16      <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 20, 0, 31, 0, 8, 24, 0, 0, 0, ~
## $ Steps17      <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 17, 0, 58, 65, 43, 0, 0,~
## $ Steps18      <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 110, 15, 92, 0, 0,~
## $ Steps19      <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 97, 51, 80, 0, 0, ~
## $ Steps20      <int> 6, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 127, 10, 0, 0, ~
## $ Steps21      <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 7, 27, 0, 5, 126, 9, 0, 0, ~
## $ Steps22      <int> 0, 0, 0, 0, 0, 0, 0, 0, 32, 0, 0, 17, 0, 4, 126, 0, 0, 0,~
## $ Steps23      <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 45, 0, 0, 109, 0, 0, 0, ~
## $ Steps24      <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 10, 29, 0, 0, 112, 0, 0, 0,~
## $ Steps25      <int> 11, 0, 0, 0, 0, 0, 0, 26, 0, 0, 9, 13, 65, 0, 93, 0, 0, 0~
## $ Steps26      <int> 21, 0, 0, 0, 0, 0, 0, 11, 0, 0, 6, 0, 0, 4, 121, 0, 0, 0,~
## $ Steps27      <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 12, 0, 0, 123, 0, 0, 0, ~
## $ Steps28      <int> 8, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 120, 0, 0, 0, 0~
## $ Steps29      <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 70, 0, 0, 0, 0,~
## $ Steps30      <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 54, 0, 66, 0, 0~
## $ Steps31      <int> 0, 0, 0, 0, 0, 0, 0, 9, 0, 0, 0, 0, 0, 0, 20, 0, 66, 0, 0~
## $ Steps32      <int> 8, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 46, 0, 0, 0, 0, 0, 0,~
## $ Steps33      <int> 6, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 101, 0, 0, 0, 0, 0, 0~
## $ Steps34      <int> 0, 0, 0, 11, 0, 0, 0, 0, 0, 0, 0, 0, 82, 0, 0, 0, 0, 0, 0~
## $ Steps35      <int> 0, 0, 0, 9, 0, 0, 0, 0, 0, 0, 4, 0, 83, 0, 0, 0, 0, 4, 0,~
## $ Steps36      <int> 0, 0, 0, 6, 0, 0, 0, 0, 45, 21, 0, 8, 8, 0, 0, 0, 0, 0, 0~
## $ Steps37      <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 39, 0, 0, 0, 0, 0, 0, 0, 0, 0,~
## $ Steps38      <int> 0, 0, 0, 0, 0, 0, 0, 0, 7, 84, 0, 65, 0, 0, 0, 0, 0, 0, 0~
## $ Steps39      <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 117, 0, 65, 0, 0, 0, 0, 0, 0, ~
## $ Steps40      <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 22, 8, 0, 0, 0, 0, 0, 0, 0, 0,~
## $ Steps41      <int> 0, 0, 0, 0, 0, 0, 0, 28, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 27~
## $ Steps42      <int> 0, 0, 0, 0, 0, 0, 0, 7, 31, 0, 0, 0, 0, 0, 0, 0, 0, 0, 12~
## $ Steps43      <int> 0, 0, 0, 0, 0, 0, 0, 0, 20, 0, 0, 0, 0, 0, 0, 0, 0, 0, 12~
## $ Steps44      <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 16, 0, 0, 0, 0, 0, 0, 0, 11~
## $ Steps45      <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 122, 0, 0, 0, 0, 0, 0, 4, 0, 4~
## $ Steps46      <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 125, 0, 0, 0, 0, 0, 64, 0, 0, ~
## $ Steps47      <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 91, 0, 0, 0, 0, 0, 29, 7, 35, ~
## $ Steps48      <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 73, 16, 0, 7, 0, 0, 23, 7, 31,~
## $ Steps49      <int> 0, 0, 0, 0, 0, 0, 0, 0, 19, 0, 0, 0, 0, 0, 0, 12, 0, 8, 6~
## $ Steps50      <int> 0, 0, 0, 0, 0, 0, 0, 16, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 11~
## $ Steps51      <int> 9, 0, 0, 0, 0, 0, 0, 13, 21, 8, 0, 0, 0, 0, 0, 12, 10, 39~
## $ Steps52      <int> 8, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 27, 0, 13, 1~
## $ Steps53      <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 9, 0, 0, 35, 0, 63, 1~
## $ Steps54      <int> 20, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 57, 0, 36, ~
## $ Steps55      <int> 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 84, 0, 7, 0, 0, 0, 81, 4~
## $ Steps56      <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 31, 0, 0, 5, 0, 0, 0, 0, 0, 47, 2~
## $ Steps57      <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 11, 0, 0, 0, 0, 115, ~
## $ Steps58      <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 42, 0, 0, 0, 0, 0, 0, 0, 0, 105, ~
## $ Steps59      <int> 0, 0, 0, 0, 0, 0, 0, 16, 2, 105, 0, 0, 12, 0, 0, 0, 0, 11~
```

```
str(mstepsw)
```

```
## 'data.frame':    21645 obs. of  62 variables:
##  $ Id          : num  1.5e+09 1.5e+09 1.5e+09 1.5e+09 1.5e+09 ...
##  $ ActivityHour: chr  "4/13/2016 12:00:00 AM" "4/13/2016 1:00:00 AM" "4/13/2016 2:00:00 AM" "4/13/20
##  $ Steps00     : int  4 0 0 0 0 0 0 0 0 0 ...
##  $ Steps01     : int  16 0 0 0 0 0 0 0 0 14 ...
##  $ Steps02     : int  0 0 0 0 0 0 0 0 0 10 ...
```

```
##  $ Steps03     : int  0 0 0 0 0 0 0 0 0 31 ...
##  $ Steps04     : int  0 0 0 0 0 0 0 0 0 37 ...
##  $ Steps05     : int  9 0 0 0 0 0 0 0 0 17 ...
##  $ Steps06     : int  0 0 0 0 0 0 0 0 0 25 ...
##  $ Steps07     : int  17 0 0 0 0 0 0 0 0 12 ...
##  $ Steps08     : int  0 0 0 0 0 0 0 0 0 6 ...
##  $ Steps09     : int  0 0 0 0 0 0 0 0 0 30 ...
##  $ Steps10     : int  0 0 0 0 0 0 0 0 0 7 ...
##  $ Steps11     : int  0 0 0 10 0 0 0 0 6 109 ...
##  $ Steps12     : int  0 0 0 0 0 0 0 0 0 140 ...
##  $ Steps13     : int  0 0 0 0 0 0 0 0 19 145 ...
##  $ Steps14     : int  0 0 0 0 0 0 0 0 0 152 ...
##  $ Steps15     : int  0 0 0 0 0 0 0 0 0 117 ...
##  $ Steps16     : int  0 0 0 0 0 0 0 0 0 20 ...
##  $ Steps17     : int  0 0 0 0 0 0 0 0 0 0 ...
##  $ Steps18     : int  0 0 0 0 0 0 0 0 0 0 ...
##  $ Steps19     : int  0 0 0 0 0 0 0 0 0 0 ...
##  $ Steps20     : int  6 0 0 0 0 0 0 0 0 0 ...
##  $ Steps21     : int  0 0 0 0 0 0 0 0 0 0 ...
##  $ Steps22     : int  0 0 0 0 0 0 0 0 32 0 ...
##  $ Steps23     : int  0 0 0 0 0 0 0 0 0 0 ...
##  $ Steps24     : int  0 0 0 0 0 0 0 0 0 0 ...
##  $ Steps25     : int  11 0 0 0 0 0 0 26 0 0 ...
##  $ Steps26     : int  21 0 0 0 0 0 0 11 0 0 ...
##  $ Steps27     : int  0 0 0 0 0 0 0 0 0 0 ...
##  $ Steps28     : int  8 0 0 0 0 0 0 0 0 0 ...
##  $ Steps29     : int  0 0 0 0 0 0 0 0 0 0 ...
##  $ Steps30     : int  0 0 0 0 0 0 0 0 0 0 ...
##  $ Steps31     : int  0 0 0 0 0 0 0 9 0 0 ...
##  $ Steps32     : int  8 0 0 0 0 0 0 0 0 0 ...
##  $ Steps33     : int  6 0 0 0 0 0 0 0 0 0 ...
##  $ Steps34     : int  0 0 0 11 0 0 0 0 0 0 ...
##  $ Steps35     : int  0 0 0 9 0 0 0 0 0 0 ...
##  $ Steps36     : int  0 0 0 6 0 0 0 0 45 21 ...
##  $ Steps37     : int  0 0 0 0 0 0 0 0 0 39 ...
##  $ Steps38     : int  0 0 0 0 0 0 0 0 7 84 ...
##  $ Steps39     : int  0 0 0 0 0 0 0 0 0 117 ...
##  $ Steps40     : int  0 0 0 0 0 0 0 0 0 22 ...
##  $ Steps41     : int  0 0 0 0 0 0 0 28 0 0 ...
##  $ Steps42     : int  0 0 0 0 0 0 0 7 31 0 ...
##  $ Steps43     : int  0 0 0 0 0 0 0 0 20 0 ...
##  $ Steps44     : int  0 0 0 0 0 0 0 0 0 0 ...
##  $ Steps45     : int  0 0 0 0 0 0 0 0 0 122 ...
##  $ Steps46     : int  0 0 0 0 0 0 0 0 0 125 ...
##  $ Steps47     : int  0 0 0 0 0 0 0 0 0 91 ...
##  $ Steps48     : int  0 0 0 0 0 0 0 0 0 73 ...
##  $ Steps49     : int  0 0 0 0 0 0 0 0 19 0 ...
##  $ Steps50     : int  0 0 0 0 0 0 0 16 0 0 ...
##  $ Steps51     : int  9 0 0 0 0 0 0 13 21 8 ...
##  $ Steps52     : int  8 0 0 0 0 0 0 0 0 0 ...
##  $ Steps53     : int  0 0 0 0 0 0 0 0 0 0 ...
##  $ Steps54     : int  20 0 0 0 0 0 0 0 0 0 ...
##  $ Steps55     : int  1 0 0 0 0 0 0 0 0 0 ...
##  $ Steps56     : int  0 0 0 0 0 0 0 0 31 0 ...
```

```
##  $ Steps57     : int  0 0 0 0 0 0 0 0 0 0 ...
##  $ Steps58     : int  0 0 0 0 0 0 0 0 42 0 ...
##  $ Steps59     : int  0 0 0 0 0 0 0 16 2 105 ...
```

```
view(mstepsw) # not rendered in the rmd file but gives a tabular view of data.frame in rstudio.
```

mmetsn

```
mmetsn <- read.csv ("minuteMETsNarrow_merged.csv")

dim(mmetsn)
```

```
## [1] 1325580       3
```

```
class(mmetsn)
```

```
## [1] "data.frame"
```

```
colnames(mmetsn)
```

```
## [1] "Id"             "ActivityMinute" "METs"
```

```
head(mmetsn)
```

```
##           Id        ActivityMinute METs
## 1 1503960366 4/12/2016 12:00:00 AM   10
## 2 1503960366 4/12/2016 12:01:00 AM   10
## 3 1503960366 4/12/2016 12:02:00 AM   10
## 4 1503960366 4/12/2016 12:03:00 AM   10
## 5 1503960366 4/12/2016 12:04:00 AM   10
## 6 1503960366 4/12/2016 12:05:00 AM   12
```

```
tail(mmetsn)
```

```
##                  Id       ActivityMinute METs
## 1325575 8877689391 5/12/2016 1:54:00 PM   11
## 1325576 8877689391 5/12/2016 1:55:00 PM   11
## 1325577 8877689391 5/12/2016 1:56:00 PM   11
## 1325578 8877689391 5/12/2016 1:57:00 PM   11
## 1325579 8877689391 5/12/2016 1:58:00 PM   11
## 1325580 8877689391 5/12/2016 1:59:00 PM   11
```

```
glimpse(mmetsn)
```

```
## Rows: 1,325,580
## Columns: 3
## $ Id             <dbl> 1503960366, 1503960366, 1503960366, 1503960366, 1503960~
## $ ActivityMinute <chr> "4/12/2016 12:00:00 AM", "4/12/2016 12:01:00 AM", "4/12~
## $ METs           <int> 10, 10, 10, 10, 10, 12, 12, 12, 12, 12, 12, 12, 10, 10,~
```

```
str(mmetsn)
```

```
## 'data.frame':    1325580 obs. of  3 variables:
##  $ Id            : num  1.5e+09 1.5e+09 1.5e+09 1.5e+09 1.5e+09 ...
##  $ ActivityMinute: chr  "4/12/2016 12:00:00 AM" "4/12/2016 12:01:00 AM" "4/12/2016 12:02:00 AM" "4/1
##  $ METs          : int  10 10 10 10 10 12 12 12 12 12 ...
```

```
view(mmetsn) # not rendered in the rmd file but gives a tabular view of data.frame in rstudio.
```

secheartrate

```
secheartrate <- read.csv ("heartrate_seconds_merged.csv")

dim(secheartrate)
```

```
## [1] 2483658       3
```

```
class(secheartrate)
```

```
## [1] "data.frame"
```

```
colnames(secheartrate)
```

```
## [1] "Id"    "Time"  "Value"
```

```
head(secheartrate)
```

```
##           Id                 Time Value
## 1 2022484408 4/12/2016 7:21:00 AM    97
## 2 2022484408 4/12/2016 7:21:05 AM   102
## 3 2022484408 4/12/2016 7:21:10 AM   105
## 4 2022484408 4/12/2016 7:21:20 AM   103
## 5 2022484408 4/12/2016 7:21:25 AM   101
## 6 2022484408 4/12/2016 7:22:05 AM    95
```

```
tail(secheartrate)
```

```
##                 Id                 Time Value
## 2483653 8877689391 5/12/2016 2:43:38 PM    58
## 2483654 8877689391 5/12/2016 2:43:53 PM    57
## 2483655 8877689391 5/12/2016 2:43:58 PM    56
## 2483656 8877689391 5/12/2016 2:44:03 PM    55
## 2483657 8877689391 5/12/2016 2:44:18 PM    55
## 2483658 8877689391 5/12/2016 2:44:28 PM    56
```

```
glimpse(secheartrate)
```

```
## Rows: 2,483,658
## Columns: 3
## $ Id    <dbl> 2022484408, 2022484408, 2022484408, 2022484408, 2022484408, 2022~
## $ Time  <chr> "4/12/2016 7:21:00 AM", "4/12/2016 7:21:05 AM", "4/12/2016 7:21:~
## $ Value <int> 97, 102, 105, 103, 101, 95, 91, 93, 94, 93, 92, 89, 83, 61, 60, ~
```

```
str(secheartrate)
```

```
## 'data.frame':    2483658 obs. of  3 variables:
##  $ Id   : num  2.02e+09 2.02e+09 2.02e+09 2.02e+09 2.02e+09 ...
##  $ Time : chr  "4/12/2016 7:21:00 AM" "4/12/2016 7:21:05 AM" "4/12/2016 7:21:10 AM" "4/12/2016 7:21:1
##  $ Value: int  97 102 105 103 101 95 91 93 94 93 ...
```

```
view(secheartrate) # not rendered in the rmd file but gives a tabular view of data.frame in rstudio.
```

sleepday

```
sleepday <- read.csv ("sleepDay_merged.csv")

dim(sleepday)
```

```
## [1] 413   5
```

```
class(sleepday)
```

```
## [1] "data.frame"
```

```
colnames(sleepday)
```

```
## [1] "Id"                 "SleepDay"           "TotalSleepRecords"
## [4] "TotalMinutesAsleep" "TotalTimeInBed"
```

```
head(sleepday)
```

```
##           Id              SleepDay TotalSleepRecords TotalMinutesAsleep
## 1 1503960366 4/12/2016 12:00:00 AM                 1                327
## 2 1503960366 4/13/2016 12:00:00 AM                 2                384
## 3 1503960366 4/15/2016 12:00:00 AM                 1                412
## 4 1503960366 4/16/2016 12:00:00 AM                 2                340
## 5 1503960366 4/17/2016 12:00:00 AM                 1                700
## 6 1503960366 4/19/2016 12:00:00 AM                 1                304
##   TotalTimeInBed
## 1            346
## 2            407
## 3            442
## 4            367
## 5            712
## 6            320
```

```
tail(sleepday)
```

```
##             Id              SleepDay TotalSleepRecords TotalMinutesAsleep
## 408 8792009665 4/29/2016 12:00:00 AM                 1                398
## 409 8792009665 4/30/2016 12:00:00 AM                 1                343
## 410 8792009665  5/1/2016 12:00:00 AM                 1                503
## 411 8792009665  5/2/2016 12:00:00 AM                 1                415
## 412 8792009665  5/3/2016 12:00:00 AM                 1                516
## 413 8792009665  5/4/2016 12:00:00 AM                 1                439
##     TotalTimeInBed
## 408            406
## 409            360
## 410            527
## 411            423
## 412            545
## 413            463
```

```
glimpse(sleepday)
```

```
## Rows: 413
## Columns: 5
## $ Id                 <dbl> 1503960366, 1503960366, 1503960366, 1503960366, 150~
## $ SleepDay           <chr> "4/12/2016 12:00:00 AM", "4/13/2016 12:00:00 AM", "~
## $ TotalSleepRecords  <int> 1, 2, 1, 2, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, ~
## $ TotalMinutesAsleep <int> 327, 384, 412, 340, 700, 304, 360, 325, 361, 430, 2~
## $ TotalTimeInBed     <int> 346, 407, 442, 367, 712, 320, 377, 364, 384, 449, 3~
```

```
str(sleepday)
```

```
## 'data.frame':    413 obs. of  5 variables:
##  $ Id                : num  1.5e+09 1.5e+09 1.5e+09 1.5e+09 1.5e+09 ...
##  $ SleepDay          : chr  "4/12/2016 12:00:00 AM" "4/13/2016 12:00:00 AM" "4/15/2016 12:00:00 AM" "
##  $ TotalSleepRecords : int  1 2 1 2 1 1 1 1 1 1 ...
##  $ TotalMinutesAsleep: int  327 384 412 340 700 304 360 325 361 430 ...
##  $ TotalTimeInBed    : int  346 407 442 367 712 320 377 364 384 449 ...
```

```
view(sleepday) # not rendered in the rmd file but gives a tabular view of data.frame in rstudio.
```

weightinfo

```
weightinfo <- read.csv ("weightLogInfo_merged.csv")

dim(weightinfo)
```

```
## [1] 67  8
```

```
class(weightinfo)
```

```
## [1] "data.frame"
```

```
colnames(weightinfo)
```

```
## [1] "Id"             "Date"           "WeightKg"       "WeightPounds"
## [5] "Fat"            "BMI"            "IsManualReport" "LogId"
```

```
head(weightinfo)
```

```
##           Id                  Date WeightKg WeightPounds Fat   BMI
## 1 1503960366  5/2/2016 11:59:59 PM     52.6     115.9631  22 22.65
## 2 1503960366  5/3/2016 11:59:59 PM     52.6     115.9631  NA 22.65
## 3 1927972279  4/13/2016 1:08:52 AM    133.5     294.3171  NA 47.54
## 4 2873212765 4/21/2016 11:59:59 PM     56.7     125.0021  NA 21.45
## 5 2873212765 5/12/2016 11:59:59 PM     57.3     126.3249  NA 21.69
## 6 4319703577 4/17/2016 11:59:59 PM     72.4     159.6147  25 27.45
##   IsManualReport        LogId
## 1           True 1.462234e+12
## 2           True 1.462320e+12
## 3          False 1.460510e+12
## 4           True 1.461283e+12
## 5           True 1.463098e+12
## 6           True 1.460938e+12
```

```
tail(weightinfo)
```

```
##            Id                  Date WeightKg WeightPounds Fat   BMI
## 62 8877689391  5/4/2016 6:48:22 AM     84.4     186.0702  NA 25.26
## 63 8877689391  5/6/2016 6:43:35 AM     85.0     187.3929  NA 25.44
## 64 8877689391  5/8/2016 7:35:53 AM     85.4     188.2748  NA 25.56
## 65 8877689391  5/9/2016 6:39:44 AM     85.5     188.4952  NA 25.61
## 66 8877689391 5/11/2016 6:51:47 AM     85.4     188.2748  NA 25.56
## 67 8877689391 5/12/2016 6:42:53 AM     84.0     185.1883  NA 25.14
##    IsManualReport        LogId
## 62          False 1.462345e+12
## 63          False 1.462517e+12
## 64          False 1.462693e+12
## 65          False 1.462776e+12
## 66          False 1.462950e+12
## 67          False 1.463035e+12
```

```
glimpse(weightinfo)
```

```
## Rows: 67
## Columns: 8
## $ Id             <dbl> 1503960366, 1503960366, 1927972279, 2873212765, 2873212~
## $ Date           <chr> "5/2/2016 11:59:59 PM", "5/3/2016 11:59:59 PM", "4/13/2~
## $ WeightKg       <dbl> 52.6, 52.6, 133.5, 56.7, 57.3, 72.4, 72.3, 69.7, 70.3, ~
## $ WeightPounds   <dbl> 115.9631, 115.9631, 294.3171, 125.0021, 126.3249, 159.6~
## $ Fat            <int> 22, NA, NA, NA, NA, 25, NA, NA, NA, NA, NA, NA, NA, NA,~
## $ BMI            <dbl> 22.65, 22.65, 47.54, 21.45, 21.69, 27.45, 27.38, 27.25,~
## $ IsManualReport <chr> "True", "True", "False", "True", "True", "True", "True"~
## $ LogId          <dbl> 1.462234e+12, 1.462320e+12, 1.460510e+12, 1.461283e+12,~
```

```
str(weightinfo)
```

```
## 'data.frame':    67 obs. of  8 variables:
##  $ Id            : num  1.50e+09 1.50e+09 1.93e+09 2.87e+09 2.87e+09 ...
##  $ Date          : chr  "5/2/2016 11:59:59 PM" "5/3/2016 11:59:59 PM" "4/13/2016 1:08:52 AM" "4/21/20
##  $ WeightKg      : num  52.6 52.6 133.5 56.7 57.3 ...
##  $ WeightPounds  : num  116 116 294 125 126 ...
##  $ Fat           : int  22 NA NA NA NA 25 NA NA NA NA ...
##  $ BMI           : num  22.6 22.6 47.5 21.5 21.7 ...
##  $ IsManualReport: chr  "True" "True" "False" "True" ...
##  $ LogId         : num  1.46e+12 1.46e+12 1.46e+12 1.46e+12 1.46e+12 ...
```

```
view(weightinfo) # not rendered in the rmd file but gives a tabular view of data.frame in rstudio.
```

Data Validation

```
dailyactivity %>%
distinct(Id) # Check for the unique number of participants by Id
```

checking for duplicates in the dailyactivity data.frame

```
##            Id
## 1  1503960366
## 2  1624580081
## 3  1644430081
## 4  1844505072
## 5  1927972279
## 6  2022484408
## 7  2026352035
## 8  2320127002
## 9  2347167796
## 10 2873212765
## 11 3372868164
## 12 3977333714
## 13 4020332650
## 14 4057192912
## 15 4319703577
## 16 4388161847
## 17 4445114986
## 18 4558609924
## 19 4702921684
## 20 5553957443
## 21 5577150313
## 22 6117666160
## 23 6290855005
## 24 6775888955
## 25 6962181067
## 26 7007744171
## 27 7086361926
```

```
## 28 8053475328
## 29 8253242879
## 30 8378563200
## 31 8583815059
## 32 8792009665
## 33 8877689391
```

```
duplicated(dailyactivity) # check all data points for any duplicates.
```

Inference: There are 33 unique participants in the dailyactivity dataset. Meaning an additional three to the original thirty.

```
##   [1] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
##  [13] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
##  [25] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
##  [37] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
##  [49] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
##  [61] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
##  [73] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
##  [85] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
##  [97] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [109] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [121] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [133] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [145] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [157] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [169] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [181] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [193] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [205] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [217] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [229] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [241] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [253] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [265] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [277] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [289] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [301] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [313] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [325] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [337] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [349] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [361] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [373] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [385] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [397] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [409] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [421] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [433] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [445] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [457] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
```

```
## [469] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [481] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [493] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [505] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [517] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [529] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [541] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [553] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [565] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [577] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [589] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [601] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [613] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [625] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [637] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [649] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [661] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [673] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [685] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [697] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [709] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [721] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [733] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [745] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [757] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [769] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [781] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [793] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [805] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [817] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [829] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [841] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [853] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [865] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [877] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [889] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [901] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [913] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [925] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [937] FALSE FALSE FALSE FALSE
```

```
sum(duplicated(dailyactivity)) # check and sum the number of duplicates
```

```
## [1] 0
```

```
dailyactivity[ duplicated(dailyactivity), ]
```

```
##  [1] Id                       ActivityDate             TotalSteps
##  [4] TotalDistance            TrackerDistance          LoggedActivitiesDistance
##  [7] VeryActiveDistance       ModeratelyActiveDistance LightActiveDistance
## [10] SedentaryActiveDistance  VeryActiveMinutes        FairlyActiveMinutes
## [13] LightlyActiveMinutes     SedentaryMinutes         Calories
## <0 rows> (or 0-length row.names)
```

```
dailyactivity[ , duplicated(dailyactivity) ]
```

```
## data frame with 0 columns and 940 rows
```

```
dailyactivity[ !duplicated(dailyactivity), ]
```

```
##             Id ActivityDate TotalSteps TotalDistance TrackerDistance
## 1   1503960366    4/12/2016      13162          8.50             8.50
## 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
## 7   1503960366    4/18/2016      13019          8.59             8.59
## 8   1503960366    4/19/2016      15506          9.88             9.88
## 9   1503960366    4/20/2016      10544          6.68             6.68
## 10  1503960366    4/21/2016       9819          6.34             6.34
## 11  1503960366    4/22/2016      12764          8.13             8.13
## 12  1503960366    4/23/2016      14371          9.04             9.04
## 13  1503960366    4/24/2016      10039          6.41             6.41
## 14  1503960366    4/25/2016      15355          9.80             9.80
## 15  1503960366    4/26/2016      13755          8.79             8.79
## 16  1503960366    4/27/2016      18134         12.21            12.21
## 17  1503960366    4/28/2016      13154          8.53             8.53
## 18  1503960366    4/29/2016      11181          7.15             7.15
## 19  1503960366    4/30/2016      14673          9.25             9.25
## 20  1503960366     5/1/2016      10602          6.81             6.81
## 21  1503960366     5/2/2016      14727          9.71             9.71
## 22  1503960366     5/3/2016      15103          9.66             9.66
## 23  1503960366     5/4/2016      11100          7.15             7.15
## 24  1503960366     5/5/2016      14070          8.90             8.90
## 25  1503960366     5/6/2016      12159          8.03             8.03
## 26  1503960366     5/7/2016      11992          7.71             7.71
## 27  1503960366     5/8/2016      10060          6.58             6.58
## 28  1503960366     5/9/2016      12022          7.72             7.72
## 29  1503960366    5/10/2016      12207          7.77             7.77
## 30  1503960366    5/11/2016      12770          8.13             8.13
## 31  1503960366    5/12/2016          0          0.00             0.00
## 32  1624580081    4/12/2016       8163          5.31             5.31
## 33  1624580081    4/13/2016       7007          4.55             4.55
## 34  1624580081    4/14/2016       9107          5.92             5.92
## 35  1624580081    4/15/2016       1510          0.98             0.98
## 36  1624580081    4/16/2016       5370          3.49             3.49
## 37  1624580081    4/17/2016       6175          4.06             4.06
## 38  1624580081    4/18/2016      10536          7.41             7.41
## 39  1624580081    4/19/2016       2916          1.90             1.90
## 40  1624580081    4/20/2016       4974          3.23             3.23
## 41  1624580081    4/21/2016       6349          4.13             4.13
## 42  1624580081    4/22/2016       4026          2.62             2.62
## 43  1624580081    4/23/2016       8538          5.55             5.55
## 44  1624580081    4/24/2016       6076          3.95             3.95
## 45  1624580081    4/25/2016       6497          4.22             4.22
```

```
## 46  1624580081    4/26/2016       2826          1.84          1.84
## 47  1624580081    4/27/2016       8367          5.44          5.44
## 48  1624580081    4/28/2016       2759          1.79          1.79
## 49  1624580081    4/29/2016       2390          1.55          1.55
## 50  1624580081    4/30/2016       6474          4.30          4.30
## 51  1624580081     5/1/2016      36019         28.03         28.03
## 52  1624580081     5/2/2016       7155          4.93          4.93
## 53  1624580081     5/3/2016       2100          1.37          1.37
## 54  1624580081     5/4/2016       2193          1.43          1.43
## 55  1624580081     5/5/2016       2470          1.61          1.61
## 56  1624580081     5/6/2016       1727          1.12          1.12
## 57  1624580081     5/7/2016       2104          1.37          1.37
## 58  1624580081     5/8/2016       3427          2.23          2.23
## 59  1624580081     5/9/2016       1732          1.13          1.13
## 60  1624580081    5/10/2016       2969          1.93          1.93
## 61  1624580081    5/11/2016       3134          2.04          2.04
## 62  1624580081    5/12/2016       2971          1.93          1.93
## 63  1644430081    4/12/2016      10694          7.77          7.77
## 64  1644430081    4/13/2016       8001          5.82          5.82
## 65  1644430081    4/14/2016      11037          8.02          8.02
## 66  1644430081    4/15/2016       5263          3.83          3.83
## 67  1644430081    4/16/2016      15300         11.12         11.12
## 68  1644430081    4/17/2016       8757          6.37          6.37
## 69  1644430081    4/18/2016       7132          5.19          5.19
## 70  1644430081    4/19/2016      11256          8.18          8.18
## 71  1644430081    4/20/2016       2436          1.77          1.77
## 72  1644430081    4/21/2016       1223          0.89          0.89
## 73  1644430081    4/22/2016       3673          2.67          2.67
## 74  1644430081    4/23/2016       6637          4.83          4.83
## 75  1644430081    4/24/2016       3321          2.41          2.41
## 76  1644430081    4/25/2016       3580          2.60          2.60
## 77  1644430081    4/26/2016       9919          7.21          7.21
## 78  1644430081    4/27/2016       3032          2.20          2.20
## 79  1644430081    4/28/2016       9405          6.84          6.84
## 80  1644430081    4/29/2016       3176          2.31          2.31
## 81  1644430081    4/30/2016      18213         13.24         13.24
## 82  1644430081     5/1/2016       6132          4.46          4.46
## 83  1644430081     5/2/2016       3758          2.73          2.73
## 84  1644430081     5/3/2016      12850          9.34          9.34
## 85  1644430081     5/4/2016       2309          1.68          1.68
## 86  1644430081     5/5/2016       4363          3.19          3.19
## 87  1644430081     5/6/2016       9787          7.12          7.12
## 88  1644430081     5/7/2016      13372          9.72          9.72
## 89  1644430081     5/8/2016       6724          4.89          4.89
## 90  1644430081     5/9/2016       6643          4.83          4.83
## 91  1644430081    5/10/2016       9167          6.66          6.66
## 92  1644430081    5/11/2016       1329          0.97          0.97
## 93  1844505072    4/12/2016       6697          4.43          4.43
## 94  1844505072    4/13/2016       4929          3.26          3.26
## 95  1844505072    4/14/2016       7937          5.25          5.25
## 96  1844505072    4/15/2016       3844          2.54          2.54
## 97  1844505072    4/16/2016       3414          2.26          2.26
## 98  1844505072    4/17/2016       4525          2.99          2.99
## 99  1844505072    4/18/2016       4597          3.04          3.04
```

```
## 100 1844505072    4/19/2016        197          0.13          0.13
## 101 1844505072    4/20/2016          8          0.01          0.01
## 102 1844505072    4/21/2016       8054          5.32          5.32
## 103 1844505072    4/22/2016       5372          3.55          3.55
## 104 1844505072    4/23/2016       3570          2.36          2.36
## 105 1844505072    4/24/2016          0          0.00          0.00
## 106 1844505072    4/25/2016          0          0.00          0.00
## 107 1844505072    4/26/2016          0          0.00          0.00
## 108 1844505072    4/27/2016          4          0.00          0.00
## 109 1844505072    4/28/2016       6907          4.57          4.57
## 110 1844505072    4/29/2016       4920          3.25          3.25
## 111 1844505072    4/30/2016       4014          2.67          2.67
## 112 1844505072     5/1/2016       2573          1.70          1.70
## 113 1844505072     5/2/2016          0          0.00          0.00
## 114 1844505072     5/3/2016       4059          2.68          2.68
## 115 1844505072     5/4/2016       2080          1.37          1.37
## 116 1844505072     5/5/2016       2237          1.48          1.48
## 117 1844505072     5/6/2016         44          0.03          0.03
## 118 1844505072     5/7/2016          0          0.00          0.00
## 119 1844505072     5/8/2016          0          0.00          0.00
## 120 1844505072     5/9/2016          0          0.00          0.00
## 121 1844505072    5/10/2016          0          0.00          0.00
## 122 1844505072    5/11/2016          0          0.00          0.00
## 123 1844505072    5/12/2016          0          0.00          0.00
## 124 1927972279    4/12/2016        678          0.47          0.47
## 125 1927972279    4/13/2016        356          0.25          0.25
## 126 1927972279    4/14/2016       2163          1.50          1.50
## 127 1927972279    4/15/2016        980          0.68          0.68
## 128 1927972279    4/16/2016          0          0.00          0.00
## 129 1927972279    4/17/2016          0          0.00          0.00
## 130 1927972279    4/18/2016        244          0.17          0.17
## 131 1927972279    4/19/2016          0          0.00          0.00
## 132 1927972279    4/20/2016          0          0.00          0.00
## 133 1927972279    4/21/2016          0          0.00          0.00
## 134 1927972279    4/22/2016        149          0.10          0.10
## 135 1927972279    4/23/2016       2945          2.04          2.04
## 136 1927972279    4/24/2016       2090          1.45          1.45
## 137 1927972279    4/25/2016        152          0.11          0.11
## 138 1927972279    4/26/2016       3761          2.60          2.60
## 139 1927972279    4/27/2016          0          0.00          0.00
## 140 1927972279    4/28/2016       1675          1.16          1.16
## 141 1927972279    4/29/2016          0          0.00          0.00
## 142 1927972279    4/30/2016          0          0.00          0.00
## 143 1927972279     5/1/2016       2704          1.87          1.87
## 144 1927972279     5/2/2016       3790          2.62          2.62
## 145 1927972279     5/3/2016       1326          0.92          0.92
## 146 1927972279     5/4/2016       1786          1.24          1.24
## 147 1927972279     5/5/2016          0          0.00          0.00
## 148 1927972279     5/6/2016       2091          1.45          1.45
## 149 1927972279     5/7/2016       1510          1.04          1.04
## 150 1927972279     5/8/2016          0          0.00          0.00
## 151 1927972279     5/9/2016          0          0.00          0.00
## 152 1927972279    5/10/2016          0          0.00          0.00
## 153 1927972279    5/11/2016          0          0.00          0.00
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## 154 1927972279    5/12/2016          0          0.00           0.00
## 155 2022484408    4/12/2016      11875          8.34           8.34
## 156 2022484408    4/13/2016      12024          8.50           8.50
## 157 2022484408    4/14/2016      10690          7.50           7.50
## 158 2022484408    4/15/2016      11034          8.03           8.03
## 159 2022484408    4/16/2016      10100          7.09           7.09
## 160 2022484408    4/17/2016      15112         11.40          11.40
## 161 2022484408    4/18/2016      14131         10.07          10.07
## 162 2022484408    4/19/2016      11548          8.53           8.53
## 163 2022484408    4/20/2016      15112         10.67          10.67
## 164 2022484408    4/21/2016      12453          8.74           8.74
## 165 2022484408    4/22/2016      12954          9.33           9.33
## 166 2022484408    4/23/2016       6001          4.21           4.21
## 167 2022484408    4/24/2016      13481         10.28          10.28
## 168 2022484408    4/25/2016      11369          8.01           8.01
## 169 2022484408    4/26/2016      10119          7.19           7.19
## 170 2022484408    4/27/2016      10159          7.13           7.13
## 171 2022484408    4/28/2016      10140          7.12           7.12
## 172 2022484408    4/29/2016      10245          7.19           7.19
## 173 2022484408    4/30/2016      18387         12.91          12.91
## 174 2022484408     5/1/2016      10538          7.40           7.40
## 175 2022484408     5/2/2016      10379          7.29           7.29
## 176 2022484408     5/3/2016      12183          8.74           8.74
## 177 2022484408     5/4/2016      11768          8.29           8.29
## 178 2022484408     5/5/2016      11895          8.35           8.35
## 179 2022484408     5/6/2016      10227          7.18           7.18
## 180 2022484408     5/7/2016       6708          4.71           4.71
## 181 2022484408     5/8/2016       3292          2.31           2.31
## 182 2022484408     5/9/2016      13379          9.39           9.39
## 183 2022484408    5/10/2016      12798          8.98           8.98
## 184 2022484408    5/11/2016      13272          9.32           9.32
## 185 2022484408    5/12/2016       9117          6.41           6.41
## 186 2026352035    4/12/2016       4414          2.74           2.74
## 187 2026352035    4/13/2016       4993          3.10           3.10
## 188 2026352035    4/14/2016       3335          2.07           2.07
## 189 2026352035    4/15/2016       3821          2.37           2.37
## 190 2026352035    4/16/2016       2547          1.58           1.58
## 191 2026352035    4/17/2016        838          0.52           0.52
## 192 2026352035    4/18/2016       3325          2.06           2.06
## 193 2026352035    4/19/2016       2424          1.50           1.50
## 194 2026352035    4/20/2016       7222          4.48           4.48
## 195 2026352035    4/21/2016       2467          1.53           1.53
## 196 2026352035    4/22/2016       2915          1.81           1.81
## 197 2026352035    4/23/2016      12357          7.71           7.71
## 198 2026352035    4/24/2016       3490          2.16           2.16
## 199 2026352035    4/25/2016       6017          3.73           3.73
## 200 2026352035    4/26/2016       5933          3.68           3.68
## 201 2026352035    4/27/2016       6088          3.77           3.77
## 202 2026352035    4/28/2016       6375          3.95           3.95
## 203 2026352035    4/29/2016       7604          4.71           4.71
## 204 2026352035    4/30/2016       4729          2.93           2.93
## 205 2026352035     5/1/2016       3609          2.28           2.28
## 206 2026352035     5/2/2016       7018          4.35           4.35
## 207 2026352035     5/3/2016       5992          3.72           3.72
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## 208 2026352035     5/4/2016       6564          4.07          4.07
## 209 2026352035     5/5/2016      12167          7.54          7.54
## 210 2026352035     5/6/2016       8198          5.08          5.08
## 211 2026352035     5/7/2016       4193          2.60          2.60
## 212 2026352035     5/8/2016       5528          3.45          3.45
## 213 2026352035     5/9/2016      10685          6.62          6.62
## 214 2026352035    5/10/2016        254          0.16          0.16
## 215 2026352035    5/11/2016       8580          5.32          5.32
## 216 2026352035    5/12/2016       8891          5.51          5.51
## 217 2320127002    4/12/2016      10725          7.49          7.49
## 218 2320127002    4/13/2016       7275          4.90          4.90
## 219 2320127002    4/14/2016       3973          2.68          2.68
## 220 2320127002    4/15/2016       5205          3.51          3.51
## 221 2320127002    4/16/2016       5057          3.41          3.41
## 222 2320127002    4/17/2016       6198          4.18          4.18
## 223 2320127002    4/18/2016       6559          4.42          4.42
## 224 2320127002    4/19/2016       5997          4.04          4.04
## 225 2320127002    4/20/2016       7192          4.85          4.85
## 226 2320127002    4/21/2016       3404          2.29          2.29
## 227 2320127002    4/22/2016       5583          3.76          3.76
## 228 2320127002    4/23/2016       5079          3.42          3.42
## 229 2320127002    4/24/2016       4165          2.81          2.81
## 230 2320127002    4/25/2016       3588          2.42          2.42
## 231 2320127002    4/26/2016       3409          2.30          2.30
## 232 2320127002    4/27/2016       1715          1.16          1.16
## 233 2320127002    4/28/2016       1532          1.03          1.03
## 234 2320127002    4/29/2016        924          0.62          0.62
## 235 2320127002    4/30/2016       4571          3.08          3.08
## 236 2320127002     5/1/2016        772          0.52          0.52
## 237 2320127002     5/2/2016       3634          2.45          2.45
## 238 2320127002     5/3/2016       7443          5.02          5.02
## 239 2320127002     5/4/2016       1201          0.81          0.81
## 240 2320127002     5/5/2016       5202          3.51          3.51
## 241 2320127002     5/6/2016       4878          3.29          3.29
## 242 2320127002     5/7/2016       7379          4.97          4.97
## 243 2320127002     5/8/2016       5161          3.48          3.48
## 244 2320127002     5/9/2016       3090          2.08          2.08
## 245 2320127002    5/10/2016       6227          4.20          4.20
## 246 2320127002    5/11/2016       6424          4.33          4.33
## 247 2320127002    5/12/2016       2661          1.79          1.79
## 248 2347167796    4/12/2016      10113          6.83          6.83
## 249 2347167796    4/13/2016      10352          7.01          7.01
## 250 2347167796    4/14/2016      10129          6.70          6.70
## 251 2347167796    4/15/2016      10465          6.92          6.92
## 252 2347167796    4/16/2016      22244         15.08         15.08
## 253 2347167796    4/17/2016       5472          3.62          3.62
## 254 2347167796    4/18/2016       8247          5.45          5.45
## 255 2347167796    4/19/2016       6711          4.44          4.44
## 256 2347167796    4/20/2016      10999          7.27          7.27
## 257 2347167796    4/21/2016      10080          6.75          6.75
## 258 2347167796    4/22/2016       7804          5.16          5.16
## 259 2347167796    4/23/2016      16901         11.37         11.37
## 260 2347167796    4/24/2016       9471          6.26          6.26
## 261 2347167796    4/25/2016       9482          6.38          6.38
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## 262 2347167796    4/26/2016       5980          3.95          3.95
## 263 2347167796    4/27/2016      11423          7.58          7.58
## 264 2347167796    4/28/2016       5439          3.60          3.60
## 265 2347167796    4/29/2016         42          0.03          0.03
## 266 2873212765    4/12/2016       8796          5.91          5.91
## 267 2873212765    4/13/2016       7618          5.12          5.12
## 268 2873212765    4/14/2016       7910          5.32          5.32
## 269 2873212765    4/15/2016       8482          5.70          5.70
## 270 2873212765    4/16/2016       9685          6.65          6.65
## 271 2873212765    4/17/2016       2524          1.70          1.70
## 272 2873212765    4/18/2016       7762          5.24          5.24
## 273 2873212765    4/19/2016       7948          5.37          5.37
## 274 2873212765    4/20/2016       9202          6.30          6.30
## 275 2873212765    4/21/2016       8859          5.98          5.98
## 276 2873212765    4/22/2016       7286          4.90          4.90
## 277 2873212765    4/23/2016       9317          6.35          6.35
## 278 2873212765    4/24/2016       6873          4.68          4.68
## 279 2873212765    4/25/2016       7373          4.95          4.95
## 280 2873212765    4/26/2016       8242          5.54          5.54
## 281 2873212765    4/27/2016       3516          2.36          2.36
## 282 2873212765    4/28/2016       7913          5.41          5.41
## 283 2873212765    4/29/2016       7365          4.95          4.95
## 284 2873212765    4/30/2016       8452          5.68          5.68
## 285 2873212765     5/1/2016       7399          4.97          4.97
## 286 2873212765     5/2/2016       7525          5.06          5.06
## 287 2873212765     5/3/2016       7412          4.98          4.98
## 288 2873212765     5/4/2016       8278          5.56          5.56
## 289 2873212765     5/5/2016       8314          5.61          5.61
## 290 2873212765     5/6/2016       7063          4.75          4.75
## 291 2873212765     5/7/2016       4940          3.38          3.38
## 292 2873212765     5/8/2016       8168          5.54          5.54
## 293 2873212765     5/9/2016       7726          5.19          5.19
## 294 2873212765    5/10/2016       8275          5.56          5.56
## 295 2873212765    5/11/2016       6440          4.33          4.33
## 296 2873212765    5/12/2016       7566          5.11          5.11
## 297 3372868164    4/12/2016       4747          3.24          3.24
## 298 3372868164    4/13/2016       9715          6.63          6.63
## 299 3372868164    4/14/2016       8844          6.03          6.03
## 300 3372868164    4/15/2016       7451          5.08          5.08
## 301 3372868164    4/16/2016       6905          4.73          4.73
## 302 3372868164    4/17/2016       8199          5.88          5.88
## 303 3372868164    4/18/2016       6798          4.64          4.64
## 304 3372868164    4/19/2016       7711          5.26          5.26
## 305 3372868164    4/20/2016       4880          3.33          3.33
## 306 3372868164    4/21/2016       8857          6.07          6.07
## 307 3372868164    4/22/2016       3843          2.62          2.62
## 308 3372868164    4/23/2016       7396          5.07          5.07
## 309 3372868164    4/24/2016       6731          4.59          4.59
## 310 3372868164    4/25/2016       5995          4.09          4.09
## 311 3372868164    4/26/2016       8283          5.79          5.79
## 312 3372868164    4/27/2016       7904          5.42          5.42
## 313 3372868164    4/28/2016       5512          3.76          3.76
## 314 3372868164    4/29/2016       9135          6.23          6.23
## 315 3372868164    4/30/2016       5250          3.58          3.58
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## 316 3372868164     5/1/2016       3077          2.10          2.10
## 317 3977333714    4/12/2016       8856          5.98          5.98
## 318 3977333714    4/13/2016      10035          6.71          6.71
## 319 3977333714    4/14/2016       7641          5.11          5.11
## 320 3977333714    4/15/2016       9010          6.06          6.06
## 321 3977333714    4/16/2016      13459          9.00          9.00
## 322 3977333714    4/17/2016      10415          6.97          6.97
## 323 3977333714    4/18/2016      11663          7.80          7.80
## 324 3977333714    4/19/2016      12414          8.78          8.78
## 325 3977333714    4/20/2016      11658          7.83          7.83
## 326 3977333714    4/21/2016       6093          4.08          4.08
## 327 3977333714    4/22/2016       8911          5.96          5.96
## 328 3977333714    4/23/2016      12058          8.07          8.07
## 329 3977333714    4/24/2016      14112         10.00         10.00
## 330 3977333714    4/25/2016      11177          8.48          8.48
## 331 3977333714    4/26/2016      11388          7.62          7.62
## 332 3977333714    4/27/2016       7193          5.04          5.04
## 333 3977333714    4/28/2016       7114          4.88          4.88
## 334 3977333714    4/29/2016      10645          7.75          7.75
## 335 3977333714    4/30/2016      13238          9.20          9.20
## 336 3977333714     5/1/2016      10414          7.07          7.07
## 337 3977333714     5/2/2016      16520         11.05         11.05
## 338 3977333714     5/3/2016      14335          9.59          9.59
## 339 3977333714     5/4/2016      13559          9.44          9.44
## 340 3977333714     5/5/2016      12312          8.58          8.58
## 341 3977333714     5/6/2016      11677          8.28          8.28
## 342 3977333714     5/7/2016      11550          7.73          7.73
## 343 3977333714     5/8/2016      13585          9.09          9.09
## 344 3977333714     5/9/2016      14687         10.08         10.08
## 345 3977333714    5/10/2016      13072          8.78          8.78
## 346 3977333714    5/11/2016        746          0.50          0.50
## 347 4020332650    4/12/2016       8539          6.12          6.12
## 348 4020332650    4/13/2016          0          0.00          0.00
## 349 4020332650    4/14/2016        108          0.08          0.08
## 350 4020332650    4/15/2016       1882          1.35          1.35
## 351 4020332650    4/16/2016       1982          1.42          1.42
## 352 4020332650    4/17/2016         16          0.01          0.01
## 353 4020332650    4/18/2016         62          0.04          0.04
## 354 4020332650    4/19/2016          0          0.00          0.00
## 355 4020332650    4/20/2016          0          0.00          0.00
## 356 4020332650    4/21/2016          0          0.00          0.00
## 357 4020332650    4/22/2016          0          0.00          0.00
## 358 4020332650    4/23/2016          0          0.00          0.00
## 359 4020332650    4/24/2016          0          0.00          0.00
## 360 4020332650    4/25/2016          0          0.00          0.00
## 361 4020332650    4/26/2016          0          0.00          0.00
## 362 4020332650    4/27/2016          0          0.00          0.00
## 363 4020332650    4/28/2016          0          0.00          0.00
## 364 4020332650    4/29/2016          0          0.00          0.00
## 365 4020332650    4/30/2016          0          0.00          0.00
## 366 4020332650     5/1/2016          0          0.00          0.00
## 367 4020332650     5/2/2016        475          0.34          0.34
## 368 4020332650     5/3/2016       4496          3.22          3.22
## 369 4020332650     5/4/2016      10252          7.35          7.35
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## 370 4020332650     5/5/2016      11728          8.43          8.43
## 371 4020332650     5/6/2016       4369          3.13          3.13
## 372 4020332650     5/7/2016       6132          4.40          4.40
## 373 4020332650     5/8/2016       5862          4.20          4.20
## 374 4020332650     5/9/2016       4556          3.27          3.27
## 375 4020332650    5/10/2016       5546          3.98          3.98
## 376 4020332650    5/11/2016       3689          2.65          2.65
## 377 4020332650    5/12/2016        590          0.42          0.42
## 378 4057192912    4/12/2016       5394          4.03          4.03
## 379 4057192912    4/13/2016       5974          4.47          4.47
## 380 4057192912    4/14/2016          0          0.00          0.00
## 381 4057192912    4/15/2016       3984          2.95          2.95
## 382 4319703577    4/12/2016       7753          5.20          5.20
## 383 4319703577    4/13/2016       8204          5.50          5.50
## 384 4319703577    4/14/2016      10210          6.88          6.88
## 385 4319703577    4/15/2016       5664          3.80          3.80
## 386 4319703577    4/16/2016       4744          3.18          3.18
## 387 4319703577    4/17/2016         29          0.02          0.02
## 388 4319703577    4/18/2016       2276          1.55          1.55
## 389 4319703577    4/19/2016       8925          5.99          5.99
## 390 4319703577    4/20/2016       8954          6.01          6.01
## 391 4319703577    4/21/2016       3702          2.48          2.48
## 392 4319703577    4/22/2016       4500          3.02          3.02
## 393 4319703577    4/23/2016       4935          3.31          3.31
## 394 4319703577    4/24/2016       4081          2.74          2.74
## 395 4319703577    4/25/2016       9259          6.21          6.21
## 396 4319703577    4/26/2016       9899          6.64          6.64
## 397 4319703577    4/27/2016      10780          7.23          7.23
## 398 4319703577    4/28/2016      10817          7.28          7.28
## 399 4319703577    4/29/2016       7990          5.36          5.36
## 400 4319703577    4/30/2016       8221          5.52          5.52
## 401 4319703577     5/1/2016       1251          0.84          0.84
## 402 4319703577     5/2/2016       9261          6.24          6.24
## 403 4319703577     5/3/2016       9648          6.47          6.47
## 404 4319703577     5/4/2016      10429          7.02          7.02
## 405 4319703577     5/5/2016      13658          9.49          9.49
## 406 4319703577     5/6/2016       9524          6.42          6.42
## 407 4319703577     5/7/2016       7937          5.33          5.33
## 408 4319703577     5/8/2016       3672          2.46          2.46
## 409 4319703577     5/9/2016      10378          6.96          6.96
## 410 4319703577    5/10/2016       9487          6.37          6.37
## 411 4319703577    5/11/2016       9129          6.13          6.13
## 412 4319703577    5/12/2016         17          0.01          0.01
## 413 4388161847    4/12/2016      10122          7.78          7.78
## 414 4388161847    4/13/2016      10993          8.45          8.45
## 415 4388161847    4/14/2016       8863          6.82          6.82
## 416 4388161847    4/15/2016       8758          6.73          6.73
## 417 4388161847    4/16/2016       6580          5.06          5.06
## 418 4388161847    4/17/2016       4660          3.58          3.58
## 419 4388161847    4/18/2016      11009          9.10          9.10
## 420 4388161847    4/19/2016      10181          7.83          7.83
## 421 4388161847    4/20/2016      10553          8.12          8.12
## 422 4388161847    4/21/2016      10055          7.73          7.73
## 423 4388161847    4/22/2016      12139          9.34          9.34
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## 424 4388161847    4/23/2016      13236         10.18          10.18
## 425 4388161847    4/24/2016      10243          7.88           7.88
## 426 4388161847    4/25/2016      12961          9.97           9.97
## 427 4388161847    4/26/2016       9461          7.28           7.28
## 428 4388161847    4/27/2016      11193          8.61           8.61
## 429 4388161847    4/28/2016      10074          7.75           7.75
## 430 4388161847    4/29/2016       9232          7.10           7.10
## 431 4388161847    4/30/2016      12533          9.64           9.64
## 432 4388161847     5/1/2016      10255          7.89           7.89
## 433 4388161847     5/2/2016      10096          8.40           8.40
## 434 4388161847     5/3/2016      12727          9.79           9.79
## 435 4388161847     5/4/2016      12375          9.52           9.52
## 436 4388161847     5/5/2016       9603          7.38           7.38
## 437 4388161847     5/6/2016      13175         10.13          10.13
## 438 4388161847     5/7/2016      22770         17.54          17.54
## 439 4388161847     5/8/2016      17298         14.38          14.38
## 440 4388161847     5/9/2016      10218          7.86           7.86
## 441 4388161847    5/10/2016      10299          7.92           7.92
## 442 4388161847    5/11/2016      10201          7.84           7.84
## 443 4388161847    5/12/2016       3369          2.59           2.59
## 444 4445114986    4/12/2016       3276          2.20           2.20
## 445 4445114986    4/13/2016       2961          1.99           1.99
## 446 4445114986    4/14/2016       3974          2.67           2.67
## 447 4445114986    4/15/2016       7198          4.83           4.83
## 448 4445114986    4/16/2016       3945          2.65           2.65
## 449 4445114986    4/17/2016       2268          1.52           1.52
## 450 4445114986    4/18/2016       6155          4.24           4.24
## 451 4445114986    4/19/2016       2064          1.39           1.39
## 452 4445114986    4/20/2016       2072          1.39           1.39
## 453 4445114986    4/21/2016       3809          2.56           2.56
## 454 4445114986    4/22/2016       6831          4.58           4.58
## 455 4445114986    4/23/2016       4363          2.93           2.93
## 456 4445114986    4/24/2016       5002          3.36           3.36
## 457 4445114986    4/25/2016       3385          2.27           2.27
## 458 4445114986    4/26/2016       6326          4.41           4.41
## 459 4445114986    4/27/2016       7243          5.03           5.03
## 460 4445114986    4/28/2016       4493          3.01           3.01
## 461 4445114986    4/29/2016       4676          3.14           3.14
## 462 4445114986    4/30/2016       6222          4.18           4.18
## 463 4445114986     5/1/2016       5232          3.51           3.51
## 464 4445114986     5/2/2016       6910          4.75           4.75
## 465 4445114986     5/3/2016       7502          5.18           5.18
## 466 4445114986     5/4/2016       2923          1.96           1.96
## 467 4445114986     5/5/2016       3800          2.55           2.55
## 468 4445114986     5/6/2016       4514          3.03           3.03
## 469 4445114986     5/7/2016       5183          3.59           3.59
## 470 4445114986     5/8/2016       7303          4.90           4.90
## 471 4445114986     5/9/2016       5275          3.54           3.54
## 472 4445114986    5/10/2016       3915          2.63           2.63
## 473 4445114986    5/11/2016       9105          6.11           6.11
## 474 4445114986    5/12/2016        768          0.52           0.52
## 475 4558609924    4/12/2016       5135          3.39           3.39
## 476 4558609924    4/13/2016       4978          3.29           3.29
## 477 4558609924    4/14/2016       6799          4.49           4.49
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## 478 4558609924    4/15/2016       7795          5.15          5.15
## 479 4558609924    4/16/2016       7289          4.82          4.82
## 480 4558609924    4/17/2016       9634          6.40          6.40
## 481 4558609924    4/18/2016       8940          5.91          5.91
## 482 4558609924    4/19/2016       5401          3.57          3.57
## 483 4558609924    4/20/2016       4803          3.17          3.17
## 484 4558609924    4/21/2016      13743          9.08          9.08
## 485 4558609924    4/22/2016       9601          6.35          6.35
## 486 4558609924    4/23/2016       6890          4.55          4.55
## 487 4558609924    4/24/2016       8563          5.66          5.66
## 488 4558609924    4/25/2016       8095          5.35          5.35
## 489 4558609924    4/26/2016       9148          6.05          6.05
## 490 4558609924    4/27/2016       9557          6.32          6.32
## 491 4558609924    4/28/2016       9451          6.25          6.25
## 492 4558609924    4/29/2016       7833          5.18          5.18
## 493 4558609924    4/30/2016      10319          6.82          6.82
## 494 4558609924     5/1/2016       3428          2.27          2.27
## 495 4558609924     5/2/2016       7891          5.22          5.22
## 496 4558609924     5/3/2016       5267          3.48          3.48
## 497 4558609924     5/4/2016       5232          3.46          3.46
## 498 4558609924     5/5/2016      10611          7.01          7.01
## 499 4558609924     5/6/2016       3755          2.48          2.48
## 500 4558609924     5/7/2016       8237          5.44          5.44
## 501 4558609924     5/8/2016       6543          4.33          4.33
## 502 4558609924     5/9/2016      11451          7.57          7.57
## 503 4558609924    5/10/2016       6435          4.25          4.25
## 504 4558609924    5/11/2016       9108          6.02          6.02
## 505 4558609924    5/12/2016       6307          4.17          4.17
## 506 4702921684    4/12/2016       7213          5.88          5.88
## 507 4702921684    4/13/2016       6877          5.58          5.58
## 508 4702921684    4/14/2016       7860          6.37          6.37
## 509 4702921684    4/15/2016       6506          5.28          5.28
## 510 4702921684    4/16/2016      11140          9.03          9.03
## 511 4702921684    4/17/2016      12692         10.29         10.29
## 512 4702921684    4/18/2016       9105          7.38          7.38
## 513 4702921684    4/19/2016       6708          5.44          5.44
## 514 4702921684    4/20/2016       8793          7.13          7.13
## 515 4702921684    4/21/2016       6530          5.30          5.30
## 516 4702921684    4/22/2016       1664          1.35          1.35
## 517 4702921684    4/23/2016      15126         12.27         12.27
## 518 4702921684    4/24/2016      15050         12.22         12.22
## 519 4702921684    4/25/2016       9167          7.43          7.43
## 520 4702921684    4/26/2016       6108          4.95          4.95
## 521 4702921684    4/27/2016       7047          5.72          5.72
## 522 4702921684    4/28/2016       9023          7.32          7.32
## 523 4702921684    4/29/2016       9930          8.05          8.05
## 524 4702921684    4/30/2016      10144          8.23          8.23
## 525 4702921684     5/1/2016          0          0.00          0.00
## 526 4702921684     5/2/2016       7245          5.92          5.92
## 527 4702921684     5/3/2016       9454          7.67          7.67
## 528 4702921684     5/4/2016       8161          6.62          6.62
## 529 4702921684     5/5/2016       8614          6.99          6.99
## 530 4702921684     5/6/2016       6943          5.63          5.63
## 531 4702921684     5/7/2016      14370         11.65         11.65
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## 532 4702921684     5/8/2016      12857         10.43          10.43
## 533 4702921684     5/9/2016       8232          6.68           6.68
## 534 4702921684    5/10/2016      10613          8.61           8.61
## 535 4702921684    5/11/2016       9810          7.96           7.96
## 536 4702921684    5/12/2016       2752          2.23           2.23
## 537 5553957443    4/12/2016      11596          7.57           7.57
## 538 5553957443    4/13/2016       4832          3.16           3.16
## 539 5553957443    4/14/2016      17022         11.12          11.12
## 540 5553957443    4/15/2016      16556         10.86          10.86
## 541 5553957443    4/16/2016       5771          3.77           3.77
## 542 5553957443    4/17/2016        655          0.43           0.43
## 543 5553957443    4/18/2016       3727          2.43           2.43
## 544 5553957443    4/19/2016      15482         10.11          10.11
## 545 5553957443    4/20/2016       2713          1.77           1.77
## 546 5553957443    4/21/2016      12346          8.06           8.06
## 547 5553957443    4/22/2016      11682          7.63           7.63
## 548 5553957443    4/23/2016       4112          2.69           2.69
## 549 5553957443    4/24/2016       1807          1.18           1.18
## 550 5553957443    4/25/2016      10946          7.19           7.19
## 551 5553957443    4/26/2016      11886          7.76           7.76
## 552 5553957443    4/27/2016      10538          6.88           6.88
## 553 5553957443    4/28/2016      11393          7.63           7.63
## 554 5553957443    4/29/2016      12764          8.33           8.33
## 555 5553957443    4/30/2016       1202          0.78           0.78
## 556 5553957443     5/1/2016       5164          3.37           3.37
## 557 5553957443     5/2/2016       9769          6.38           6.38
## 558 5553957443     5/3/2016      12848          8.39           8.39
## 559 5553957443     5/4/2016       4249          2.77           2.77
## 560 5553957443     5/5/2016      14331          9.51           9.51
## 561 5553957443     5/6/2016       9632          6.29           6.29
## 562 5553957443     5/7/2016       1868          1.22           1.22
## 563 5553957443     5/8/2016       6083          4.00           4.00
## 564 5553957443     5/9/2016      11611          7.58           7.58
## 565 5553957443    5/10/2016      16358         10.71          10.71
## 566 5553957443    5/11/2016       4926          3.22           3.22
## 567 5553957443    5/12/2016       3121          2.04           2.04
## 568 5577150313    4/12/2016       8135          6.08           6.08
## 569 5577150313    4/13/2016       5077          3.79           3.79
## 570 5577150313    4/14/2016       8596          6.42           6.42
## 571 5577150313    4/15/2016      12087          9.08           9.08
## 572 5577150313    4/16/2016      14269         10.66          10.66
## 573 5577150313    4/17/2016      12231          9.14           9.14
## 574 5577150313    4/18/2016       9893          7.39           7.39
## 575 5577150313    4/19/2016      12574          9.42           9.42
## 576 5577150313    4/20/2016       8330          6.22           6.22
## 577 5577150313    4/21/2016      10830          8.09           8.09
## 578 5577150313    4/22/2016       9172          6.85           6.85
## 579 5577150313    4/23/2016       7638          5.71           5.71
## 580 5577150313    4/24/2016      15764         11.78          11.78
## 581 5577150313    4/25/2016       6393          4.78           4.78
## 582 5577150313    4/26/2016       5325          3.98           3.98
## 583 5577150313    4/27/2016       6805          5.14           5.14
## 584 5577150313    4/28/2016       9841          7.43           7.43
## 585 5577150313    4/29/2016       7924          5.92           5.92
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## 586 5577150313    4/30/2016      12363          9.24          9.24
## 587 5577150313     5/1/2016      13368          9.99          9.99
## 588 5577150313     5/2/2016       7439          5.56          5.56
## 589 5577150313     5/3/2016      11045          8.25          8.25
## 590 5577150313     5/4/2016       5206          3.89          3.89
## 591 5577150313     5/5/2016       7550          5.64          5.64
## 592 5577150313     5/6/2016       4950          3.70          3.70
## 593 5577150313     5/7/2016          0          0.00          0.00
## 594 5577150313     5/8/2016          0          0.00          0.00
## 595 5577150313     5/9/2016       3421          2.56          2.56
## 596 5577150313    5/10/2016       8869          6.65          6.65
## 597 5577150313    5/11/2016       4038          3.04          3.04
## 598 6117666160    4/12/2016          0          0.00          0.00
## 599 6117666160    4/13/2016          0          0.00          0.00
## 600 6117666160    4/14/2016          0          0.00          0.00
## 601 6117666160    4/15/2016      14019         10.59         10.59
## 602 6117666160    4/16/2016      14450         10.91         10.91
## 603 6117666160    4/17/2016       7150          5.40          5.40
## 604 6117666160    4/18/2016       5153          3.91          3.91
## 605 6117666160    4/19/2016      11135          8.41          8.41
## 606 6117666160    4/20/2016      10449          8.02          8.02
## 607 6117666160    4/21/2016      19542         15.01         15.01
## 608 6117666160    4/22/2016       8206          6.20          6.20
## 609 6117666160    4/23/2016      11495          8.68          8.68
## 610 6117666160    4/24/2016       7623          5.76          5.76
## 611 6117666160    4/25/2016          0          0.00          0.00
## 612 6117666160    4/26/2016       9543          7.21          7.21
## 613 6117666160    4/27/2016       9411          7.11          7.11
## 614 6117666160    4/28/2016       3403          2.60          2.60
## 615 6117666160    4/29/2016       9592          7.24          7.24
## 616 6117666160    4/30/2016       6987          5.28          5.28
## 617 6117666160     5/1/2016       8915          6.73          6.73
## 618 6117666160     5/2/2016       4933          3.73          3.73
## 619 6117666160     5/3/2016          0          0.00          0.00
## 620 6117666160     5/4/2016       2997          2.26          2.26
## 621 6117666160     5/5/2016       9799          7.40          7.40
## 622 6117666160     5/6/2016       3365          2.68          2.68
## 623 6117666160     5/7/2016       7336          5.54          5.54
## 624 6117666160     5/8/2016       7328          5.53          5.53
## 625 6117666160     5/9/2016       4477          3.38          3.38
## 626 6290855005    4/12/2016       4562          3.45          3.45
## 627 6290855005    4/13/2016       7142          5.40          5.40
## 628 6290855005    4/14/2016       7671          5.80          5.80
## 629 6290855005    4/15/2016       9501          7.18          7.18
## 630 6290855005    4/16/2016       8301          6.28          6.28
## 631 6290855005    4/17/2016       7851          5.94          5.94
## 632 6290855005    4/18/2016       6885          5.21          5.21
## 633 6290855005    4/19/2016       7142          5.40          5.40
## 634 6290855005    4/20/2016       6361          4.81          4.81
## 635 6290855005    4/21/2016          0          0.00          0.00
## 636 6290855005    4/22/2016       6238          4.72          4.72
## 637 6290855005    4/23/2016          0          0.00          0.00
## 638 6290855005    4/24/2016       5896          4.46          4.46
## 639 6290855005    4/25/2016       7802          5.90          5.90
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## 640 6290855005    4/26/2016         0         0.00          0.00
## 641 6290855005    4/27/2016      5565         4.21          4.21
## 642 6290855005    4/28/2016      5731         4.33          4.33
## 643 6290855005    4/29/2016         0         0.00          0.00
## 644 6290855005    4/30/2016      6744         5.10          5.10
## 645 6290855005     5/1/2016      9837         7.44          7.44
## 646 6290855005     5/2/2016      6781         5.13          5.13
## 647 6290855005     5/3/2016      6047         4.57          4.57
## 648 6290855005     5/4/2016      5832         4.41          4.41
## 649 6290855005     5/5/2016      6339         4.79          4.79
## 650 6290855005     5/6/2016      6116         4.62          4.62
## 651 6290855005     5/7/2016      5510         4.17          4.17
## 652 6290855005     5/8/2016      7706         5.83          5.83
## 653 6290855005     5/9/2016      6277         4.75          4.75
## 654 6290855005    5/10/2016         0         0.00          0.00
## 655 6775888955    4/12/2016         0         0.00          0.00
## 656 6775888955    4/13/2016      4053         2.91          2.91
## 657 6775888955    4/14/2016      5162         3.70          3.70
## 658 6775888955    4/15/2016      1282         0.92          0.92
## 659 6775888955    4/16/2016      4732         3.39          3.39
## 660 6775888955    4/17/2016      2497         1.79          1.79
## 661 6775888955    4/18/2016      8294         5.95          5.95
## 662 6775888955    4/19/2016         0         0.00          0.00
## 663 6775888955    4/20/2016     10771         7.72          7.72
## 664 6775888955    4/21/2016         0         0.00          0.00
## 665 6775888955    4/22/2016       637         0.46          0.46
## 666 6775888955    4/23/2016         0         0.00          0.00
## 667 6775888955    4/24/2016      2153         1.54          1.54
## 668 6775888955    4/25/2016      6474         4.64          4.64
## 669 6775888955    4/26/2016      7091         5.27          5.27
## 670 6775888955    4/27/2016         0         0.00          0.00
## 671 6775888955    4/28/2016       703         0.50          0.50
## 672 6775888955    4/29/2016         0         0.00          0.00
## 673 6775888955    4/30/2016      2503         1.79          1.79
## 674 6775888955     5/1/2016      2487         1.78          1.78
## 675 6775888955     5/2/2016         0         0.00          0.00
## 676 6775888955     5/3/2016         9         0.01          0.01
## 677 6775888955     5/4/2016         0         0.00          0.00
## 678 6775888955     5/5/2016         0         0.00          0.00
## 679 6775888955     5/6/2016      4697         3.37          3.37
## 680 6775888955     5/7/2016      1967         1.41          1.41
## 681 6962181067    4/12/2016     10199         6.74          6.74
## 682 6962181067    4/13/2016      5652         3.74          3.74
## 683 6962181067    4/14/2016      1551         1.03          1.03
## 684 6962181067    4/15/2016      5563         3.68          3.68
## 685 6962181067    4/16/2016     13217         8.74          8.74
## 686 6962181067    4/17/2016     10145         6.71          6.71
## 687 6962181067    4/18/2016     11404         7.54          7.54
## 688 6962181067    4/19/2016     10742         7.10          7.10
## 689 6962181067    4/20/2016     13928         9.55          9.55
## 690 6962181067    4/21/2016     11835         9.71          7.88
## 691 6962181067    4/22/2016     10725         7.09          7.09
## 692 6962181067    4/23/2016     20031        13.24         13.24
## 693 6962181067    4/24/2016      5029         3.32          3.32
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## 694 6962181067    4/25/2016      13239          9.27          9.08
## 695 6962181067    4/26/2016      10433          6.90          6.90
## 696 6962181067    4/27/2016      10320          6.82          6.82
## 697 6962181067    4/28/2016      12627          8.35          8.35
## 698 6962181067    4/29/2016      10762          7.11          7.11
## 699 6962181067    4/30/2016      10081          6.66          6.66
## 700 6962181067     5/1/2016       5454          3.61          3.61
## 701 6962181067     5/2/2016      12912          8.54          8.54
## 702 6962181067     5/3/2016      12109          8.12          8.12
## 703 6962181067     5/4/2016      10147          6.71          6.71
## 704 6962181067     5/5/2016      10524          6.96          6.96
## 705 6962181067     5/6/2016       5908          3.91          3.91
## 706 6962181067     5/7/2016       6815          4.50          4.50
## 707 6962181067     5/8/2016       4188          2.77          2.77
## 708 6962181067     5/9/2016      12342          8.72          8.68
## 709 6962181067    5/10/2016      15448         10.21         10.21
## 710 6962181067    5/11/2016       6722          4.44          4.44
## 711 6962181067    5/12/2016       3587          2.37          2.37
## 712 7007744171    4/12/2016      14172         10.29          9.48
## 713 7007744171    4/13/2016      12862          9.65          8.60
## 714 7007744171    4/14/2016      11179          8.24          7.48
## 715 7007744171    4/15/2016       5273          3.53          3.53
## 716 7007744171    4/16/2016       4631          3.10          3.10
## 717 7007744171    4/17/2016       8059          5.39          5.39
## 718 7007744171    4/18/2016      14816         10.98          9.91
## 719 7007744171    4/19/2016      14194         10.48          9.50
## 720 7007744171    4/20/2016      15566         11.31         10.41
## 721 7007744171    4/21/2016      13744          9.19          9.19
## 722 7007744171    4/22/2016      15299         10.24         10.24
## 723 7007744171    4/23/2016       8093          5.41          5.41
## 724 7007744171    4/24/2016      11085          7.42          7.42
## 725 7007744171    4/25/2016      18229         13.34         12.20
## 726 7007744171    4/26/2016      15090         10.10         10.10
## 727 7007744171    4/27/2016      13541         10.22          9.06
## 728 7007744171    4/28/2016      15128         10.12         10.12
## 729 7007744171    4/29/2016      20067         14.30         13.42
## 730 7007744171    4/30/2016       3761          2.52          2.52
## 731 7007744171     5/1/2016       5600          3.75          3.75
## 732 7007744171     5/2/2016      13041          9.18          8.72
## 733 7007744171     5/3/2016      14510         10.87          9.71
## 734 7007744171     5/4/2016          0          0.00          0.00
## 735 7007744171     5/5/2016      15010         11.10         10.04
## 736 7007744171     5/6/2016      11459          7.67          7.67
## 737 7007744171     5/7/2016          0          0.00          0.00
## 738 7086361926    4/12/2016      11317          8.41          8.41
## 739 7086361926    4/13/2016       5813          3.62          3.62
## 740 7086361926    4/14/2016       9123          6.12          6.12
## 741 7086361926    4/15/2016       8585          5.67          5.67
## 742 7086361926    4/16/2016         31          0.01          0.01
## 743 7086361926    4/17/2016          0          0.00          0.00
## 744 7086361926    4/18/2016       9827          6.71          6.71
## 745 7086361926    4/19/2016      10688          7.29          7.29
## 746 7086361926    4/20/2016      14365         10.64         10.64
## 747 7086361926    4/21/2016       9469          6.18          6.18
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## 748 7086361926    4/22/2016       9753          6.53          6.53
## 749 7086361926    4/23/2016       2817          1.81          1.81
## 750 7086361926    4/24/2016       3520          2.16          2.16
## 751 7086361926    4/25/2016      10091          6.82          6.82
## 752 7086361926    4/26/2016      10387          7.07          7.07
## 753 7086361926    4/27/2016      11107          8.34          8.34
## 754 7086361926    4/28/2016      11584          7.80          7.80
## 755 7086361926    4/29/2016       7881          4.95          4.95
## 756 7086361926    4/30/2016      14560          9.41          9.41
## 757 7086361926     5/1/2016      12390          8.07          8.07
## 758 7086361926     5/2/2016      10052          6.81          6.81
## 759 7086361926     5/3/2016      10288          6.76          6.76
## 760 7086361926     5/4/2016      10988          8.31          8.31
## 761 7086361926     5/5/2016       8564          5.60          5.60
## 762 7086361926     5/6/2016      12461          8.38          8.38
## 763 7086361926     5/7/2016      12827          8.48          8.48
## 764 7086361926     5/8/2016      10677          7.10          7.10
## 765 7086361926     5/9/2016      13566          9.11          9.11
## 766 7086361926    5/10/2016      14433         10.79         10.79
## 767 7086361926    5/11/2016       9572          6.52          6.52
## 768 7086361926    5/12/2016       3789          2.56          2.56
## 769 8053475328    4/12/2016      18060         14.12         14.12
## 770 8053475328    4/13/2016      16433         13.35         13.35
## 771 8053475328    4/14/2016      20159         15.97         15.97
## 772 8053475328    4/15/2016      20669         16.24         16.24
## 773 8053475328    4/16/2016      14549         11.11         11.11
## 774 8053475328    4/17/2016      18827         13.69         13.69
## 775 8053475328    4/18/2016      17076         12.66         12.66
## 776 8053475328    4/19/2016      15929         12.48         12.48
## 777 8053475328    4/20/2016      15108         12.19         12.19
## 778 8053475328    4/21/2016      16057         12.51         12.51
## 779 8053475328    4/22/2016      10520          8.29          8.29
## 780 8053475328    4/23/2016      22359         17.19         17.19
## 781 8053475328    4/24/2016      22988         17.95         17.95
## 782 8053475328    4/25/2016      20500         15.69         15.69
## 783 8053475328    4/26/2016      12685          9.62          9.62
## 784 8053475328    4/27/2016      12422          9.82          9.82
## 785 8053475328    4/28/2016      15447         12.40         12.40
## 786 8053475328    4/29/2016      12315          9.65          9.65
## 787 8053475328    4/30/2016       7135          5.59          5.59
## 788 8053475328     5/1/2016       1170          0.85          0.85
## 789 8053475328     5/2/2016       1969          1.43          1.43
## 790 8053475328     5/3/2016      15484         11.90         11.90
## 791 8053475328     5/4/2016      14581         11.15         11.15
## 792 8053475328     5/5/2016      14990         11.51         11.51
## 793 8053475328     5/6/2016      13953         11.00         11.00
## 794 8053475328     5/7/2016      19769         15.67         15.67
## 795 8053475328     5/8/2016      22026         17.65         17.65
## 796 8053475328     5/9/2016      12465          9.38          9.38
## 797 8053475328    5/10/2016      14810         11.36         11.36
## 798 8053475328    5/11/2016      12209          9.40          9.40
## 799 8053475328    5/12/2016       4998          3.91          3.91
## 800 8253242879    4/12/2016       9033          7.16          7.16
## 801 8253242879    4/13/2016       8053          6.10          6.10
```

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## 802 8253242879    4/14/2016       5234          3.46          3.46
## 803 8253242879    4/15/2016       2672          1.77          1.77
## 804 8253242879    4/16/2016       9256          6.14          6.14
## 805 8253242879    4/17/2016      10204          7.91          7.91
## 806 8253242879    4/18/2016       5151          3.48          3.48
## 807 8253242879    4/19/2016       4212          2.78          2.78
## 808 8253242879    4/20/2016       6466          4.27          4.27
## 809 8253242879    4/21/2016      11268          8.56          8.56
## 810 8253242879    4/22/2016       2824          1.87          1.87
## 811 8253242879    4/23/2016       9282          6.26          6.26
## 812 8253242879    4/24/2016       8905          7.13          7.13
## 813 8253242879    4/25/2016       6829          4.51          4.51
## 814 8253242879    4/26/2016       4562          3.04          3.04
## 815 8253242879    4/27/2016      10232          8.18          8.18
## 816 8253242879    4/28/2016       2718          1.80          1.80
## 817 8253242879    4/29/2016       6260          4.26          4.26
## 818 8253242879    4/30/2016          0          0.00          0.00
## 819 8378563200    4/12/2016       7626          6.05          6.05
## 820 8378563200    4/13/2016      12386          9.82          9.82
## 821 8378563200    4/14/2016      13318         10.56         10.56
## 822 8378563200    4/15/2016      14461         11.47         11.47
## 823 8378563200    4/16/2016      11207          8.89          8.89
## 824 8378563200    4/17/2016       2132          1.69          1.69
## 825 8378563200    4/18/2016      13630         10.81         10.81
## 826 8378563200    4/19/2016      13070         10.36         10.36
## 827 8378563200    4/20/2016       9388          7.44          7.44
## 828 8378563200    4/21/2016      15148         12.01         12.01
## 829 8378563200    4/22/2016      12200          9.67          9.67
## 830 8378563200    4/23/2016       5709          4.53          4.53
## 831 8378563200    4/24/2016       3703          2.94          2.94
## 832 8378563200    4/25/2016      12405          9.84          9.84
## 833 8378563200    4/26/2016      16208         12.85         12.85
## 834 8378563200    4/27/2016       7359          5.84          5.84
## 835 8378563200    4/28/2016       5417          4.30          4.30
## 836 8378563200    4/29/2016       6175          4.90          4.90
## 837 8378563200    4/30/2016       2946          2.34          2.34
## 838 8378563200     5/1/2016      11419          9.06          9.06
## 839 8378563200     5/2/2016       6064          4.81          4.81
## 840 8378563200     5/3/2016       8712          6.91          6.91
## 841 8378563200     5/4/2016       7875          6.24          6.24
## 842 8378563200     5/5/2016       8567          6.79          6.79
## 843 8378563200     5/6/2016       7045          5.59          5.59
## 844 8378563200     5/7/2016       4468          3.54          3.54
## 845 8378563200     5/8/2016       2943          2.33          2.33
## 846 8378563200     5/9/2016       8382          6.65          6.65
## 847 8378563200    5/10/2016       6582          5.22          5.22
## 848 8378563200    5/11/2016       9143          7.25          7.25
## 849 8378563200    5/12/2016       4561          3.62          3.62
## 850 8583815059    4/12/2016       5014          3.91          3.91
## 851 8583815059    4/13/2016       5571          4.35          4.35
## 852 8583815059    4/14/2016       3135          2.45          2.45
## 853 8583815059    4/15/2016       3430          2.68          2.68
## 854 8583815059    4/16/2016       5319          4.15          4.15
## 855 8583815059    4/17/2016       3008          2.35          2.35
```

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## 856 8583815059    4/18/2016       3864          3.01          3.01
## 857 8583815059    4/19/2016       5697          4.44          4.44
## 858 8583815059    4/20/2016       5273          4.11          4.11
## 859 8583815059    4/21/2016       8538          6.66          6.66
## 860 8583815059    4/22/2016       8687          6.78          6.78
## 861 8583815059    4/23/2016       9423          7.35          7.35
## 862 8583815059    4/24/2016       8286          6.46          6.46
## 863 8583815059    4/25/2016       4503          3.51          3.51
## 864 8583815059    4/26/2016      10499          8.19          8.19
## 865 8583815059    4/27/2016      12474          9.73          9.73
## 866 8583815059    4/28/2016       6174          4.82          4.82
## 867 8583815059    4/29/2016      15168         11.83         11.83
## 868 8583815059    4/30/2016      10085          7.87          7.87
## 869 8583815059     5/1/2016       4512          3.52          3.52
## 870 8583815059     5/2/2016       8469          6.61          6.61
## 871 8583815059     5/3/2016      12015          9.37          9.37
## 872 8583815059     5/4/2016       3588          2.80          2.80
## 873 8583815059     5/5/2016      12427          9.69          9.69
## 874 8583815059     5/6/2016       5843          4.56          4.56
## 875 8583815059     5/7/2016       6117          4.77          4.77
## 876 8583815059     5/8/2016       9217          7.19          7.19
## 877 8583815059     5/9/2016       9877          7.70          7.70
## 878 8583815059    5/10/2016       8240          6.43          6.43
## 879 8583815059    5/11/2016       8701          6.79          6.79
## 880 8583815059    5/12/2016          0          0.00          0.00
## 881 8792009665    4/12/2016       2564          1.64          1.64
## 882 8792009665    4/13/2016       1320          0.84          0.84
## 883 8792009665    4/14/2016       1219          0.78          0.78
## 884 8792009665    4/15/2016       2483          1.59          1.59
## 885 8792009665    4/16/2016        244          0.16          0.16
## 886 8792009665    4/17/2016          0          0.00          0.00
## 887 8792009665    4/18/2016          0          0.00          0.00
## 888 8792009665    4/19/2016          0          0.00          0.00
## 889 8792009665    4/20/2016       3147          2.01          2.01
## 890 8792009665    4/21/2016        144          0.09          0.09
## 891 8792009665    4/22/2016       4068          2.60          2.60
## 892 8792009665    4/23/2016       5245          3.36          3.36
## 893 8792009665    4/24/2016        400          0.26          0.26
## 894 8792009665    4/25/2016          0          0.00          0.00
## 895 8792009665    4/26/2016       1321          0.85          0.85
## 896 8792009665    4/27/2016       1758          1.13          1.13
## 897 8792009665    4/28/2016       6157          3.94          3.94
## 898 8792009665    4/29/2016       8360          5.35          5.35
## 899 8792009665    4/30/2016       7174          4.59          4.59
## 900 8792009665     5/1/2016       1619          1.04          1.04
## 901 8792009665     5/2/2016       1831          1.17          1.17
## 902 8792009665     5/3/2016       2421          1.55          1.55
## 903 8792009665     5/4/2016       2283          1.46          1.46
## 904 8792009665     5/5/2016          0          0.00          0.00
## 905 8792009665     5/6/2016          0          0.00          0.00
## 906 8792009665     5/7/2016          0          0.00          0.00
## 907 8792009665     5/8/2016          0          0.00          0.00
## 908 8792009665     5/9/2016          0          0.00          0.00
## 909 8792009665    5/10/2016          0          0.00          0.00
```

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## 910 8877689391    4/12/2016      23186         20.40           20.40
## 911 8877689391    4/13/2016      15337          9.58            9.58
## 912 8877689391    4/14/2016      21129         18.98           18.98
## 913 8877689391    4/15/2016      13422          7.17            7.17
## 914 8877689391    4/16/2016      29326         25.29           25.29
## 915 8877689391    4/17/2016      15118          8.87            8.87
## 916 8877689391    4/18/2016      11423          8.67            8.67
## 917 8877689391    4/19/2016      18785         17.40           17.40
## 918 8877689391    4/20/2016      19948         18.11           18.11
## 919 8877689391    4/21/2016      19377         17.62           17.62
## 920 8877689391    4/22/2016      18258         16.31           16.31
## 921 8877689391    4/23/2016      11200          7.43            7.43
## 922 8877689391    4/24/2016      16674         15.74           15.74
## 923 8877689391    4/25/2016      12986          8.74            8.74
## 924 8877689391    4/26/2016      11101          8.43            8.43
## 925 8877689391    4/27/2016      23629         20.65           20.65
## 926 8877689391    4/28/2016      14890         11.30           11.30
## 927 8877689391    4/29/2016       9733          7.39            7.39
## 928 8877689391    4/30/2016      27745         26.72           26.72
## 929 8877689391     5/1/2016      10930          8.32            8.32
## 930 8877689391     5/2/2016       4790          3.64            3.64
## 931 8877689391     5/3/2016      10818          8.21            8.21
## 932 8877689391     5/4/2016      18193         16.30           16.30
## 933 8877689391     5/5/2016      14055         10.67           10.67
## 934 8877689391     5/6/2016      21727         19.34           19.34
## 935 8877689391     5/7/2016      12332          8.13            8.13
## 936 8877689391     5/8/2016      10686          8.11            8.11
## 937 8877689391     5/9/2016      20226         18.25           18.25
## 938 8877689391    5/10/2016      10733          8.15            8.15
## 939 8877689391    5/11/2016      21420         19.56           19.56
## 940 8877689391    5/12/2016       8064          6.12            6.12
##     LoggedActivitiesDistance VeryActiveDistance ModeratelyActiveDistance
## 1                   0.000000              1.88                     0.55
## 2                   0.000000              1.57                     0.69
## 3                   0.000000              2.44                     0.40
## 4                   0.000000              2.14                     1.26
## 5                   0.000000              2.71                     0.41
## 6                   0.000000              3.19                     0.78
## 7                   0.000000              3.25                     0.64
## 8                   0.000000              3.53                     1.32
## 9                   0.000000              1.96                     0.48
## 10                  0.000000              1.34                     0.35
## 11                  0.000000              4.76                     1.12
## 12                  0.000000              2.81                     0.87
## 13                  0.000000              2.92                     0.21
## 14                  0.000000              5.29                     0.57
## 15                  0.000000              2.33                     0.92
## 16                  0.000000              6.40                     0.41
## 17                  0.000000              3.54                     1.16
## 18                  0.000000              1.06                     0.50
## 19                  0.000000              3.56                     1.42
## 20                  0.000000              2.29                     1.60
## 21                  0.000000              3.21                     0.57
## 22                  0.000000              3.73                     1.05
```

```
## 23          0.000000          2.46          0.87
## 24          0.000000          2.92          1.08
## 25          0.000000          1.97          0.25
## 26          0.000000          2.46          2.12
## 27          0.000000          3.53          0.32
## 28          0.000000          3.45          0.53
## 29          0.000000          3.35          1.16
## 30          0.000000          2.56          1.01
## 31          0.000000          0.00          0.00
## 32          0.000000          0.00          0.00
## 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          1.03          1.52
## 38          0.000000          2.15          0.62
## 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          1.15          0.91
## 45          0.000000          0.00          0.00
## 46          0.000000          0.00          0.00
## 47          0.000000          1.11          1.87
## 48          0.000000          0.00          0.20
## 49          0.000000          0.00          0.00
## 50          0.000000          0.90          1.28
## 51          0.000000         21.92          4.19
## 52          0.000000          0.86          0.59
## 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          0.14          2.30
## 64          0.000000          2.28          0.90
## 65          0.000000          0.36          2.56
## 66          0.000000          0.22          0.15
## 67          0.000000          4.10          1.88
## 68          0.000000          2.25          0.57
## 69          0.000000          1.07          1.67
## 70          0.000000          0.36          2.53
## 71          0.000000          0.00          0.00
## 72          0.000000          0.00          0.00
## 73          0.000000          0.00          0.00
## 74          0.000000          0.00          0.58
## 75          0.000000          0.00          0.00
## 76          0.000000          0.59          0.06
```

```
## 77          0.000000        0.80        1.72
## 78          0.000000        0.00        0.00
## 79          0.000000        0.20        2.32
## 80          0.000000        0.00        0.00
## 81          0.000000        0.63        3.14
## 82          0.000000        0.24        0.99
## 83          0.000000        0.07        0.31
## 84          0.000000        0.72        4.09
## 85          0.000000        0.00        0.00
## 86          0.000000        0.52        0.54
## 87          0.000000        0.82        0.27
## 88          0.000000        3.26        0.79
## 89          0.000000        0.00        0.00
## 90          0.000000        2.39        0.35
## 91          0.000000        0.88        0.81
## 92          0.000000        0.00        0.00
## 93          0.000000        0.00        0.00
## 94          0.000000        0.00        0.00
## 95          0.000000        0.00        0.00
## 96          0.000000        0.00        0.00
## 97          0.000000        0.00        0.00
## 98          0.000000        0.14        0.26
## 99          0.000000        0.00        0.48
## 100         0.000000        0.00        0.00
## 101         0.000000        0.00        0.00
## 102         0.000000        0.12        0.52
## 103         0.000000        0.00        0.00
## 104         0.000000        0.00        0.00
## 105         0.000000        0.00        0.00
## 106         0.000000        0.00        0.00
## 107         0.000000        0.00        0.00
## 108         0.000000        0.00        0.00
## 109         0.000000        0.00        0.00
## 110         0.000000        0.00        0.00
## 111         0.000000        0.00        0.00
## 112         0.000000        0.00        0.26
## 113         0.000000        0.00        0.00
## 114         0.000000        0.00        0.00
## 115         0.000000        0.00        0.00
## 116         0.000000        0.00        0.00
## 117         0.000000        0.00        0.00
## 118         0.000000        0.00        0.00
## 119         0.000000        0.00        0.00
## 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        0.40
## 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          0.00          0.00
## 133          0.000000          0.00          0.00
## 134          0.000000          0.00          0.00
## 135          0.000000          0.00          0.00
## 136          0.000000          0.07          0.24
## 137          0.000000          0.00          0.00
## 138          0.000000          0.00          0.00
## 139          0.000000          0.00          0.00
## 140          0.000000          0.00          0.00
## 141          0.000000          0.00          0.00
## 142          0.000000          0.00          0.00
## 143          0.000000          1.01          0.03
## 144          0.000000          1.16          0.30
## 145          0.000000          0.73          0.00
## 146          0.000000          0.00          0.00
## 147          0.000000          0.00          0.00
## 148          0.000000          0.00          0.00
## 149          0.000000          0.00          0.00
## 150          0.000000          0.00          0.00
## 151          0.000000          0.00          0.00
## 152          0.000000          0.00          0.00
## 153          0.000000          0.00          0.00
## 154          0.000000          0.00          0.00
## 155          0.000000          3.31          0.77
## 156          0.000000          2.99          0.10
## 157          0.000000          2.48          0.21
## 158          0.000000          1.94          0.31
## 159          0.000000          3.15          0.55
## 160          0.000000          3.87          0.66
## 161          0.000000          3.64          0.12
## 162          0.000000          3.29          0.24
## 163          0.000000          3.34          1.93
## 164          0.000000          3.33          1.11
## 165          0.000000          4.43          0.42
## 166          0.000000          0.00          0.00
## 167          0.000000          4.55          1.15
## 168          0.000000          3.33          0.22
## 169          0.000000          1.43          0.66
## 170          0.000000          1.04          0.97
## 171          0.000000          0.41          1.33
## 172          0.000000          0.48          1.21
## 173          0.000000          0.94          1.40
## 174          0.000000          1.94          0.96
## 175          0.000000          2.61          0.34
## 176          0.000000          3.99          0.46
## 177          0.000000          2.51          0.93
## 178          0.000000          2.79          0.86
## 179          0.000000          1.87          0.67
## 180          0.000000          1.61          0.08
## 181          0.000000          0.00          0.00
## 182          0.000000          2.12          1.63
## 183          0.000000          2.22          1.21
## 184          0.000000          4.18          1.15
```

```
## 185          0.000000          1.28          0.67
## 186          0.000000          0.19          0.35
## 187          0.000000          0.00          0.00
## 188          0.000000          0.00          0.00
## 189          0.000000          0.00          0.00
## 190          0.000000          0.00          0.00
## 191          0.000000          0.00          0.00
## 192          0.000000          0.00          0.00
## 193          0.000000          0.00          0.00
## 194          0.000000          0.00          0.00
## 195          0.000000          0.00          0.00
## 196          0.000000          0.00          0.00
## 197          0.000000          0.00          0.00
## 198          0.000000          0.00          0.00
## 199          0.000000          0.00          0.00
## 200          0.000000          0.00          0.00
## 201          0.000000          0.00          0.00
## 202          0.000000          0.00          0.00
## 203          0.000000          0.00          0.00
## 204          0.000000          0.00          0.00
## 205          0.000000          0.00          0.00
## 206          0.000000          0.00          0.00
## 207          0.000000          0.00          0.00
## 208          0.000000          0.00          0.00
## 209          0.000000          0.00          0.00
## 210          0.000000          0.00          0.00
## 211          0.000000          0.00          0.00
## 212          0.000000          0.00          0.00
## 213          0.000000          0.00          0.00
## 214          0.000000          0.00          0.00
## 215          0.000000          0.00          0.00
## 216          0.000000          0.00          0.00
## 217          0.000000          1.17          0.31
## 218          0.000000          0.00          0.00
## 219          0.000000          0.00          0.00
## 220          0.000000          0.00          0.00
## 221          0.000000          0.00          0.00
## 222          0.000000          0.00          0.00
## 223          0.000000          0.00          0.26
## 224          0.000000          0.00          0.38
## 225          0.000000          0.00          0.49
## 226          0.000000          0.06          0.42
## 227          0.000000          0.00          0.00
## 228          0.000000          0.00          0.00
## 229          0.000000          0.00          0.00
## 230          0.000000          0.23          0.20
## 231          0.000000          0.00          0.00
## 232          0.000000          0.00          0.00
## 233          0.000000          0.00          0.00
## 234          0.000000          0.00          0.00
## 235          0.000000          0.00          0.00
## 236          0.000000          0.00          0.00
## 237          0.000000          0.36          0.21
## 238          0.000000          1.49          0.37
```

```
## 239          0.000000          0.00          0.00
## 240          0.000000          0.00          0.39
## 241          0.000000          0.00          0.00
## 242          0.000000          0.00          0.00
## 243          0.000000          0.00          0.00
## 244          0.000000          0.00          0.00
## 245          0.000000          0.00          0.00
## 246          0.000000          0.00          0.00
## 247          0.000000          0.00          0.00
## 248          0.000000          2.00          0.62
## 249          0.000000          1.66          1.94
## 250          0.000000          0.02          2.74
## 251          0.000000          0.07          1.42
## 252          0.000000          5.45          4.10
## 253          0.000000          0.08          0.28
## 254          0.000000          0.79          0.86
## 255          0.000000          0.00          0.00
## 256          0.000000          0.68          1.81
## 257          0.000000          1.85          1.53
## 258          0.000000          0.56          1.68
## 259          0.000000          2.78          1.45
## 260          0.000000          0.00          0.00
## 261          0.000000          1.27          0.52
## 262          0.000000          0.00          0.00
## 263          0.000000          1.86          0.40
## 264          0.000000          0.00          0.00
## 265          0.000000          0.00          0.00
## 266          0.000000          0.11          0.93
## 267          0.000000          0.00          0.22
## 268          0.000000          0.00          0.00
## 269          0.000000          0.00          0.00
## 270          0.000000          3.11          0.02
## 271          0.000000          0.00          0.35
## 272          0.000000          0.07          0.28
## 273          0.000000          0.00          0.00
## 274          0.000000          1.51          0.12
## 275          0.000000          0.13          0.37
## 276          0.000000          0.46          0.00
## 277          0.000000          2.09          0.23
## 278          0.000000          3.00          0.06
## 279          0.000000          0.00          0.00
## 280          0.000000          0.12          0.18
## 281          0.000000          0.00          0.00
## 282          0.000000          2.16          0.34
## 283          0.000000          1.36          1.41
## 284          0.000000          0.33          1.08
## 285          0.000000          0.49          1.04
## 286          0.000000          0.00          0.21
## 287          0.000000          0.06          0.25
## 288          0.000000          0.00          0.00
## 289          0.000000          0.78          0.80
## 290          0.000000          0.00          0.12
## 291          0.000000          2.28          0.55
## 292          0.000000          2.90          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          0.99          0.34
## 299          0.000000          0.34          1.03
## 300          0.000000          0.00          0.00
## 301          0.000000          0.00          0.00
## 302          0.000000          1.41          0.10
## 303          0.000000          1.08          0.20
## 304          0.000000          0.00          0.00
## 305          0.000000          0.84          0.09
## 306          0.000000          1.15          0.26
## 307          0.000000          0.00          0.00
## 308          0.000000          1.40          0.08
## 309          0.000000          0.89          0.19
## 310          0.000000          0.00          0.00
## 311          0.000000          1.85          0.05
## 312          0.000000          1.58          0.63
## 313          0.000000          0.00          0.00
## 314          0.000000          0.00          0.00
## 315          0.000000          1.06          0.09
## 316          0.000000          0.00          0.00
## 317          0.000000          3.06          0.91
## 318          0.000000          2.03          2.13
## 319          0.000000          0.32          0.97
## 320          0.000000          1.05          1.75
## 321          0.000000          2.03          4.00
## 322          0.000000          0.70          2.35
## 323          0.000000          0.25          3.73
## 324          0.000000          2.24          2.45
## 325          0.000000          0.20          4.35
## 326          0.000000          0.00          0.00
## 327          0.000000          2.33          0.58
## 328          0.000000          0.00          4.22
## 329          0.000000          3.27          4.56
## 330          0.000000          5.62          0.43
## 331          0.000000          0.45          4.22
## 332          0.000000          0.00          0.42
## 333          0.000000          1.37          0.29
## 334          0.000000          3.74          1.30
## 335          0.000000          3.69          2.10
## 336          0.000000          2.67          1.98
## 337          0.000000          1.54          6.48
## 338          0.000000          3.32          1.74
## 339          0.000000          1.81          4.58
## 340          0.000000          1.76          4.11
## 341          0.000000          3.11          2.51
## 342          0.000000          0.00          4.13
## 343          0.000000          0.68          5.24
## 344          0.000000          0.77          5.60
## 345          0.000000          0.07          5.40
## 346          0.000000          0.37          0.00
```

```
## 347    0.000000    0.15    0.24
## 348    0.000000    0.00    0.00
## 349    0.000000    0.00    0.00
## 350    0.000000    0.21    0.36
## 351    0.000000    0.45    0.37
## 352    0.000000    0.00    0.00
## 353    0.000000    0.00    0.00
## 354    0.000000    0.00    0.00
## 355    0.000000    0.00    0.00
## 356    0.000000    0.00    0.00
## 357    0.000000    0.00    0.00
## 358    0.000000    0.00    0.00
## 359    0.000000    0.00    0.00
## 360    0.000000    0.00    0.00
## 361    0.000000    0.00    0.00
## 362    0.000000    0.00    0.00
## 363    0.000000    0.00    0.00
## 364    0.000000    0.00    0.00
## 365    0.000000    0.00    0.00
## 366    0.000000    0.00    0.00
## 367    0.000000    0.00    0.04
## 368    0.000000    0.00    0.00
## 369    0.000000    0.67    1.04
## 370    0.000000    2.62    1.68
## 371    0.000000    0.00    0.00
## 372    0.000000    0.00    0.00
## 373    0.000000    0.00    0.00
## 374    0.000000    0.20    0.12
## 375    0.000000    0.00    0.00
## 376    0.000000    0.11    0.17
## 377    0.000000    0.00    0.00
## 378    0.000000    0.00    0.00
## 379    0.000000    0.00    0.00
## 380    0.000000    0.00    0.00
## 381    0.000000    0.21    0.26
## 382    0.000000    0.00    0.00
## 383    0.000000    0.53    0.59
## 384    0.000000    0.11    0.33
## 385    0.000000    0.00    0.00
## 386    0.000000    0.00    0.00
## 387    0.000000    0.00    0.00
## 388    0.000000    0.07    0.33
## 389    0.000000    0.00    0.00
## 390    0.000000    0.00    0.68
## 391    0.000000    0.00    0.00
## 392    0.000000    0.06    0.81
## 393    0.000000    0.00    0.00
## 394    0.000000    0.06    0.20
## 395    0.000000    0.00    0.28
## 396    0.000000    0.57    0.92
## 397    0.000000    0.41    1.92
## 398    0.000000    1.01    0.33
## 399    0.000000    0.45    0.79
## 400    0.000000    0.40    1.61
```

```
## 401          0.000000          0.00          0.00
## 402          0.000000          0.00          0.44
## 403          0.000000          0.58          1.07
## 404          0.000000          0.59          0.58
## 405          0.000000          2.63          1.41
## 406          0.000000          0.41          0.47
## 407          0.000000          0.19          1.05
## 408          0.000000          0.00          0.00
## 409          0.000000          0.14          0.56
## 410          0.000000          0.21          0.46
## 411          0.000000          0.20          0.74
## 412          0.000000          0.00          0.00
## 413          0.000000          0.00          0.00
## 414          0.000000          0.06          0.63
## 415          0.000000          0.13          1.07
## 416          0.000000          0.00          0.00
## 417          0.000000          0.21          0.40
## 418          0.000000          0.00          0.00
## 419          0.000000          3.56          0.40
## 420          0.000000          1.37          0.69
## 421          0.000000          1.10          1.72
## 422          0.000000          0.37          0.39
## 423          0.000000          3.30          1.11
## 424          0.000000          4.50          0.32
## 425          0.000000          1.08          0.51
## 426          0.000000          0.73          1.40
## 427          0.000000          0.94          1.06
## 428          0.000000          0.70          2.51
## 429          0.000000          1.29          0.43
## 430          0.000000          0.80          0.89
## 431          0.000000          0.70          2.00
## 432          0.000000          1.01          0.68
## 433          0.000000          3.77          0.08
## 434          0.000000          1.13          0.78
## 435          0.000000          2.79          0.93
## 436          0.000000          0.63          1.67
## 437          0.000000          2.11          2.09
## 438          0.000000          9.45          2.77
## 439          0.000000          9.89          1.26
## 440          0.000000          0.34          0.73
## 441          0.000000          0.81          0.65
## 442          0.000000          0.53          0.79
## 443          0.000000          0.00          0.00
## 444          0.000000          0.00          0.00
## 445          0.000000          0.00          0.00
## 446          0.000000          0.00          0.00
## 447          0.000000          0.00          0.00
## 448          0.000000          0.00          0.00
## 449          0.000000          0.00          0.00
## 450          0.000000          2.00          0.29
## 451          0.000000          0.00          0.00
## 452          0.000000          0.00          0.00
## 453          0.000000          0.00          0.00
## 454          0.000000          0.00          0.00
```

```
## 455          0.000000          0.00          0.00
## 456          0.000000          0.00          0.00
## 457          0.000000          0.00          0.00
## 458          0.000000          2.41          0.04
## 459          0.000000          2.62          0.03
## 460          0.000000          0.00          0.00
## 461          0.000000          0.00          0.00
## 462          0.000000          0.00          0.00
## 463          0.000000          0.00          0.00
## 464          0.000000          2.21          0.19
## 465          0.000000          2.48          0.11
## 466          0.000000          0.00          0.00
## 467          0.000000          0.12          0.24
## 468          0.000000          0.00          0.00
## 469          0.000000          2.13          0.19
## 470          0.000000          0.00          0.25
## 471          0.000000          0.00          0.00
## 472          0.000000          0.00          0.00
## 473          0.000000          2.25          1.00
## 474          0.000000          0.00          0.00
## 475          0.000000          0.00          0.00
## 476          0.000000          1.24          0.44
## 477          0.000000          0.00          0.00
## 478          0.000000          0.59          0.84
## 479          0.000000          0.55          0.75
## 480          0.000000          0.55          1.14
## 481          0.000000          0.98          0.93
## 482          0.000000          0.05          0.36
## 483          0.000000          0.00          0.00
## 484          0.000000          0.42          0.97
## 485          0.000000          1.37          1.50
## 486          0.000000          0.34          0.20
## 487          0.000000          0.00          0.00
## 488          0.000000          0.59          0.25
## 489          0.000000          0.43          2.03
## 490          0.000000          1.96          0.89
## 491          0.000000          0.02          0.27
## 492          0.000000          1.02          1.85
## 493          0.000000          0.47          1.89
## 494          0.000000          0.00          0.00
## 495          0.000000          0.00          0.00
## 496          0.000000          0.60          0.28
## 497          0.000000          0.00          0.00
## 498          0.000000          1.01          0.50
## 499          0.000000          0.00          0.00
## 500          0.000000          1.61          1.00
## 501          0.000000          1.80          0.50
## 502          0.000000          0.43          1.62
## 503          0.000000          0.74          1.12
## 504          0.000000          0.26          1.82
## 505          0.000000          0.00          0.00
## 506          0.000000          0.00          0.00
## 507          0.000000          0.00          0.00
## 508          0.000000          0.00          0.00
```

```
## 509          0.000000          0.07          0.42
## 510          0.000000          0.24          1.25
## 511          0.000000          0.96          3.46
## 512          0.000000          1.82          1.49
## 513          0.000000          0.88          0.37
## 514          0.000000          0.16          1.23
## 515          0.000000          0.31          2.05
## 516          0.000000          0.00          0.00
## 517          0.000000          0.76          3.24
## 518          0.000000          1.20          5.12
## 519          0.000000          0.49          0.82
## 520          0.000000          0.07          0.35
## 521          0.000000          0.09          0.80
## 522          0.000000          1.13          0.42
## 523          0.000000          1.06          0.92
## 524          0.000000          0.32          2.03
## 525          0.000000          0.00          0.00
## 526          0.000000          0.38          1.74
## 527          0.000000          0.00          0.00
## 528          0.000000          0.34          0.73
## 529          0.000000          0.67          0.22
## 530          0.000000          0.08          0.66
## 531          0.000000          0.37          2.31
## 532          0.000000          0.68          6.21
## 533          0.000000          0.00          0.57
## 534          0.000000          0.08          1.88
## 535          0.000000          0.78          2.16
## 536          0.000000          0.00          0.00
## 537          0.000000          1.37          0.79
## 538          0.000000          0.00          0.00
## 539          0.000000          4.00          2.45
## 540          0.000000          4.16          1.98
## 541          0.000000          0.00          0.00
## 542          0.000000          0.00          0.00
## 543          0.000000          0.00          0.00
## 544          0.000000          4.28          1.66
## 545          0.000000          0.00          0.00
## 546          0.000000          2.95          2.16
## 547          0.000000          1.38          0.63
## 548          0.000000          0.00          0.00
## 549          0.000000          0.00          0.00
## 550          0.000000          2.93          0.57
## 551          0.000000          2.37          0.93
## 552          0.000000          1.14          1.00
## 553          0.000000          3.71          0.75
## 554          0.000000          2.79          0.64
## 555          0.000000          0.00          0.00
## 556          0.000000          0.00          0.00
## 557          0.000000          1.06          0.41
## 558          0.000000          1.50          1.20
## 559          0.000000          0.00          0.00
## 560          0.000000          3.43          1.66
## 561          0.000000          1.52          0.54
## 562          0.000000          0.00          0.00
```

```
## 563    0.000000    0.22    0.47
## 564    0.000000    2.13    0.89
## 565    0.000000    3.87    1.61
## 566    0.000000    0.00    0.00
## 567    0.000000    0.58    0.40
## 568    0.000000    3.60    0.38
## 569    0.000000    0.32    0.22
## 570    0.000000    3.33    0.31
## 571    0.000000    3.92    1.60
## 572    0.000000    6.64    1.28
## 573    0.000000    5.98    0.83
## 574    0.000000    4.86    0.72
## 575    0.000000    7.02    0.64
## 576    0.000000    4.12    0.34
## 577    0.000000    3.65    1.66
## 578    0.000000    2.42    0.79
## 579    0.000000    1.21    0.36
## 580    0.000000    7.65    2.15
## 581    0.000000    1.35    0.67
## 582    0.000000    0.85    0.65
## 583    0.000000    1.81    0.40
## 584    0.000000    3.25    1.17
## 585    0.000000    2.84    0.61
## 586    0.000000    5.83    0.79
## 587    0.000000    5.31    1.44
## 588    0.000000    1.12    0.35
## 589    0.000000    4.52    0.15
## 590    0.000000    1.56    0.25
## 591    0.000000    2.50    0.47
## 592    0.000000    1.93    0.32
## 593    0.000000    0.00    0.00
## 594    0.000000    0.00    0.00
## 595    0.000000    1.43    0.14
## 596    0.000000    2.56    0.75
## 597    0.000000    1.83    0.30
## 598    0.000000    0.00    0.00
## 599    0.000000    0.00    0.00
## 600    0.000000    0.00    0.00
## 601    0.000000    0.00    0.28
## 602    0.000000    0.58    0.85
## 603    0.000000    0.00    0.00
## 604    0.000000    0.00    0.00
## 605    0.000000    0.00    0.00
## 606    0.000000    2.03    0.48
## 607    0.000000    0.98    0.40
## 608    0.000000    0.00    0.00
## 609    0.000000    0.00    0.00
## 610    0.000000    0.00    0.00
## 611    0.000000    0.00    0.00
## 612    0.000000    0.00    0.34
## 613    0.000000    0.00    0.00
## 614    0.000000    0.00    0.00
## 615    0.000000    0.00    0.00
## 616    0.000000    0.00    0.00
```

```
## 617          0.000000          0.00          0.00
## 618          0.000000          0.00          0.00
## 619          0.000000          0.00          0.00
## 620          0.000000          0.00          0.00
## 621          0.000000          0.00          0.00
## 622          0.000000          0.00          0.00
## 623          0.000000          0.00          0.00
## 624          0.000000          0.00          0.00
## 625          0.000000          0.00          0.00
## 626          0.000000          0.00          0.00
## 627          0.000000          0.00          0.00
## 628          0.000000          0.00          0.00
## 629          0.000000          0.00          0.00
## 630          0.000000          0.00          0.00
## 631          0.000000          1.14          0.79
## 632          0.000000          0.00          0.00
## 633          0.000000          0.00          0.00
## 634          0.000000          0.00          0.00
## 635          0.000000          0.00          0.00
## 636          0.000000          0.00          0.00
## 637          0.000000          0.00          0.00
## 638          0.000000          0.00          0.00
## 639          0.000000          0.68          0.18
## 640          0.000000          0.00          0.00
## 641          0.000000          0.00          0.00
## 642          0.000000          0.00          0.00
## 643          0.000000          0.00          0.00
## 644          0.000000          0.00          0.00
## 645          0.000000          0.66          2.75
## 646          0.000000          0.00          0.00
## 647          0.000000          0.00          0.00
## 648          0.000000          0.00          0.00
## 649          0.000000          0.00          0.00
## 650          0.000000          0.00          0.00
## 651          0.000000          0.00          0.00
## 652          0.000000          0.00          0.00
## 653          0.000000          0.00          0.00
## 654          0.000000          0.00          0.00
## 655          0.000000          0.00          0.00
## 656          0.000000          1.11          0.58
## 657          0.000000          0.87          0.86
## 658          0.000000          0.00          0.00
## 659          0.000000          2.52          0.81
## 660          0.000000          0.35          1.13
## 661          0.000000          2.00          0.77
## 662          0.000000          0.00          0.00
## 663          0.000000          3.77          1.74
## 664          0.000000          0.00          0.00
## 665          0.000000          0.00          0.00
## 666          0.000000          0.00          0.00
## 667          0.000000          0.77          0.62
## 668          0.000000          2.27          0.46
## 669          1.959596          3.48          0.87
## 670          0.000000          0.00          0.00
```

```
## 671          0.000000          0.06          0.20
## 672          0.000000          0.00          0.00
## 673          0.000000          0.16          0.16
## 674          0.000000          0.48          0.62
## 675          0.000000          0.00          0.00
## 676          0.000000          0.00          0.00
## 677          0.000000          0.00          0.00
## 678          0.000000          0.00          0.00
## 679          0.000000          0.47          0.93
## 680          0.000000          0.13          0.24
## 681          0.000000          3.40          0.83
## 682          0.000000          0.57          1.21
## 683          0.000000          0.00          0.00
## 684          0.000000          0.00          0.00
## 685          0.000000          3.66          0.19
## 686          0.000000          0.33          0.68
## 687          0.000000          0.83          2.39
## 688          0.000000          2.10          2.13
## 689          0.000000          4.28          0.19
## 690          4.081692          3.99          2.10
## 691          0.000000          1.77          1.55
## 692          0.000000          4.20          2.00
## 693          0.000000          0.00          0.00
## 694          2.785175          3.02          1.68
## 695          0.000000          2.58          0.42
## 696          0.000000          0.55          2.02
## 697          0.000000          2.51          0.24
## 698          0.000000          0.82          0.48
## 699          0.000000          2.24          0.76
## 700          0.000000          0.00          0.00
## 701          0.000000          1.20          2.00
## 702          0.000000          1.74          2.04
## 703          0.000000          0.47          1.68
## 704          0.000000          0.99          1.16
## 705          0.000000          0.00          0.00
## 706          0.000000          0.00          0.00
## 707          0.000000          0.00          0.52
## 708          3.167822          3.90          1.18
## 709          0.000000          3.47          1.75
## 710          0.000000          1.49          0.31
## 711          0.000000          0.00          0.25
## 712          4.869783          4.50          0.38
## 713          4.851307          4.61          0.56
## 714          3.285415          2.95          0.34
## 715          0.000000          0.00          0.00
## 716          0.000000          0.00          0.00
## 717          0.000000          0.00          0.00
## 718          4.930550          3.79          2.12
## 719          4.942142          4.41          0.76
## 720          4.924841          4.79          0.67
## 721          0.000000          2.15          1.87
## 722          0.000000          4.10          1.76
## 723          0.000000          0.13          1.13
## 724          0.000000          0.00          0.00
```

```
## 725  4.861792  4.31  1.37
## 726  0.000000  0.93  0.94
## 727  4.885605  4.27  0.66
## 728  0.000000  1.09  0.77
## 729  4.911146  4.31  2.05
## 730  0.000000  0.00  0.00
## 731  0.000000  0.00  0.00
## 732  2.832326  4.64  0.70
## 733  4.912368  4.48  1.02
## 734  0.000000  0.00  0.00
## 735  4.878232  4.33  1.29
## 736  0.000000  3.00  0.81
## 737  0.000000  0.00  0.00
## 738  0.000000  5.27  0.15
## 739  0.000000  0.56  0.21
## 740  0.000000  2.03  0.33
## 741  0.000000  2.04  1.11
## 742  0.000000  0.00  0.00
## 743  0.000000  0.00  0.00
## 744  0.000000  3.17  1.22
## 745  0.000000  3.53  1.23
## 746  0.000000  7.64  0.45
## 747  0.000000  1.36  0.30
## 748  0.000000  2.87  0.97
## 749  0.000000  0.00  0.00
## 750  0.000000  0.00  0.00
## 751  0.000000  3.75  0.70
## 752  0.000000  4.16  0.77
## 753  0.000000  5.63  0.18
## 754  0.000000  2.79  1.64
## 755  0.000000  0.49  0.45
## 756  0.000000  3.12  1.04
## 757  0.000000  2.30  0.90
## 758  0.000000  3.48  0.66
## 759  0.000000  2.74  0.85
## 760  0.000000  5.28  0.12
## 761  0.000000  1.78  0.83
## 762  0.000000  3.82  1.43
## 763  0.000000  1.46  2.33
## 764  0.000000  2.31  1.53
## 765  0.000000  4.26  1.71
## 766  0.000000  7.11  1.20
## 767  0.000000  2.89  1.39
## 768  0.000000  0.38  0.27
## 769  0.000000 11.64  0.39
## 770  0.000000 10.43  0.47
## 771  0.000000 12.34  0.21
## 772  0.000000 13.26  0.39
## 773  0.000000  9.36  0.27
## 774  0.000000  9.24  0.80
## 775  0.000000  9.08  0.23
## 776  0.000000  9.22  0.31
## 777  0.000000  9.58  0.23
## 778  0.000000  9.67  0.25
```

```
## 779          0.000000          6.26          0.15
## 780          0.000000         12.54          0.63
## 781          0.000000         13.13          1.55
## 782          0.000000         11.37          0.46
## 783          0.000000          6.31          0.20
## 784          0.000000          6.46          0.43
## 785          0.000000          9.67          0.39
## 786          0.000000          6.17          0.31
## 787          0.000000          2.99          0.06
## 788          0.000000          0.00          0.00
## 789          0.000000          0.00          0.00
## 790          0.000000          8.39          0.93
## 791          0.000000          8.82          0.40
## 792          0.000000          8.85          0.45
## 793          0.000000          9.10          0.69
## 794          0.000000         12.44          0.88
## 795          0.000000         13.40          0.59
## 796          0.000000          6.12          0.57
## 797          0.000000          9.09          0.42
## 798          0.000000          6.08          0.28
## 799          0.000000          2.95          0.20
## 800          0.000000          5.43          0.14
## 801          0.000000          4.17          0.63
## 802          0.000000          1.93          0.99
## 803          0.000000          0.00          0.00
## 804          0.000000          0.43          3.27
## 805          0.000000          5.43          0.15
## 806          0.000000          1.04          0.63
## 807          0.000000          0.00          0.00
## 808          0.000000          0.33          0.82
## 809          0.000000          5.88          0.93
## 810          0.000000          0.00          0.00
## 811          0.000000          2.09          1.04
## 812          0.000000          5.60          0.19
## 813          0.000000          0.36          2.39
## 814          0.000000          1.18          0.49
## 815          0.000000          6.24          0.23
## 816          0.000000          0.67          0.78
## 817          0.000000          1.29          0.54
## 818          0.000000          0.00          0.00
## 819          2.253081          0.83          0.71
## 820          2.092147          4.96          0.65
## 821          2.253081          5.62          1.03
## 822          0.000000          4.91          1.15
## 823          0.000000          5.37          1.07
## 824          0.000000          0.00          0.00
## 825          2.092147          5.05          0.56
## 826          2.253081          5.30          0.88
## 827          2.092147          2.23          0.44
## 828          2.253081          6.90          0.82
## 829          2.092147          4.91          0.59
## 830          0.000000          1.52          0.52
## 831          0.000000          0.00          0.00
## 832          2.092147          5.05          0.87
```

```
## 833    0.000000    7.51    0.92
## 834    0.000000    0.33    0.18
## 835    0.000000    0.90    0.49
## 836    0.000000    0.25    0.36
## 837    0.000000    0.00    0.00
## 838    0.000000    6.03    0.56
## 839    2.092147    0.63    0.17
## 840    2.253081    1.34    1.06
## 841    0.000000    1.56    0.49
## 842    2.253081    0.89    0.16
## 843    2.092147    1.55    0.25
## 844    0.000000    0.00    0.00
## 845    0.000000    0.00    0.00
## 846    2.092147    1.27    0.66
## 847    2.253081    0.66    0.64
## 848    2.092147    1.39    0.59
## 849    0.000000    0.65    0.27
## 850    0.000000    0.00    0.33
## 851    0.000000    0.15    0.97
## 852    0.000000    0.00    0.00
## 853    0.000000    0.00    0.00
## 854    0.000000    0.00    0.00
## 855    0.000000    0.00    0.00
## 856    0.000000    0.31    1.06
## 857    0.000000    0.53    0.48
## 858    0.000000    0.00    1.04
## 859    0.000000    2.63    1.02
## 860    0.000000    0.29    2.41
## 861    0.000000    0.53    2.03
## 862    0.000000    0.15    2.05
## 863    0.000000    1.47    0.24
## 864    0.000000    0.07    4.22
## 865    0.000000    6.60    0.27
## 866    0.000000    0.00    1.20
## 867    0.000000    3.90    3.00
## 868    0.000000    0.15    1.28
## 869    0.000000    0.78    0.12
## 870    0.000000    0.00    0.00
## 871    0.000000    0.00    0.00
## 872    0.000000    0.00    0.00
## 873    0.000000    0.00    0.00
## 874    0.000000    0.14    1.19
## 875    0.000000    0.00    0.00
## 876    0.000000    0.22    3.31
## 877    0.000000    5.76    0.17
## 878    0.000000    0.69    2.01
## 879    0.000000    0.37    3.24
## 880    0.000000    0.00    0.00
## 881    0.000000    0.00    0.00
## 882    0.000000    0.00    0.00
## 883    0.000000    0.00    0.00
## 884    0.000000    0.00    0.00
## 885    0.000000    0.00    0.00
## 886    0.000000    0.00    0.00
```

```
## 887    0.000000    0.00    0.00
## 888    0.000000    0.00    0.00
## 889    0.000000    0.00    0.28
## 890    0.000000    0.00    0.00
## 891    0.000000    0.05    0.28
## 892    0.000000    0.16    0.44
## 893    0.000000    0.04    0.05
## 894    0.000000    0.00    0.00
## 895    0.000000    0.00    0.00
## 896    0.000000    0.00    0.00
## 897    0.000000    0.00    0.00
## 898    0.000000    0.14    0.28
## 899    0.000000    0.33    0.36
## 900    0.000000    0.00    0.00
## 901    0.000000    0.00    0.00
## 902    0.000000    0.00    0.00
## 903    0.000000    0.00    0.00
## 904    0.000000    0.00    0.00
## 905    0.000000    0.00    0.00
## 906    0.000000    0.00    0.00
## 907    0.000000    0.00    0.00
## 908    0.000000    0.00    0.00
## 909    0.000000    0.00    0.00
## 910    0.000000   12.22    0.34
## 911    0.000000    3.55    0.38
## 912    0.000000   10.55    0.59
## 913    0.000000    0.05    0.05
## 914    0.000000   13.24    1.21
## 915    0.000000    0.00    0.07
## 916    0.000000    2.44    0.27
## 917    0.000000   12.15    0.18
## 918    0.000000   11.02    0.69
## 919    0.000000   12.29    0.42
## 920    0.000000   10.23    0.03
## 921    0.000000    0.00    0.00
## 922    0.000000   11.01    0.01
## 923    0.000000    2.37    0.07
## 924    0.000000    1.76    0.13
## 925    0.000000   13.07    0.44
## 926    0.000000    4.93    0.38
## 927    0.000000    1.38    0.17
## 928    0.000000   21.66    0.08
## 929    0.000000    3.13    0.57
## 930    0.000000    0.00    0.00
## 931    0.000000    1.39    0.10
## 932    0.000000   10.42    0.31
## 933    0.000000    5.46    0.82
## 934    0.000000   12.79    0.29
## 935    0.000000    0.08    0.96
## 936    0.000000    1.08    0.20
## 937    0.000000   11.10    0.80
## 938    0.000000    1.35    0.46
## 939    0.000000   13.22    0.41
## 940    0.000000    1.82    0.04
```

```
##     LightActiveDistance SedentaryActiveDistance VeryActiveMinutes
## 1                  6.06                    0.00                25
## 2                  4.71                    0.00                21
## 3                  3.91                    0.00                30
## 4                  2.83                    0.00                29
## 5                  5.04                    0.00                36
## 6                  2.51                    0.00                38
## 7                  4.71                    0.00                42
## 8                  5.03                    0.00                50
## 9                  4.24                    0.00                28
## 10                 4.65                    0.00                19
## 11                 2.24                    0.00                66
## 12                 5.36                    0.00                41
## 13                 3.28                    0.00                39
## 14                 3.94                    0.00                73
## 15                 5.54                    0.00                31
## 16                 5.41                    0.00                78
## 17                 3.79                    0.00                48
## 18                 5.58                    0.00                16
## 19                 4.27                    0.00                52
## 20                 2.92                    0.00                33
## 21                 5.92                    0.00                41
## 22                 4.88                    0.00                50
## 23                 3.82                    0.00                36
## 24                 4.88                    0.00                45
## 25                 5.81                    0.00                24
## 26                 3.13                    0.00                37
## 27                 2.73                    0.00                44
## 28                 3.74                    0.00                46
## 29                 3.26                    0.00                46
## 30                 4.55                    0.00                36
## 31                 0.00                    0.00                 0
## 32                 5.31                    0.00                 0
## 33                 4.55                    0.00                 0
## 34                 5.91                    0.01                 0
## 35                 0.97                    0.00                 0
## 36                 3.49                    0.00                 0
## 37                 1.49                    0.01                15
## 38                 4.62                    0.01                17
## 39                 1.90                    0.00                 0
## 40                 3.23                    0.00                 0
## 41                 4.11                    0.02                 0
## 42                 2.60                    0.00                 0
## 43                 5.54                    0.01                 0
## 44                 1.89                    0.00                16
## 45                 4.20                    0.02                 0
## 46                 1.83                    0.01                 0
## 47                 2.46                    0.00                17
## 48                 1.60                    0.00                 0
## 49                 1.55                    0.00                 0
## 50                 2.12                    0.01                11
## 51                 1.91                    0.02               186
## 52                 3.47                    0.00                 7
## 53                 1.34                    0.02                 0
```

```
## 54              1.42              0.00              0
## 55              1.58              0.02              0
## 56              1.12              0.01              0
## 57              1.37              0.00              0
## 58              2.22              0.00              0
## 59              1.13              0.00              0
## 60              1.92              0.01              0
## 61              2.04              0.00              0
## 62              1.92              0.01              0
## 63              5.33              0.00              2
## 64              2.64              0.00             30
## 65              5.10              0.00              5
## 66              3.45              0.00              3
## 67              5.09              0.00             51
## 68              3.55              0.00             29
## 69              2.45              0.00             15
## 70              5.30              0.00              5
## 71              1.76              0.01              0
## 72              0.88              0.01              0
## 73              2.66              0.01              0
## 74              4.25              0.00              0
## 75              2.41              0.00              0
## 76              1.95              0.00              8
## 77              4.69              0.00             11
## 78              2.20              0.00              0
## 79              4.31              0.00              3
## 80              2.31              0.00              0
## 81              9.46              0.00              9
## 82              3.23              0.00              3
## 83              2.35              0.00              1
## 84              4.54              0.00             10
## 85              1.66              0.02              0
## 86              2.13              0.01              6
## 87              6.01              0.02             11
## 88              5.67              0.01             41
## 89              4.88              0.00              0
## 90              2.09              0.01             32
## 91              4.97              0.01             12
## 92              0.95              0.01              0
## 93              4.43              0.00              0
## 94              3.26              0.00              0
## 95              5.23              0.00              0
## 96              2.54              0.00              0
## 97              2.26              0.00              0
## 98              2.59              0.00              2
## 99              2.56              0.00              0
## 100             0.13              0.00              0
## 101             0.01              0.00              0
## 102             4.68              0.00              2
## 103             3.55              0.00              0
## 104             2.36              0.00              0
## 105             0.00              0.00              0
## 106             0.00              0.00              0
## 107             0.00              0.00              0
```

```
## 108          0.00          0.00          0
## 109          4.56          0.00          0
## 110          3.25          0.00          0
## 111          2.65          0.00          0
## 112          1.45          0.00          0
## 113          0.00          0.00          0
## 114          2.68          0.00          0
## 115          1.37          0.00          0
## 116          1.48          0.00          0
## 117          0.03          0.00          0
## 118          0.00          0.00          0
## 119          0.00          0.00          0
## 120          0.00          0.00          0
## 121          0.00          0.00          0
## 122          0.00          0.00          0
## 123          0.00          0.00          0
## 124          0.47          0.00          0
## 125          0.25          0.00          0
## 126          1.10          0.00          0
## 127          0.68          0.00          0
## 128          0.00          0.00          0
## 129          0.00          0.00          0
## 130          0.17          0.00          0
## 131          0.00          0.00          0
## 132          0.00          0.00          0
## 133          0.00          0.00          0
## 134          0.10          0.00          0
## 135          2.04          0.00          0
## 136          1.14          0.00          1
## 137          0.11          0.00          0
## 138          2.60          0.00          0
## 139          0.00          0.00          0
## 140          1.16          0.00          0
## 141          0.00          0.00          0
## 142          0.00          0.00          0
## 143          0.83          0.00         14
## 144          1.16          0.00         16
## 145          0.18          0.00         10
## 146          1.24          0.00          0
## 147          0.00          0.00          0
## 148          1.45          0.00          0
## 149          1.04          0.00          0
## 150          0.00          0.00          0
## 151          0.00          0.00          0
## 152          0.00          0.00          0
## 153          0.00          0.00          0
## 154          0.00          0.00          0
## 155          4.26          0.00         42
## 156          5.41          0.00         43
## 157          4.82          0.00         32
## 158          5.78          0.00         27
## 159          3.39          0.00         41
## 160          6.88          0.00         28
## 161          6.30          0.00         48
```

```
## 162          5.00          0.00          31
## 163          5.40          0.00          48
## 164          4.31          0.00         104
## 165          4.47          0.00          52
## 166          4.21          0.00           0
## 167          4.58          0.00          37
## 168          4.46          0.00          44
## 169          5.11          0.00          55
## 170          5.12          0.00          19
## 171          5.39          0.00           6
## 172          5.50          0.00          21
## 173         10.57          0.00          13
## 174          4.50          0.00          25
## 175          4.33          0.00          36
## 176          4.28          0.00          72
## 177          4.85          0.00          36
## 178          4.70          0.00          55
## 179          4.64          0.00          24
## 180          3.02          0.00          20
## 181          2.31          0.00           0
## 182          5.64          0.00          35
## 183          5.56          0.00          57
## 184          3.99          0.00          58
## 185          4.44          0.00          16
## 186          2.20          0.00           3
## 187          3.10          0.00           0
## 188          2.05          0.00           0
## 189          2.37          0.00           0
## 190          1.58          0.00           0
## 191          0.52          0.00           0
## 192          2.06          0.00           0
## 193          1.50          0.00           0
## 194          4.48          0.00           0
## 195          1.53          0.00           0
## 196          1.81          0.00           0
## 197          7.71          0.00           0
## 198          2.16          0.00           0
## 199          3.73          0.00           0
## 200          3.68          0.00           0
## 201          3.77          0.00           0
## 202          3.95          0.00           0
## 203          4.71          0.00           0
## 204          2.93          0.00           0
## 205          2.28          0.00           0
## 206          4.35          0.00           0
## 207          3.72          0.00           0
## 208          4.07          0.00           0
## 209          7.54          0.00           0
## 210          5.08          0.00           0
## 211          2.60          0.00           0
## 212          3.45          0.00           0
## 213          6.60          0.00           0
## 214          0.16          0.00           0
## 215          5.32          0.00           0
```

```
## 216              5.51              0.00               0
## 217              6.01              0.00              13
## 218              4.90              0.00               0
## 219              2.68              0.00               0
## 220              3.51              0.00               0
## 221              3.40              0.00               0
## 222              4.18              0.00               0
## 223              4.14              0.00               0
## 224              3.66              0.00               0
## 225              4.34              0.00               0
## 226              1.81              0.00               1
## 227              3.76              0.00               0
## 228              3.42              0.00               0
## 229              2.80              0.00               0
## 230              1.99              0.00               3
## 231              2.30              0.00               0
## 232              1.16              0.00               0
## 233              1.03              0.00               0
## 234              0.62              0.00               0
## 235              3.07              0.00               0
## 236              0.52              0.00               0
## 237              1.88              0.00               5
## 238              3.16              0.00              20
## 239              0.81              0.00               0
## 240              3.11              0.00               0
## 241              3.29              0.00               0
## 242              4.97              0.00               0
## 243              3.47              0.00               0
## 244              2.08              0.00               0
## 245              4.20              0.00               0
## 246              4.33              0.00               0
## 247              1.79              0.00               0
## 248              4.20              0.00              28
## 249              3.41              0.00              19
## 250              3.94              0.00               1
## 251              5.43              0.00               1
## 252              5.53              0.00              66
## 253              3.26              0.00               1
## 254              3.79              0.00              11
## 255              4.44              0.00               0
## 256              4.78              0.00              11
## 257              3.38              0.00              23
## 258              2.92              0.00               9
## 259              7.15              0.00              32
## 260              6.26              0.00               0
## 261              4.60              0.00              15
## 262              3.95              0.00               0
## 263              5.32              0.00              26
## 264              3.60              0.00               0
## 265              0.03              0.00               0
## 266              4.88              0.00               2
## 267              4.88              0.02               0
## 268              5.32              0.00               0
## 269              5.69              0.01               0
```

```
## 270          3.51          0.01          47
## 271          1.34          0.00           0
## 272          4.89          0.00           1
## 273          5.36          0.00           0
## 274          4.66          0.01          22
## 275          5.47          0.01           2
## 276          4.42          0.02          46
## 277          4.02          0.01          28
## 278          1.62          0.00          46
## 279          4.95          0.00           0
## 280          5.24          0.00           2
## 281          2.36          0.00          46
## 282          2.91          0.00          28
## 283          2.18          0.00          20
## 284          4.26          0.01           5
## 285          3.44          0.00           7
## 286          4.83          0.02           0
## 287          4.66          0.01           1
## 288          5.56          0.00           0
## 289          4.03          0.00          13
## 290          4.61          0.01           0
## 291          0.55          0.00          75
## 292          2.64          0.00          46
## 293          5.19          0.00           0
## 294          5.55          0.01           0
## 295          4.32          0.01           0
## 296          5.11          0.00           0
## 297          3.23          0.01           0
## 298          5.27          0.02          16
## 299          4.65          0.01           6
## 300          5.06          0.02           0
## 301          4.70          0.03           0
## 302          4.36          0.01          11
## 303          3.35          0.00          20
## 304          5.24          0.02           0
## 305          2.38          0.02          15
## 306          4.64          0.01          18
## 307          2.61          0.01           0
## 308          3.58          0.00          20
## 309          3.49          0.02          14
## 310          4.09          0.00           0
## 311          3.87          0.01          22
## 312          3.19          0.01          24
## 313          3.76          0.00           0
## 314          6.22          0.01           0
## 315          2.42          0.01          17
## 316          2.09          0.00           0
## 317          2.01          0.00          44
## 318          2.55          0.00          31
## 319          3.82          0.00           5
## 320          3.26          0.00          15
## 321          2.97          0.00          31
## 322          3.92          0.00          11
## 323          3.82          0.00           4
```

```
## 324          3.96          0.00          19
## 325          3.28          0.00           2
## 326          4.06          0.00           0
## 327          3.06          0.00          33
## 328          3.85          0.00           0
## 329          2.17          0.00          30
## 330          2.41          0.00          50
## 331          2.95          0.00           7
## 332          4.62          0.00           0
## 333          3.22          0.00          15
## 334          2.71          0.00          36
## 335          3.41          0.00          43
## 336          2.41          0.00          41
## 337          3.02          0.00          24
## 338          4.53          0.00          47
## 339          2.89          0.00          14
## 340          2.71          0.00          14
## 341          2.67          0.00          29
## 342          3.59          0.00           0
## 343          3.17          0.00           9
## 344          3.55          0.00           8
## 345          3.31          0.00           1
## 346          0.13          0.00           4
## 347          5.68          0.00           4
## 348          0.00          0.00           0
## 349          0.03          0.00           0
## 350          0.77          0.00          36
## 351          0.59          0.00          65
## 352          0.01          0.00           0
## 353          0.04          0.00           0
## 354          0.00          0.00           0
## 355          0.00          0.00           0
## 356          0.00          0.00           0
## 357          0.00          0.00           0
## 358          0.00          0.00           0
## 359          0.00          0.00           0
## 360          0.00          0.00           0
## 361          0.00          0.00           0
## 362          0.00          0.00           0
## 363          0.00          0.00           0
## 364          0.00          0.00           0
## 365          0.00          0.00           0
## 366          0.00          0.00           0
## 367          0.29          0.00           0
## 368          3.15          0.05           0
## 369          5.58          0.00          13
## 370          4.04          0.07          38
## 371          3.10          0.01           0
## 372          3.58          0.00           0
## 373          4.15          0.00           0
## 374          2.94          0.00           3
## 375          3.87          0.04           0
## 376          2.33          0.00           2
## 377          0.41          0.00           0
```

```
## 378              3.94              0.00               0
## 379              4.37              0.00               0
## 380              0.00              0.00               0
## 381              2.44              0.00               3
## 382              0.00              0.00               0
## 383              1.31              0.00               8
## 384              6.44              0.00               1
## 385              3.80              0.00               0
## 386              3.18              0.00               0
## 387              0.02              0.00               0
## 388              1.12              0.00               1
## 389              5.99              0.00               0
## 390              5.31              0.00               0
## 391              0.35              0.00               0
## 392              2.15              0.00               1
## 393              3.31              0.00               0
## 394              2.47              0.00               1
## 395              5.93              0.00               0
## 396              5.15              0.00               8
## 397              4.91              0.00               6
## 398              5.94              0.00              13
## 399              4.12              0.00               6
## 400              3.51              0.00               6
## 401              0.84              0.00               0
## 402              5.71              0.00               0
## 403              4.83              0.00               8
## 404              5.85              0.00               8
## 405              5.45              0.00              27
## 406              5.46              0.00               6
## 407              4.08              0.00               3
## 408              2.46              0.00               0
## 409              6.25              0.00               2
## 410              5.70              0.00               3
## 411              5.18              0.00               3
## 412              0.01              0.00               0
## 413              0.00              0.00               0
## 414              3.88              0.00               1
## 415              5.62              0.00              10
## 416              6.73              0.00               0
## 417              4.45              0.00               6
## 418              3.58              0.00               0
## 419              5.14              0.00              27
## 420              5.77              0.00              20
## 421              5.29              0.00              19
## 422              6.98              0.00               7
## 423              4.92              0.00              77
## 424              5.35              0.00              58
## 425              6.30              0.00              14
## 426              7.84              0.00              11
## 427              5.27              0.00              14
## 428              5.39              0.00              11
## 429              6.03              0.00              19
## 430              5.42              0.00              13
## 431              6.94              0.00              14
```

```
## 432          6.20          0.00          12
## 433          4.55          0.00          33
## 434          7.88          0.00          18
## 435          5.80          0.00          35
## 436          5.09          0.00          12
## 437          5.93          0.00          33
## 438          5.33          0.00         120
## 439          3.23          0.00         107
## 440          6.79          0.00           6
## 441          6.46          0.00          13
## 442          6.53          0.00           8
## 443          2.59          0.00           0
## 444          2.20          0.00           0
## 445          1.99          0.00           0
## 446          2.67          0.00           0
## 447          4.83          0.00           0
## 448          2.65          0.00           0
## 449          1.52          0.00           0
## 450          1.95          0.00          25
## 451          1.39          0.00           0
## 452          1.39          0.00           0
## 453          2.54          0.00           0
## 454          4.58          0.00           0
## 455          2.93          0.00           0
## 456          3.36          0.00           0
## 457          2.27          0.00           0
## 458          1.96          0.00          29
## 459          2.38          0.00          32
## 460          3.01          0.00           0
## 461          3.13          0.00           0
## 462          4.18          0.00           0
## 463          3.51          0.00           0
## 464          2.35          0.00          27
## 465          2.58          0.00          30
## 466          1.96          0.00           0
## 467          2.18          0.00           2
## 468          3.03          0.00           0
## 469          1.25          0.00          26
## 470          4.65          0.00           0
## 471          3.54          0.00           0
## 472          2.63          0.00           0
## 473          2.86          0.00          34
## 474          0.52          0.00           0
## 475          3.39          0.00           0
## 476          1.61          0.00          19
## 477          4.49          0.00           0
## 478          3.73          0.00          17
## 479          3.50          0.00           8
## 480          4.71          0.00           7
## 481          4.00          0.00          14
## 482          3.16          0.00           1
## 483          3.17          0.00           0
## 484          7.70          0.00           6
## 485          3.47          0.00          20
```

```
## 486              4.01              0.00               5
## 487              5.65              0.00               0
## 488              4.51              0.00              18
## 489              3.59              0.00              12
## 490              3.46              0.00              27
## 491              5.95              0.00               1
## 492              2.31              0.00              15
## 493              4.46              0.00               7
## 494              2.27              0.00               0
## 495              5.22              0.00               0
## 496              2.60              0.00              21
## 497              3.46              0.00               0
## 498              5.51              0.00              14
## 499              2.48              0.00               0
## 500              2.83              0.00              23
## 501              2.02              0.00              66
## 502              5.52              0.00               6
## 503              2.39              0.00              11
## 504              3.94              0.00               4
## 505              4.17              0.00               0
## 506              5.85              0.00               0
## 507              5.58              0.00               0
## 508              6.37              0.00               0
## 509              4.79              0.00               1
## 510              7.54              0.00               3
## 511              5.88              0.00              12
## 512              4.07              0.00              22
## 513              4.19              0.00              10
## 514              5.73              0.00               2
## 515              2.94              0.00               4
## 516              1.35              0.00               0
## 517              8.27              0.00               9
## 518              5.88              0.00              15
## 519              6.11              0.00               6
## 520              4.54              0.00               1
## 521              4.78              0.00               1
## 522              5.77              0.00              14
## 523              6.07              0.00              12
## 524              5.88              0.00               4
## 525              0.00              0.00               0
## 526              3.76              0.00               5
## 527              7.67              0.00               0
## 528              5.54              0.00               4
## 529              6.09              0.00               8
## 530              4.87              0.00               1
## 531              8.97              0.00               5
## 532              3.54              0.00               9
## 533              6.10              0.00               0
## 534              6.65              0.00               1
## 535              4.98              0.00              10
## 536              2.23              0.00               0
## 537              5.41              0.00              19
## 538              3.16              0.00               0
## 539              4.67              0.00              61
```

```
## 540              4.71              0.00              58
## 541              3.77              0.00               0
## 542              0.43              0.00               0
## 543              2.43              0.00               0
## 544              4.18              0.00              69
## 545              1.77              0.00               0
## 546              2.96              0.00              47
## 547              5.60              0.00              25
## 548              2.68              0.00               0
## 549              1.18              0.00               0
## 550              3.69              0.00              51
## 551              4.46              0.00              40
## 552              4.74              0.00              16
## 553              3.17              0.00              49
## 554              4.91              0.00              46
## 555              0.78              0.00               0
## 556              3.37              0.00               0
## 557              4.90              0.00              23
## 558              5.68              0.00              26
## 559              2.77              0.00               0
## 560              4.43              0.00              44
## 561              4.23              0.00              21
## 562              1.22              0.00               0
## 563              3.30              0.00               3
## 564              4.56              0.00              59
## 565              5.20              0.00              61
## 566              3.22              0.00               0
## 567              1.06              0.00               8
## 568              2.10              0.00              86
## 569              3.25              0.00              15
## 570              2.78              0.00             118
## 571              3.56              0.00             115
## 572              2.73              0.00             184
## 573              2.32              0.00             200
## 574              1.82              0.00             114
## 575              1.76              0.00             108
## 576              1.76              0.00              87
## 577              2.78              0.00             110
## 578              3.30              0.00              62
## 579              4.14              0.00              24
## 580              1.98              0.00             210
## 581              2.76              0.00              61
## 582              2.47              0.00              38
## 583              2.93              0.00              63
## 584              3.01              0.00              99
## 585              2.47              0.00              97
## 586              2.61              0.00             207
## 587              3.24              0.00             194
## 588              4.07              0.00              37
## 589              3.57              0.00              97
## 590              2.08              0.00              25
## 591              2.67              0.00              45
## 592              1.45              0.00              41
## 593              0.00              0.00               0
```

```
## 594              0.00                0.00               0
## 595              0.99                0.00              34
## 596              3.35                0.00             104
## 597              0.89                0.00              45
## 598              0.00                0.00               0
## 599              0.00                0.00               0
## 600              0.00                0.00               0
## 601             10.30                0.00               0
## 602              9.48                0.00               7
## 603              5.40                0.00               0
## 604              3.89                0.00               0
## 605              8.41                0.00               0
## 606              5.52                0.00              26
## 607              5.62                0.00              11
## 608              6.20                0.00               0
## 609              8.68                0.00               0
## 610              5.76                0.00               0
## 611              0.00                0.00               0
## 612              6.87                0.00               0
## 613              7.11                0.00               0
## 614              2.60                0.00               0
## 615              7.24                0.00               0
## 616              5.28                0.00               0
## 617              6.73                0.00               0
## 618              3.73                0.00               0
## 619              0.00                0.00               0
## 620              2.26                0.00               0
## 621              7.40                0.00               0
## 622              2.68                0.00               0
## 623              5.54                0.00               0
## 624              5.53                0.00               0
## 625              3.38                0.00               0
## 626              3.45                0.00               0
## 627              5.39                0.01               0
## 628              5.77                0.03               0
## 629              7.17                0.01               0
## 630              6.27                0.01               0
## 631              4.00                0.00              31
## 632              5.19                0.02               0
## 633              5.39                0.01               0
## 634              4.80                0.01               0
## 635              0.00                0.00               0
## 636              4.72                0.00               0
## 637              0.00                0.00              33
## 638              4.46                0.00               0
## 639              5.03                0.01               8
## 640              0.00                0.00               0
## 641              4.18                0.03               0
## 642              4.33                0.00               0
## 643              0.00                0.00               0
## 644              5.09                0.01               0
## 645              4.00                0.02               8
## 646              5.11                0.02               0
## 647              4.57                0.00               0
```

```
## 648              4.40              0.01               0
## 649              4.79              0.00               0
## 650              4.59              0.03               0
## 651              4.16              0.00               0
## 652              5.82              0.00               0
## 653              4.73              0.02               0
## 654              0.00              0.00               0
## 655              0.00              0.00               0
## 656              1.22              0.00              17
## 657              1.97              0.00              14
## 658              0.92              0.00               0
## 659              0.06              0.00              36
## 660              0.31              0.00               5
## 661              3.17              0.00              30
## 662              0.00              0.00               0
## 663              2.22              0.00              70
## 664              0.00              0.00               0
## 665              0.46              0.00               0
## 666              0.00              0.00               0
## 667              0.15              0.00              11
## 668              1.90              0.00              33
## 669              0.73              0.00              42
## 670              0.00              0.00               0
## 671              0.24              0.00               2
## 672              0.00              0.00               0
## 673              1.48              0.00               3
## 674              0.68              0.00               9
## 675              0.00              0.00               0
## 676              0.01              0.00               0
## 677              0.00              0.00               0
## 678              0.00              0.00               0
## 679              1.93              0.00              12
## 680              1.05              0.00               2
## 681              2.51              0.00              50
## 682              1.96              0.00               8
## 683              1.03              0.00               0
## 684              3.68              0.00               0
## 685              4.88              0.00              50
## 686              5.69              0.00               5
## 687              4.32              0.00              13
## 688              2.87              0.00              35
## 689              5.09              0.00              48
## 690              3.51              0.11              53
## 691              3.77              0.00              30
## 692              7.04              0.00              58
## 693              3.32              0.00               0
## 694              4.46              0.10              35
## 695              3.90              0.00              36
## 696              4.25              0.00               7
## 697              5.59              0.00              38
## 698              5.81              0.00              12
## 699              3.67              0.00              32
## 700              3.61              0.00               0
## 701              5.34              0.00              18
```

```
## 702             4.33            0.00            21
## 703             4.55            0.00            15
## 704             4.81            0.00            14
## 705             3.91            0.00             0
## 706             4.50            0.00             0
## 707             2.25            0.00             0
## 708             3.65            0.00            43
## 709             4.99            0.00            62
## 710             2.65            0.00            24
## 711             2.11            0.00             0
## 712             5.41            0.00            53
## 713             4.48            0.00            56
## 714             4.96            0.00            34
## 715             3.53            0.00             0
## 716             3.10            0.00             0
## 717             5.39            0.00             0
## 718             5.05            0.02            48
## 719             5.31            0.00            53
## 720             5.86            0.00            60
## 721             5.17            0.00            30
## 722             4.37            0.00            64
## 723             4.15            0.00             2
## 724             7.42            0.00             0
## 725             7.67            0.00            51
## 726             8.23            0.00            16
## 727             5.29            0.00            50
## 728             8.26            0.00            16
## 729             7.95            0.00            55
## 730             2.52            0.00             0
## 731             3.75            0.00             0
## 732             3.83            0.00            64
## 733             5.36            0.00            58
## 734             0.00            0.00             0
## 735             5.48            0.00            53
## 736             3.86            0.00            44
## 737             0.00            0.00             0
## 738             2.97            0.00            59
## 739             2.84            0.00            31
## 740             3.66            0.00            35
## 741             2.53            0.00            30
## 742             0.01            0.00             0
## 743             0.00            0.00             0
## 744             2.31            0.00            61
## 745             2.51            0.00            67
## 746             2.54            0.00            87
## 747             4.51            0.00            19
## 748             2.67            0.00            58
## 749             1.80            0.00             0
## 750             2.15            0.00             0
## 751             2.37            0.00            69
## 752             2.12            0.00            70
## 753             2.53            0.00            55
## 754             3.36            0.00            54
## 755             4.00            0.00            24
```

```
## 756              5.24              0.00              42
## 757              4.85              0.00              30
## 758              2.66              0.00              66
## 759              3.16              0.00              57
## 760              2.90              0.00              45
## 761              2.95              0.00              24
## 762              3.12              0.00              84
## 763              4.68              0.00              20
## 764              3.25              0.00              32
## 765              3.12              0.00              67
## 766              2.45              0.00              72
## 767              2.23              0.00              57
## 768              1.89              0.00               5
## 769              2.10              0.00             116
## 770              2.45              0.00              95
## 771              3.36              0.00             119
## 772              2.59              0.00             132
## 773              1.49              0.00              96
## 774              3.64              0.00             111
## 775              3.35              0.00             102
## 776              2.95              0.00              90
## 777              2.38              0.00              89
## 778              2.58              0.00             100
## 779              1.88              0.00              60
## 780              4.02              0.00             125
## 781              3.26              0.00             129
## 782              3.86              0.00             118
## 783              3.10              0.00              68
## 784              2.93              0.00              60
## 785              2.35              0.00              90
## 786              3.17              0.00              58
## 787              2.54              0.00              27
## 788              0.85              0.00               0
## 789              1.43              0.00               0
## 790              2.59              0.00              87
## 791              1.91              0.00              89
## 792              2.21              0.00              93
## 793              1.21              0.00              90
## 794              2.35              0.00             121
## 795              3.66              0.00             125
## 796              2.69              0.00              66
## 797              1.85              0.00              96
## 798              3.04              0.00              60
## 799              0.76              0.00              28
## 800              1.59              0.00              40
## 801              1.31              0.00              35
## 802              0.54              0.00              29
## 803              1.76              0.00               0
## 804              2.45              0.00               6
## 805              2.33              0.00              41
## 806              1.80              0.00              16
## 807              2.78              0.00               0
## 808              3.11              0.01               5
## 809              1.75              0.00              49
```

```
## 810              1.87              0.00               0
## 811              3.13              0.00              30
## 812              1.34              0.00              41
## 813              1.77              0.00               7
## 814              1.37              0.00              19
## 815              1.70              0.00              45
## 816              0.34              0.00              11
## 817              2.40              0.00              16
## 818              0.00              0.00               0
## 819              4.50              0.00              65
## 820              4.21              0.00             116
## 821              3.91              0.00             123
## 822              5.41              0.00              60
## 823              2.44              0.00              64
## 824              1.69              0.00               0
## 825              5.20              0.00             117
## 826              4.18              0.00             120
## 827              4.78              0.00              82
## 828              4.29              0.00             137
## 829              4.18              0.00             113
## 830              2.48              0.00              19
## 831              2.94              0.00               0
## 832              3.92              0.00             117
## 833              4.42              0.00              90
## 834              5.33              0.00               4
## 835              2.91              0.00              11
## 836              4.27              0.00               3
## 837              2.34              0.00               0
## 838              2.47              0.00              71
## 839              4.01              0.00              63
## 840              4.50              0.00              71
## 841              4.20              0.00              19
## 842              5.74              0.00              66
## 843              3.78              0.00              74
## 844              3.54              0.00               0
## 845              2.33              0.00               0
## 846              4.72              0.00              71
## 847              3.92              0.00              63
## 848              5.27              0.00              72
## 849              2.69              0.00               8
## 850              3.58              0.00               0
## 851              3.23              0.00               2
## 852              2.43              0.00               0
## 853              0.90              0.00               0
## 854              0.00              0.00               0
## 855              0.00              0.00               0
## 856              1.35              0.00               4
## 857              3.44              0.00               7
## 858              3.07              0.00               0
## 859              3.01              0.00              35
## 860              4.08              0.00               4
## 861              4.75              0.00               7
## 862              4.27              0.00               2
## 863              1.81              0.00              18
```

```
## 864              3.89              0.00               1
## 865              2.87              0.00              77
## 866              3.61              0.00               0
## 867              4.92              0.00              46
## 868              6.43              0.00               2
## 869              2.04              0.00              10
## 870              0.00              0.00               0
## 871              0.00              0.00               0
## 872              0.00              0.00               0
## 873              1.18              0.00               0
## 874              3.23              0.00               2
## 875              4.77              0.00               0
## 876              3.66              0.00               3
## 877              1.73              0.00              66
## 878              3.72              0.00               9
## 879              3.17              0.00               5
## 880              0.00              0.00               0
## 881              1.64              0.00               0
## 882              0.84              0.00               0
## 883              0.78              0.00               0
## 884              1.59              0.00               0
## 885              0.16              0.00               0
## 886              0.00              0.00               0
## 887              0.00              0.00               0
## 888              0.00              0.00               0
## 889              1.74              0.00               0
## 890              0.09              0.00               0
## 891              2.27              0.00               1
## 892              2.75              0.00               8
## 893              0.16              0.00               3
## 894              0.00              0.00               0
## 895              0.85              0.00               0
## 896              1.13              0.00               0
## 897              3.94              0.00               0
## 898              4.93              0.00               6
## 899              3.91              0.00              10
## 900              1.04              0.00               0
## 901              1.17              0.00               0
## 902              1.55              0.00               0
## 903              1.46              0.00               0
## 904              0.00              0.00               0
## 905              0.00              0.00               0
## 906              0.00              0.00               0
## 907              0.00              0.00               0
## 908              0.00              0.00               0
## 909              0.00              0.00               0
## 910              7.82              0.00              85
## 911              5.64              0.00             108
## 912              7.75              0.02              68
## 913              7.01              0.01             106
## 914             10.71              0.00              94
## 915              8.79              0.00              58
## 916              5.94              0.00              29
## 917              5.03              0.00              82
```

```
## 918                6.34                  0.00                73
## 919                4.89                  0.00                82
## 920                5.97                  0.05                61
## 921                7.40                  0.01               102
## 922                4.69                  0.00                64
## 923                6.27                  0.01               113
## 924                6.50                  0.00                22
## 925                7.10                  0.00                93
## 926                5.97                  0.00                58
## 927                5.79                  0.00                18
## 928                4.93                  0.00               124
## 929                4.57                  0.00                36
## 930                3.56                  0.00                 0
## 931                6.67                  0.01                19
## 932                5.53                  0.00                66
## 933                4.37                  0.00                67
## 934                6.16                  0.00                96
## 935                6.99                  0.00               105
## 936                6.80                  0.00                17
## 937                6.24                  0.05                73
## 938                6.28                  0.00                18
## 939                5.89                  0.00                88
## 940                4.25                  0.00                23
##     FairlyActiveMinutes LightlyActiveMinutes SedentaryMinutes Calories
## 1                    13                  328              728     1985
## 2                    19                  217              776     1797
## 3                    11                  181             1218     1776
## 4                    34                  209              726     1745
## 5                    10                  221              773     1863
## 6                    20                  164              539     1728
## 7                    16                  233             1149     1921
## 8                    31                  264              775     2035
## 9                    12                  205              818     1786
## 10                    8                  211              838     1775
## 11                   27                  130             1217     1827
## 12                   21                  262              732     1949
## 13                    5                  238              709     1788
## 14                   14                  216              814     2013
## 15                   23                  279              833     1970
## 16                   11                  243             1108     2159
## 17                   28                  189              782     1898
## 18                   12                  243              815     1837
## 19                   34                  217              712     1947
## 20                   35                  246              730     1820
## 21                   15                  277              798     2004
## 22                   24                  254              816     1990
## 23                   22                  203             1179     1819
## 24                   24                  250              857     1959
## 25                    6                  289              754     1896
## 26                   46                  175              833     1821
## 27                    8                  203              574     1740
## 28                   11                  206              835     1819
## 29                   31                  214              746     1859
## 30                   23                  251              669     1783
```

```
## 31   0    0 1440    0
## 32   0  146 1294 1432
## 33   0  148 1292 1411
## 34   0  236 1204 1572
## 35   0   96 1344 1344
## 36   0  176 1264 1463
## 37  22  127 1276 1554
## 38   7  202 1214 1604
## 39   0  141 1299 1435
## 40   0  151 1289 1446
## 41   0  186 1254 1467
## 42   0  199 1241 1470
## 43   0  227 1213 1562
## 44  18  185 1221 1617
## 45   0  202 1238 1492
## 46   0  140 1300 1402
## 47  36  154 1233 1670
## 48   5  115 1320 1401
## 49   0  150 1290 1404
## 50  23  224 1182 1655
## 51  63  171 1020 2690
## 52   6  166 1261 1497
## 53   0   96 1344 1334
## 54   0  118 1322 1368
## 55   0  117 1323 1370
## 56   0  102 1338 1341
## 57   0  182 1258 1474
## 58   0  152 1288 1427
## 59   0   91 1349 1328
## 60   0  139 1301 1393
## 61   0  112 1328 1359
## 62   0  107  890 1002
## 63  51  256 1131 3199
## 64  16  135 1259 2902
## 65  58  252 1125 3226
## 66   4  170 1263 2750
## 67  42  212 1135 3493
## 68  13  186 1212 3011
## 69  33  121 1271 2806
## 70  58  278 1099 3300
## 71   0  125 1315 2430
## 72   0   38 1402 2140
## 73   0   86 1354 2344
## 74  15  160 1265 2677
## 75   0   89 1351 2413
## 76   1   94 1337 2497
## 77  41  223 1165 3123
## 78   0  118 1322 2489
## 79  53  227 1157 3108
## 80   0  120 1193 2498
## 81  71  402  816 3846
## 82  24  146  908 2696
## 83   7  148  682 2580
## 84  94  221 1115 3324
```

```
## 85    0   52 1388 2222
## 86   12   81 1341 2463
## 87    6  369 1054 3328
## 88   17  243 1139 3404
## 89    0  295  991 2987
## 90    6  303 1099 3008
## 91   19  155 1254 2799
## 92    0   49  713 1276
## 93    0  339 1101 2030
## 94    0  248 1192 1860
## 95    0  373  843 2130
## 96    0  176  527 1725
## 97    0  147 1293 1657
## 98    8  199 1231 1793
## 99   12  217 1211 1814
## 100   0   10 1430 1366
## 101   0    1 1439 1349
## 102  13  308 1117 2062
## 103   0  220 1220 1827
## 104   0  139 1301 1645
## 105   0    0 1440 1347
## 106   0    0 1440 1347
## 107   0    0 1440 1347
## 108   0    1 1439 1348
## 109   0  302 1138 1992
## 110   0  247 1082 1856
## 111   0  184  218 1763
## 112   7   75  585 1541
## 113   0    0 1440 1348
## 114   0  184 1256 1742
## 115   0   87 1353 1549
## 116   0  120 1320 1589
## 117   0    2 1438 1351
## 118   0    0 1440 1347
## 119   0    0 1440 1347
## 120   0    0 1440 1347
## 121   0    0 1440 1347
## 122   0    0 1440 1347
## 123   0    0  711  665
## 124   0   55  734 2220
## 125   0   32  986 2151
## 126   9   88 1292 2383
## 127   0   51  941 2221
## 128   0    0 1440 2064
## 129   0    0 1440 2063
## 130   0   17 1423 2111
## 131   0    0 1440 2063
## 132   0    0 1440 2063
## 133   0    0 1440 2064
## 134   0   10 1430 2093
## 135   0  145 1295 2499
## 136   6   75 1358 2324
## 137   0   12 1303 2100
## 138   0  192 1058 2638
```

```
## 139    0    0  1440  2063
## 140    0   95  1167  2351
## 141    0    0  1440  2063
## 142    0    0  1440  2064
## 143    1   70  1355  2411
## 144    8   94  1322  2505
## 145    0   17  1413  2195
## 146    0   87  1353  2338
## 147    0    0  1440  2063
## 148    0  108  1332  2383
## 149    0   48  1392  2229
## 150    0    0  1440  2063
## 151    0    0  1440  2063
## 152    0    0  1440  2063
## 153    0    0  1440  2063
## 154    0    0   966  1383
## 155   14  227  1157  2390
## 156    5  292  1100  2601
## 157    3  257  1148  2312
## 158    9  282  1122  2525
## 159   11  151  1237  2177
## 160   29  331  1052  2782
## 161    3  311  1078  2770
## 162    7  250  1152  2489
## 163   63  276  1053  2897
## 164   53  255  1028  3158
## 165   10  273  1105  2638
## 166    0  249  1191  2069
## 167   26  216  1161  2529
## 168    8  217  1171  2470
## 169   24  275  1086  2793
## 170   20  282  1119  2463
## 171   20  291  1123  2296
## 172   40  281  1098  2611
## 173   23  361  1043  2732
## 174   28  245  1142  2380
## 175    8  277  1119  2473
## 176   14  250  1104  2752
## 177   27  272  1105  2649
## 178   20  253  1112  2609
## 179   17  295  1104  2498
## 180    2  149  1269  1995
## 181    0  135  1305  1848
## 182   47  297  1061  2709
## 183   28  271  1084  2797
## 184   25  224  1133  2544
## 185   16  236   728  1853
## 186    8  181   706  1459
## 187    0  238   663  1521
## 188    0  197   653  1431
## 189    0  188   687  1444
## 190    0  150   728  1373
## 191    0   60  1053  1214
## 192    0  182  1062  1419
```

```
## 193   0  141  785 1356
## 194   0  327  623 1667
## 195   0  153  749 1370
## 196   0  162  712 1399
## 197   0  432  458 1916
## 198   0  164  704 1401
## 199   0  260  821 1576
## 200   0  288 1018 1595
## 201   0  286  586 1593
## 202   0  331  626 1649
## 203   0  352  492 1692
## 204   0  233  594 1506
## 205   0  191  716 1447
## 206   0  355  716 1690
## 207   0  304  981 1604
## 208   0  345  530 1658
## 209   0  475  479 1926
## 210   0  383  511 1736
## 211   0  229  665 1491
## 212   0  258  610 1555
## 213   0  401  543 1869
## 214   0   17 1002 1141
## 215   0  330  569 1698
## 216   0  343  330 1364
## 217   9  306 1112 2124
## 218   0  335 1105 2003
## 219   0  191 1249 1696
## 220   0  245 1195 1801
## 221   0  195 1245 1724
## 222   0  249 1191 1852
## 223   7  260 1173 1905
## 224  11  228 1201 1811
## 225  11  283 1146 1922
## 226  10  127 1302 1610
## 227   0  266 1174 1851
## 228   0  242 1129 1804
## 229   0  204 1236 1725
## 230   5  152 1280 1654
## 231   0  147 1293 1632
## 232   0   82 1358 1481
## 233   0   76 1364 1473
## 234   0   45 1395 1410
## 235   0  234 1206 1779
## 236   0   40 1400 1403
## 237   6  123 1306 1613
## 238  10  206 1204 1878
## 239   0   52 1388 1426
## 240  11  223 1206 1780
## 241   0  204 1236 1742
## 242   0  319 1121 1972
## 243   0  247 1193 1821
## 244   0  145 1295 1630
## 245   0  290 1150 1899
## 246   0  300 1140 1903
```

```
## 247    0   128   830  1125
## 248   13   320   964  2344
## 249   32   195   676  2038
## 250   48   206   705  2010
## 251   24   284   720  2133
## 252   72   268   968  2670
## 253    7   249   508  1882
## 254   16   206   678  1944
## 255    7   382   648  2346
## 256   43   269  1011  2198
## 257   26   208   761  2048
## 258   27   206   781  1946
## 259   35   360   591  2629
## 260    0   360   584  2187
## 261   11   277   653  2095
## 262    0   227   732  1861
## 263    9   295   623  2194
## 264    0   229   764  1854
## 265    0     4     2   403
## 266   21   356  1061  1982
## 267    8   404  1028  2004
## 268    0   331  1109  1893
## 269    0   448   992  2063
## 270    1   305  1087  2148
## 271    8   160  1272  1529
## 272    6   311  1122  1890
## 273    0   389  1051  1956
## 274    5   378  1035  2094
## 275   10   371  1057  1970
## 276    0   366  1028  2241
## 277    5   330  1077  2021
## 278    1   190  1203  1898
## 279    0   359  1081  1907
## 280    5   309  1124  1882
## 281    0   197  1197  1966
## 282    7   213  1192  1835
## 283   23   206  1191  1780
## 284   20   248  1167  1830
## 285   18   196  1219  1739
## 286    7   334  1099  1878
## 287    6   363  1070  1906
## 288    0   420  1020  2015
## 289   23   311  1093  1971
## 290    5   370  1065  1910
## 291   11    52  1302  1897
## 292    0   326  1068  2096
## 293    0   345  1095  1906
## 294    0   373  1067  1962
## 295    0   319  1121  1826
## 296    0   268   720  1431
## 297    0   280  1160  1788
## 298    8   371  1045  2093
## 299   25   370  1039  2065
## 300    0   335  1105  1908
```

```
## 301     0   356   1084   1908
## 302     2   322   1105   1964
## 303     7   343   1070   2014
## 304     0   376   1064   1985
## 305     3   274   1148   1867
## 306     9   376   1037   2124
## 307     0   206   1234   1669
## 308     2   303   1115   1995
## 309     7   292   1127   1921
## 310     0   416   1024   2010
## 311     2   333   1083   2057
## 312    13   346   1057   2095
## 313     0   385   1055   1972
## 314     0   402   1038   2044
## 315     4   300   1119   1946
## 316     0   172    842   1237
## 317    19   131    777   1450
## 318    46   153    754   1495
## 319    23   214    801   1433
## 320    42   183    644   1468
## 321    83   153    663   1625
## 322    58   205    600   1529
## 323    95   214    605   1584
## 324    67   221    738   1638
## 325    98   164    845   1554
## 326     0   242    712   1397
## 327    12   188    731   1481
## 328    92   252    724   1638
## 329    95   129    660   1655
## 330     9   133    781   1570
## 331    95   170    797   1551
## 332    10   176    714   1377
## 333     8   190    804   1407
## 334    32   150    744   1545
## 335    52   194    687   1650
## 336    40   124    691   1501
## 337   143   176    713   1760
## 338    41   258    594   1710
## 339    96   142    852   1628
## 340    88   178    680   1618
## 341    55   168    676   1590
## 342    86   208    703   1574
## 343   116   171    688   1633
## 344   122   151   1159   1667
## 345   115   196    676   1630
## 346     0     9     13     52
## 347    15   331    712   3654
## 348     0     0   1440   1981
## 349     0     3   1437   2011
## 350    18    87   1299   2951
## 351    21    55   1222   3051
## 352     0     2   1438   1990
## 353     0     2   1438   1995
## 354     0     0   1440   1980
```

```
## 355    0    0  1440  1980
## 356    0    0  1440  1980
## 357    0    0  1440  1980
## 358    0    0  1440  1980
## 359    0    0  1440  1980
## 360    0    0  1440  1980
## 361    0    0  1440  1980
## 362    0    0  1440  1980
## 363    0    0  1440  1980
## 364    0    0  1440  1980
## 365    0    0  1440  1980
## 366    0    0  1440  1980
## 367   11   31  1350  2207
## 368    0  174   950  2828
## 369   46  346   531  3879
## 370   42  196   916  3429
## 371    0  177   855  2704
## 372    0  184  1256  2975
## 373    0  263   775  3089
## 374    5  173  1225  2785
## 375    0  206   774  2926
## 376    8  134  1296  2645
## 377    0   21   721  1120
## 378    0  164  1276  2286
## 379    0  160  1280  2306
## 380    0    0  1440  1776
## 381    6   88   873  1527
## 382    0    0  1440  2115
## 383   15   96  1234  2135
## 384    9  339   589  2302
## 385    0  228   752  1985
## 386    0  194   724  1884
## 387    0    3  1363  1464
## 388    9   58   824  1632
## 389    0  311   604  2200
## 390   18  306   671  2220
## 391    0   34  1265  1792
## 392   19  176   709  1886
## 393    0  233   546  1945
## 394    5  191   692  1880
## 395    8  390   544  2314
## 396   21  288   649  2236
## 397   47  300   680  2324
## 398    8  359   552  2367
## 399   18  289   624  2175
## 400   38  196   695  2092
## 401    0   67   836  1593
## 402   11  344   585  2270
## 403   26  287   669  2235
## 404   13  313  1106  2282
## 405   34  328   957  2530
## 406   11  314   692  2266
## 407   28  279   586  2158
## 408    0  153   603  1792
```

```
## 409   14  374  490  2345
## 410   12  329  555  2260
## 411   18  311  574  2232
## 412    0    2    0   257
## 413    0    0 1440  2955
## 414   14  150 1275  3092
## 415   35  219  945  2998
## 416    0  299  837  3066
## 417    9  253  609  3073
## 418    0  201  721  2572
## 419    8  239 1017  3274
## 420   16  249  704  3015
## 421   42  228  696  3083
## 422   12  272  853  3069
## 423   25  220  945  3544
## 424    5  215  749  3306
## 425    8  239  584  2885
## 426   31  301 1054  3288
## 427   23  224  673  2929
## 428   48  241  684  3074
## 429    9  234  878  2969
## 430   16  236 1175  2979
## 431   43  300  537  3283
## 432   15  241  579  2926
## 433    4  204  935  3147
## 434   18  306  984  3290
## 435   21  251  632  3162
## 436   39  199  896  2899
## 437   45  262 1100  3425
## 438   56  260  508  4022
## 439   38  178  576  3934
## 440   19  258 1020  3013
## 441   14  267  648  3061
## 442   18  256  858  2954
## 443    0  108  825  1623
## 444    0  196  787  2113
## 445    0  194  840  2095
## 446    0  231  717  2194
## 447    0  350  711  2496
## 448    0  225  716  2180
## 449    0  114 1219  1933
## 450    6  162 1247  2248
## 451    0  121  895  1954
## 452    0  137  841  1974
## 453    0  215  756  2150
## 454    0  317  706  2432
## 455    0  201 1239  2149
## 456    0  244 1196  2247
## 457    0  179  916  2070
## 458    1  180  839  2291
## 459    1  194  839  2361
## 460    0  236  762  2203
## 461    0  226 1106  2196
## 462    0  290  797  2363
```

```
## 463    0   240   741  2246
## 464    4   200   667  2336
## 465    2   233   725  2421
## 466    0   180   897  2070
## 467    6   185   734  2120
## 468    0   229   809  2211
## 469    4   108   866  2123
## 470    8   308   733  2423
## 471    0   266   641  2281
## 472    0   231   783  2181
## 473   22   232   622  2499
## 474    0    58   380  1212
## 475    0   318  1122  1909
## 476    7   127  1287  1722
## 477    0   279  1161  1922
## 478   30   262  1131  2121
## 479   12   308  1112  1997
## 480   19   304  1110  2117
## 481   15   331  1080  2116
## 482    9   248  1182  1876
## 483    0   222  1218  1788
## 484   21   432   844  2486
## 485   25   273  1122  2094
## 486    5   308  1122  2085
## 487    0   395  1045  2173
## 488   10   340   993  2225
## 489   41   283  1062  2223
## 490   14   312  1087  2098
## 491   11   367   985  2185
## 492   29   197  1096  1918
## 493   29   293  1111  2105
## 494    0   190  1121  1692
## 495    0   383  1057  2066
## 496   10   237  1172  1953
## 497    0   252  1188  1842
## 498    8   370  1048  2262
## 499    0   202  1238  1722
## 500   16   233  1116  1973
## 501   35   238  1019  2666
## 502   30   339  1065  2223
## 503   18   220  1191  1889
## 504   31   324  1081  2131
## 505    0   247   736  1452
## 506    0   263   718  2947
## 507    0   258   777  2898
## 508    0   271   772  2984
## 509    8   256   944  2896
## 510   24   335   556  3328
## 511   66   302   437  3394
## 512   30   191   890  3013
## 513    8   179   757  2812
## 514   29   260   717  3061
## 515   41   144   901  2729
## 516    0    72  1341  2241
```

```
## 517    66   408   469  3691
## 518    95   281   542  3538
## 519    15   270   730  3064
## 520     8   216   765  2784
## 521    16   238   733  2908
## 522     9   232   738  3033
## 523    19   267   692  3165
## 524    36   263   728  3115
## 525     0     0  1440  2017
## 526    40   195  1131  2859
## 527     0   313   729  3145
## 528    15   251   757  3004
## 529     5   241   745  3006
## 530    16   207   682  2859
## 531    46   439   577  3683
## 532   125   192  1019  3287
## 533    12   253   746  2990
## 534    37   262   701  3172
## 535    41   235   784  3069
## 536     0    68   241  1240
## 537    13   277   767  2026
## 538     0   226   647  1718
## 539    41   256   693  2324
## 540    38   239   689  2254
## 541     0   288   521  1831
## 542     0    46   943  1397
## 543     0   206   622  1683
## 544    28   249   756  2284
## 545     0   148   598  1570
## 546    42   177   801  2066
## 547    16   270   781  2105
## 548     0   272   443  1776
## 549     0   104   582  1507
## 550    11   201   732  2033
## 551    18   238   750  2093
## 552    16   206   745  1922
## 553    13   165   727  1999
## 554    15   270   709  2169
## 555     0    84   506  1463
## 556     0   237   436  1747
## 557     9   227   724  1996
## 558    29   247   812  2116
## 559     0   224   651  1698
## 560    29   241   692  2156
## 561     9   229   761  1916
## 562     0    96   902  1494
## 563     8   210   505  1762
## 564    22   251   667  2272
## 565    40   265   707  2335
## 566     0   195   628  1693
## 567     6    48   222   741
## 568    16   140   728  3405
## 569    11   144   776  2551
## 570    30   176   662  4022
```

```
## 571    54    199    695    4005
## 572    56    158    472    4274
## 573    37    159    525    4552
## 574    32    130    623    3625
## 575    23    111    733    3501
## 576    16    113    773    3192
## 577    74    175    670    4018
## 578    30    200    823    3329
## 579    24    223    627    3152
## 580    65    141    425    4392
## 581    38    214    743    3374
## 582    32    181    759    3088
## 583    16    190    773    3294
## 584    51    141    692    3580
## 585    36    165    739    3544
## 586    45    163    621    4501
## 587    72    178    499    4546
## 588    20    235    732    3014
## 589     8    212    580    3795
## 590     9    141    631    2755
## 591    21    143   1153    3004
## 592    16     79   1304    2643
## 593     0      0   1440    1819
## 594     0      0   1440    1819
## 595    11     70   1099    2489
## 596    37    194    639    3841
## 597    15     63    257    1665
## 598     0      0   1440    1496
## 599     0      0   1440    1496
## 600     0      0   1440    1496
## 601     6    513    921    2865
## 602    15    518    502    2828
## 603     0    312    702    2225
## 604     0    241    759    2018
## 605     0    480    425    2606
## 606    10    349    587    2536
## 607    19    294    579    4900
## 608     0    402    413    2409
## 609     0    512    468    2651
## 610     0    362    711    2305
## 611     0      0   1440    1497
## 612     7    352   1077    2450
## 613     0    458    417    2576
## 614     0    141    758    1879
## 615     0    461    479    2560
## 616     0    343   1040    2275
## 617     0    397    525    2361
## 618     0    236   1204    2044
## 619     0      0   1440    1496
## 620     0    156   1279    1902
## 621     0    487    479    2636
## 622     0    133    673    1838
## 623     0    412    456    2469
## 624     0    318    517    2250
```

```
## 625     0   197   125  1248
## 626     0   199  1241  2560
## 627     0   350  1090  2905
## 628     0   363  1077  2952
## 629     0   328  1112  2896
## 630     0   258  1182  2783
## 631    12   225  1172  3171
## 632     0   271  1169  2766
## 633     0   321  1119  2839
## 634     0   258  1182  2701
## 635     0     0  1440  2060
## 636     0   302  1138  2796
## 637     0     0  1407  2664
## 638     0   258  1182  2703
## 639     3   249  1180  2771
## 640     0     0  1440  2060
## 641     0   287  1153  2743
## 642     0   255  1185  2687
## 643     0     0  1440  2060
## 644     0   324  1116  2843
## 645    95   282  1055  3327
## 646     0   268  1172  2725
## 647     0   240  1200  2671
## 648     0   272  1168  2718
## 649     0   239  1201  2682
## 650     0   305  1135  2806
## 651     0   227  1213  2613
## 652     0   251  1189  2712
## 653     0   264   800  2175
## 654     0     0  1440     0
## 655     0     0  1440  1841
## 656    18    85  1053  2400
## 657    24   105   863  2507
## 658     0    58   976  2127
## 659    18     9  1377  2225
## 660    24    19  1392  2067
## 661    31   146  1233  2798
## 662     0     0  1440  1841
## 663   113   178  1079  3727
## 664     0     0  1440  1841
## 665     0    20  1420  1922
## 666     0     0  1440  1841
## 667    18    11  1400  2053
## 668    13    92  1302  2484
## 669    30    47  1321  2584
## 670     0     0  1440  1841
## 671    13    15  1410  1993
## 672     0     0  1440  1841
## 673     9    84  1344  2280
## 674    34    50  1347  2319
## 675     0     0  1440  1841
## 676     0     1  1439  1843
## 677     0     0  1440  1841
## 678     0     0  1440  1841
```

```
## 679   35   75  1318  2496
## 680    5   49   551  1032
## 681   14  189   796  1994
## 682   24  142   548  1718
## 683    0   86   862  1466
## 684    0  217   837  1756
## 685    3  280   741  2173
## 686   13  295   634  2027
## 687   42  238   689  2039
## 688   41  195   659  2046
## 689    4  297   639  2174
## 690   27  214   708  2179
## 691   33  240   659  2086
## 692   41  347   484  2571
## 693    0  199   720  1705
## 694   31  282   637  2194
## 695    7  254   680  2012
## 696   38  279   697  2034
## 697    8  288   621  2182
## 698   15  369   645  2254
## 699   16  237   731  2002
## 700    0  215   722  1740
## 701   39  313   655  2162
## 702   36  267   654  2072
## 703   36  284   683  2086
## 704   22  305   591  2066
## 705    0  299   717  1850
## 706    0  328   745  1947
## 707   14  151   709  1659
## 708   21  231   607  2105
## 709   34  275   626  2361
## 710    7  199   709  1855
## 711    8  105   127   928
## 712    8  355  1024  2937
## 713   22  261  1101  2742
## 714    6  304  1096  2668
## 715    0  202  1238  2098
## 716    0  203  1155  2076
## 717    0  305  1135  2383
## 718   31  284  1077  2832
## 719   17  304  1066  2812
## 720   33  347  1000  3096
## 721   34  327  1049  2763
## 722   50  261  1065  2889
## 723   25  223  1190  2284
## 724    0  419  1021  2667
## 725   24  379   986  3055
## 726   22  424   978  2939
## 727   12  337  1041  2830
## 728   16  401  1007  2836
## 729   42  382   961  3180
## 730    0  200  1240  2051
## 731    0  237  1142  2225
## 732   14  250  1112  2642
```

```
## 733  31  330  1021  2976
## 734   0    0  1440  1557
## 735  23  317  1047  2933
## 736  13  247  1136  2553
## 737   0    0   111   120
## 738   6  153   745  2772
## 739  26  155   744  2516
## 740  32  189   787  2734
## 741  21  139   864  2395
## 742   0    3  1437  1635
## 743   0    0  1440  1629
## 744  51  114  1136  2743
## 745  69  124   671  2944
## 746  13  145   797  2997
## 747   6  206   758  2463
## 748  59  153   762  2846
## 749   0   90  1350  1965
## 750   0  125   566  2049
## 751  39  129   706  2752
## 752  33  132   726  2781
## 753   6  145   829  2693
## 754  48  161   810  2862
## 755  36  182  1198  2616
## 756  17  308   584  2995
## 757  15  258   685  2730
## 758  26  139   737  2754
## 759  36  152   761  2754
## 760  12  135   843  2655
## 761  14  149  1253  2386
## 762  35  154   834  2924
## 763  42  209   621  2739
## 764  27  147   695  2534
## 765  50  171   743  2960
## 766  23  106  1182  2800
## 767  40  128   757  2735
## 768   4   58   343  1199
## 769   8  123  1193  3186
## 770  12  156  1177  3140
## 771   5  193  1123  3411
## 772   8  158  1142  3410
## 773   6   83  1255  2867
## 774  21  195  1113  3213
## 775   6  195  1137  3133
## 776   7  191  1152  3114
## 777   5  158   695  3043
## 778   6  170  1164  3103
## 779   3  117  1260  2655
## 780  14  223   741  3554
## 781  33  182  1096  3577
## 782   9  209  1104  3403
## 783   5  185  1182  2846
## 784  10  183  1187  2852
## 785   9  153  1188  3062
## 786   8  159  1215  2794
```

```
## 787     1   131   1281  2408
## 788     0    51   1389  1886
## 789     0    95   1345  1988
## 790    22   165   1166  3023
## 791     8   123   1220  2918
## 792     9   130   1208  2950
## 793    15    90   1245  2859
## 794    20   148   1076  3331
## 795    14   228   1073  3589
## 796    12   148   1214  2765
## 797    10   115   1219  2926
## 798     7   184   1189  2809
## 799     4    39    839  1505
## 800     2   154   1244  2044
## 801    11    96   1298  1935
## 802    16    33   1362  1705
## 803     0   105   1335  1632
## 804    51   115   1268  1880
## 805     5   157   1237  2112
## 806    16   130   1278  1829
## 807     0   164   1276  1763
## 808    18   216   1201  1931
## 809    20   172   1199  2218
## 810     0   120   1320  1651
## 811    26   191   1193  2132
## 812     4    82   1313  1976
## 813    54   118   1261  1909
## 814    14   108   1299  1813
## 815     5   104   1286  2008
## 816    16    20   1393  1580
## 817    14   136   1257  1854
## 818     0     0   1440     0
## 819    15   156    723  3635
## 820    14   169    680  4079
## 821    21   174    699  4163
## 822    23   190    729  3666
## 823    21   142    563  3363
## 824     0    93    599  2572
## 825    10   174    720  4157
## 826    19   154    737  4092
## 827     8   169    763  3787
## 828    16   145    677  4236
## 829    12   159    769  4044
## 830    10   136    740  2908
## 831     0   135    734  2741
## 832    16   141    692  4005
## 833    18   161    593  3763
## 834     4   192    676  3061
## 835    10   139    711  2884
## 836     7   172    767  2982
## 837     0   121    780  2660
## 838    10   127    669  3369
## 839     4   142    802  3491
## 840    20   195    822  3784
```

```
## 841   10  167   680  3110
## 842    3  214   764  3783
## 843    5  166   831  3644
## 844    0  158   851  2799
## 845    0  139   621  2685
## 846   13  171   772  3721
## 847   13  152   840  3586
## 848   10  184   763  3788
## 849    6  102   433  1976
## 850    7  196  1237  2650
## 851   23  163  1252  2654
## 852    0  134  1306  2443
## 853    0   65  1375  2505
## 854    0    0  1440  2693
## 855    0    0  1440  2439
## 856   22  105  1309  2536
## 857   10  166  1257  2668
## 858   27  167  1246  2647
## 859   18  158  1229  2883
## 860   54  212  1170  2944
## 861   44  238  1151  3012
## 862   44  206  1188  2889
## 863    6  122  1294  2547
## 864   91  214  1134  3093
## 865    5  129  1229  3142
## 866   28  203  1209  2757
## 867   67  258  1069  3513
## 868   28  317  1093  3164
## 869    2  117  1311  2596
## 870    0    0  1440  2894
## 871    0    0  1440  3212
## 872    0    0  1440  2516
## 873    0   70  1370  3266
## 874   22  166  1250  2683
## 875    0  250  1190  2810
## 876   72  182  1183  2940
## 877    4  110  1260  2947
## 878   43  162  1226  2846
## 879   71  177  1106  2804
## 880    0    0  1440     0
## 881    0  116   831  2044
## 882    0   82   806  1934
## 883    0   84   853  1963
## 884    0  126   937  2009
## 885    0   12  1428  1721
## 886    0    0  1440  1688
## 887    0    0  1440  1688
## 888    0    0  1440  1688
## 889   10  139   744  2188
## 890    0    9  1431  1720
## 891   20  195   817  2419
## 892   45  232   795  2748
## 893    8   19  1410  1799
## 894    0    0  1440  1688
```

```
## 895                  0                  80                1360      1928
## 896                  0                 112                 900      2067
## 897                  0                 310                 714      2780
## 898                 14                 380                 634      3101
## 899                 20                 301                 749      2896
## 900                  0                  79                 834      1962
## 901                  0                 101                 916      2015
## 902                  0                 156                 739      2297
## 903                  0                 129                 848      2067
## 904                  0                   0                1440      1688
## 905                  0                   0                1440      1688
## 906                  0                   0                1440      1688
## 907                  0                   0                1440      1688
## 908                  0                   0                1440      1688
## 909                  0                   0                  48        57
## 910                  7                 312                1036      3921
## 911                 18                 216                1098      3566
## 912                 13                 298                1061      3793
## 913                  1                 281                1052      3934
## 914                 29                 429                 888      4547
## 915                 15                 307                1060      3545
## 916                  5                 191                1215      2761
## 917                 13                 214                1131      3676
## 918                 19                 225                1123      3679
## 919                 13                 226                1119      3659
## 920                  2                 236                1141      3427
## 921                  6                 300                1032      3891
## 922                  1                 227                1148      3455
## 923                  8                 218                1101      3802
## 924                  3                 258                1157      2860
## 925                  8                 235                1104      3808
## 926                  8                 231                1143      3060
## 927                  5                 210                1207      2698
## 928                  4                 223                1089      4398
## 929                 12                 166                1226      2786
## 930                  0                 105                1335      2189
## 931                  3                 229                1189      2817
## 932                  8                 212                1154      3477
## 933                 15                 188                1170      3052
## 934                 17                 232                1095      4015
## 935                 28                 271                1036      4142
## 936                  4                 245                1174      2847
## 937                 19                 217                1131      3710
## 938                 11                 224                1187      2832
## 939                 12                 213                1127      3832
## 940                  1                 137                 770      1849
```

Inference: There are no duplicated ID's. Meaning there were exactly 33 unique participants

```
dailyactivity %>%
summarise(n_distinct(dailyactivity$Id))
```

Total num of participants - daily activity

```
##   n_distinct(dailyactivity$Id)
## 1                           33
```

```
dailycalories %>%
summarise(n_distinct(dailycalories$Id))
```

Total num of participants - dailycalories dataset

```
##   n_distinct(dailycalories$Id)
## 1                           33
```

Inference: There are 33 unique participants in the dailycalories dataset. Meaning an additional three to the original thirty.

```
sum(duplicated(dailycalories)) # checking for duplicates
```

duplicated daily calories

```
## [1] 0
```

Inference: There are no duplicated ID's. Meaning there were exactly 33 unique participants

```
dailyintensities %>%
  summarise(n_distinct(dailyintensities$Id))
```

Total num of participants - daily intensities

```
##   n_distinct(dailyintensities$Id)
## 1                              33
```

Inference: There are 33 unique participants in the dailyintensities dataset. Meaning an additional three to the original thirty.

```
sum(duplicated(dailyintensities)) # checking for duplicates
```

duplicated daily intensities

```
## [1] 0
```

Inference: There are no duplicated ID's. Meaning there were exactly 33 unique participants

```
dailysteps %>%
  summarise(n_distinct(dailysteps$Id))
```

Total num of participants - daily steps

```
##   n_distinct(dailysteps$Id)
## 1                        33
```

Inference: There are 33 unique participants in the dailysteps dataset. Meaning an additional three to the original thirty.

```
sum(duplicated(dailysteps)) # checking for duplicates
```

Duplicated daily steps

```
## [1] 0
```

Inference: There are no duplicated ID's. Meaning there were exactly 33 unique participants

```
weightinfo %>%
  summarise(n_distinct(weightinfo$Id))
```

Total num of participants - weight

```
##   n_distinct(weightinfo$Id)
## 1                         8
```

Inference: The sample size is too small to draw any meaningful insight and recommendations. Therefore, we will not be working with this (weightinfo) dataset.

```
secheartrate %>%
summarise(n_distinct(secheartrate$Id))
```

Total num of participants - heartrate

```
##   n_distinct(secheartrate$Id)
## 1                          14
```

Inference: The sample size is too small to draw any meaningful insight and recommendations. Therefore, we will not be working with this (secheartrate) dataset.

```
sleepday %>%
summarise(n_distinct(sleepday$Id))
```

Total num of participants - sleep day

```
##   n_distinct(sleepday$Id)
## 1                      24
```

Inference: There are 24 unique participants in the sleepday dataset. Meaning nine participants lesser than the other datasets.

```
sleepday_outer_join <- merge(sleepday, dailyactivity, by="Id", all = TRUE)
```

Action: To even up the number of participants, we will ultilize the "outer_join" function

```
n_distinct(sleepday_outer_join$Id)
```

Recheck Total num of participants - sleepday_outer_join

```
## [1] 33
```

Inference: There are 33 unique participants in the dailysteps dataset. Meaning an additional three to the original thirty. A good idea will be to save the newly formed dataset sleepday_outer_join write.csv(sleepday_outer_join, "sleepday_outer_join.csv")

Data Wrangling And Manipulation

A few datasets have shown they have similar columns, we will therefore be merging them. The "merge" function will be ultilized.

Combine dailyactivity dataset And dailyintensities dataset

```
dailyactivity1 <- dailyactivity %>%
select(Id, ActivityDate, TotalSteps, TotalDistance, TrackerDistance, LoggedActivitiesDistance, Calories)
rename(ActivityDay = ActivityDate)

colnames(dailyactivity1)
```

Rename ActivityDate == ActivityDay in dailyactivity

```
## [1] "Id"                       "ActivityDay"
## [3] "TotalSteps"               "TotalDistance"
## [5] "TrackerDistance"          "LoggedActivitiesDistance"
## [7] "Calories"
```

```
dailyactivity2 <- merge(x=dailyactivity1, y=dailyintensities, by=c("Id", "ActivityDay"))
View(dailyactivity2)
```

Now combine dailyactivity1 + dailyintensities Good idea will be to saved the newly merged dataset dailyactivity2

write.csv(dailyactivity2, "dailyactivity2.csv")

Now combine hourlycalories dataset And hourlyintensities dataset And hourlysteps dataset
The merge function can only merge two datasets at a time so

```
hourlycombined1 <- merge(x=hourlycalories, y=hourlyintensities, by=c("Id", "ActivityHour"))
```

Firstly, we merge hourlycalories + hourlyintensities

```
hourlycombined2 <- merge(x=hourlycombined1, y=hourlysteps, by=c("Id", "ActivityHour"))
```

Now combine hourlycombined1 + hourlysteps A good idea will be to save the newly merged d.f hourlycombined2

write.csv(hourlycombined2, "hourlycombined2.csv")

Now we will combine all min d.f's

```
mincombined <- merge(x=mmetsn, y=mstepsn, by=c("Id", "ActivityMinute"))
```

Firstly, combine mmetsn + mstepsn

```
mincombined1 <- merge(x=mintensitiesn, y=mcaloriesn, by=c("Id", "ActivityMinute"))
```

Secondly, combine mintensitiesn + mcaloriesn

```
mincombined2 <- merge(x=mincombined, y=mincombined1, by=c("Id", "ActivityMinute"))
```

Finally, combine mincombined + mincombined1 A good idea will be to save the newly merged d.f hourlycombined2

write.csv(mincombined2, "mincombined2.csv")

__The ActivityHour variable is stored as "chr" character which is the wrong format as this is a date&time variable.

First, we need to convert this to a date$time format.__

Functions in the lubridate package will be ultilized to achieve this.

```
dailyactivity2$ActivityDay=as.POSIXct(dailyactivity2$ActivityDay, format = "%m/%d/%Y", tz=Sys.timezone()
dailyactivity2$Date <- format (dailyactivity2$ActivityDay, format = "%m/%d/%Y")

dailyactivity2$ActivityDay = as.Date(dailyactivity2$ActivityDay, format = "%m/%d/%Y", tz=Sys.timezone()
dailyactivity2$Date =as.Date (dailyactivity2$Date, format = "%m/%d/%Y")

class(dailyactivity2$ActivityDay)
```

dailycombined2

```
## [1] "Date"
```

```
str(dailyactivity2$ActivityDay)
```

```
##  Date[1:940], format: "2016-04-12" "2016-04-13" "2016-04-14" "2016-04-15" "2016-04-16" ...
```

```
glimpse(dailyactivity2$ActivityDay)
```

```
##  Date[1:940], format: "2016-04-12" "2016-04-13" "2016-04-14" "2016-04-15" "2016-04-16" ...
```

```
hourlycombined2$ActivityHour=as.POSIXct(hourlycombined2$ActivityHour, format = "%m/%d/%Y %I:%M:%S %p", t
hourlycombined2$Date <- format (hourlycombined2$ActivityHour, format = "%m/%d/%Y %I:%M:%S %p")

hourlycombined2$ActivityHour = as.Date(hourlycombined2$ActivityHour, format = "%m/%d/%Y %I:%M:%S %p", tz
hourlycombined2$Date = as.Date(hourlycombined2$Date, format = "%m/%d/%Y %I:%M:%S %p")

class(hourlycombined2$ActivityHour)
```

hourlycombined

```
## [1] "Date"
```

```
glimpse(hourlycombined2$ActivityHour)
```

```
##  Date[1:22099], format: "2016-04-12" "2016-04-12" "2016-04-12" "2016-04-12" "2016-04-12" ...
```

sleepday_outer_join View(sleepday_outer_join)

```
sleepday_outer_join$SleepDay = as.POSIXct(sleepday_outer_join$SleepDay, format = "%m/%d/%Y %I:%M:%S %p"
sleepday_outer_join$SleepDay <- format (sleepday_outer_join$SleepDay, format = "%m/%d/%Y %I:%M:%S %p")

sleepday_outer_join$SleepDay = as.Date (sleepday_outer_join$SleepDay, format = "%m/%d/%Y %I:%M:%S %p", t
sleepday_outer_join$SleepDay = as.Date (sleepday_outer_join$SleepDay, format = "%m/%d/%Y %I:%M:%S %p")

class(sleepday_outer_join$SleepDay)
```

```
## [1] "Date"
```

```
glimpse(sleepday_outer_join$SleepDay)
```

```
##  Date[1:12668], format: "2016-04-12" "2016-04-12" "2016-04-12" "2016-04-12" "2016-04-12" ...
```

```
secheartrate$Time = as.POSIXct(secheartrate$Time, format = "%m/%d/%Y %I:%M:%S %p", tz=Sys.timezone())
secheartrate$Date <- format (secheartrate$Time, format = "%m/%d/%Y %I:%M:%S %p")

secheartrate$Time = as.Date (secheartrate$Time, format = "%m/%d/%Y %I:%M:%S %p", tz=Sys.timezone())
secheartrate$Date = as.Date (secheartrate$Date, format = "%m/%d/%Y %I:%M:%S %p")

class(secheartrate$Time)
```

secheartrate

```
## [1] "Date"
```

```
glimpse(secheartrate$Time)
```

```
##  Date[1:2483658], format: "2016-04-12" "2016-04-12" "2016-04-12" "2016-04-12" "2016-04-12" ...
```

Statistical summary

```
dailyactivity2 %>%
select(TotalSteps, TotalDistance, Calories) %>%
summary
```

Statistical summary of TotalSteps, TotalDistance & Calories (dataset: dailyactivity2)

```
##    TotalSteps    TotalDistance       Calories
##  Min.   :    0   Min.   : 0.000   Min.   :   0
##  1st Qu.: 3790   1st Qu.: 2.620   1st Qu.:1828
##  Median : 7406   Median : 5.245   Median :2134
##  Mean   : 7638   Mean   : 5.490   Mean   :2304
##  3rd Qu.:10727   3rd Qu.: 7.713   3rd Qu.:2793
##  Max.   :36019   Max.   :28.030   Max.   :4900
```

Inference: The Average total steps per day (which is 7638) is lower than the CDC recommendation. 8,000 steps per day is the recommended steps per day by the CDC and this has been associated with a 50% lower risk for all-cause mortality. And taking 12,000 steps per day was associated with a 60% lower risk compared with taking 5,000 or lesser steps. Consequently, the amount of calories burned daily is also, lower than the recommended.

```
dailyactivity2 %>%
select(VeryActiveDistance, ModeratelyActiveDistance, LightActiveDistance, SedentaryActiveDistance) %>%
summary
```

Statistical summary of VeryActiveDistance ModeratelyActiveDistance LightActiveDistance SedentaryActiveDistance (dataset: dailyactivity2)

```
##  VeryActiveDistance ModeratelyActiveDistance LightActiveDistance
##  Min.   : 0.000     Min.   :0.0000           Min.   : 0.000
##  1st Qu.: 0.000     1st Qu.:0.0000           1st Qu.: 1.945
##  Median : 0.210     Median :0.2400           Median : 3.365
##  Mean   : 1.503     Mean   :0.5675           Mean   : 3.341
##  3rd Qu.: 2.053     3rd Qu.:0.8000           3rd Qu.: 4.782
##  Max.   :21.920     Max.   :6.4800           Max.   :10.710
##  SedentaryActiveDistance
##  Min.   :0.000000
##  1st Qu.:0.000000
##  Median :0.000000
##  Mean   :0.001606
##  3rd Qu.:0.000000
##  Max.   :0.110000
```

```
dailyactivity2 %>%
select(VeryActiveMinutes, FairlyActiveMinutes, LightlyActiveMinutes, SedentaryMinutes) %>%
summary()
```

Statistical summary of VeryActiveMinutes, FairlyActiveMinutes, LightlyActiveMinutes, SedentaryMinutes (dataset: dailyactivity2)

```
##  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
```

Inference: Of all the different categories of activity minutes, sedentary minutes has the highest average. This suggests to us that the Fitbit users spend more time doing nothing. (i.e., not working out or using their devices.)

```
hourlycombined2 %>%
select(Calories, TotalIntensity, AverageIntensity, StepTotal) %>%
summary()
```

Statistical summary of Calories, TotalIntensity, AverageIntensity, StepTotal (dataset: hourlycombined2)

```
##     Calories      TotalIntensity   AverageIntensity   StepTotal
##  Min.   : 42.00   Min.   :  0.00   Min.   :0.0000   Min.   :    0.0
##  1st Qu.: 63.00   1st Qu.:  0.00   1st Qu.:0.0000   1st Qu.:    0.0
##  Median : 83.00   Median :  3.00   Median :0.0500   Median :   40.0
##  Mean   : 97.39   Mean   : 12.04   Mean   :0.2006   Mean   :  320.2
##  3rd Qu.:108.00   3rd Qu.: 16.00   3rd Qu.:0.2667   3rd Qu.:  357.0
##  Max.   :948.00   Max.   :180.00   Max.   :3.0000   Max.   :10554.0
```

Inference: An average of 3,500 steps per hour is the recommended steps/hour. Fitbit users have an average of 320 steps per hour which is very low and suggest the users aren't walking enough in every hour. Consequently, users burn reduced amount of calories hourly. This further suggest that most fitbit users have a sedentary lifestyle.

```
sleepday_outer_join %>%
select(TotalTimeInBed, TotalMinutesAsleep) %>%
summary()
```

Statistical summary of TotalTimeInBed, TotalMinutesAsleep (dataset: sleepday_outer_join)

```
##  TotalTimeInBed  TotalMinutesAsleep
##  Min.   : 61.0   Min.   : 58.0
##  1st Qu.:402.0   1st Qu.:361.0
##  Median :463.0   Median :432.0
##  Mean   :458.4   Mean   :419.4
##  3rd Qu.:526.0   3rd Qu.:492.0
##  Max.   :961.0   Max.   :796.0
##  NA's   :227     NA's   :227
```

Inference: The users spend more time in bed than they are actually asleep. This suggest to us that users are awake during bed time. Users may be working night shift, they may be students who need to stay awake at night to read.

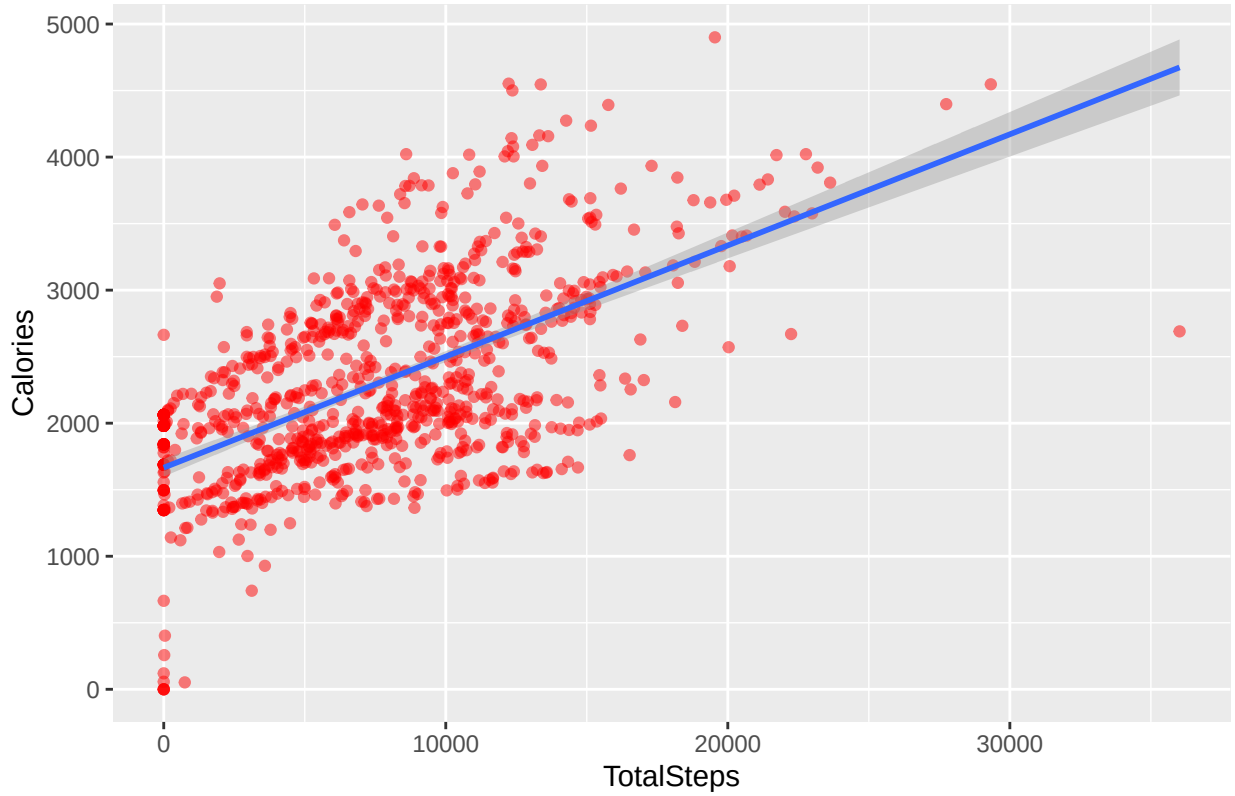
visualization (ggplot2)

```
ggplot(data = dailyactivity2,
mapping = aes(x=TotalSteps, y=Calories))+
geom_point(colour = "red", alpha=5/10)+
geom_smooth(method="lm")+
labs(x="TotalSteps", y="Calories",
title="Fig 1.0 - Total Steps Vs Calories")
```

dailyactivity2

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

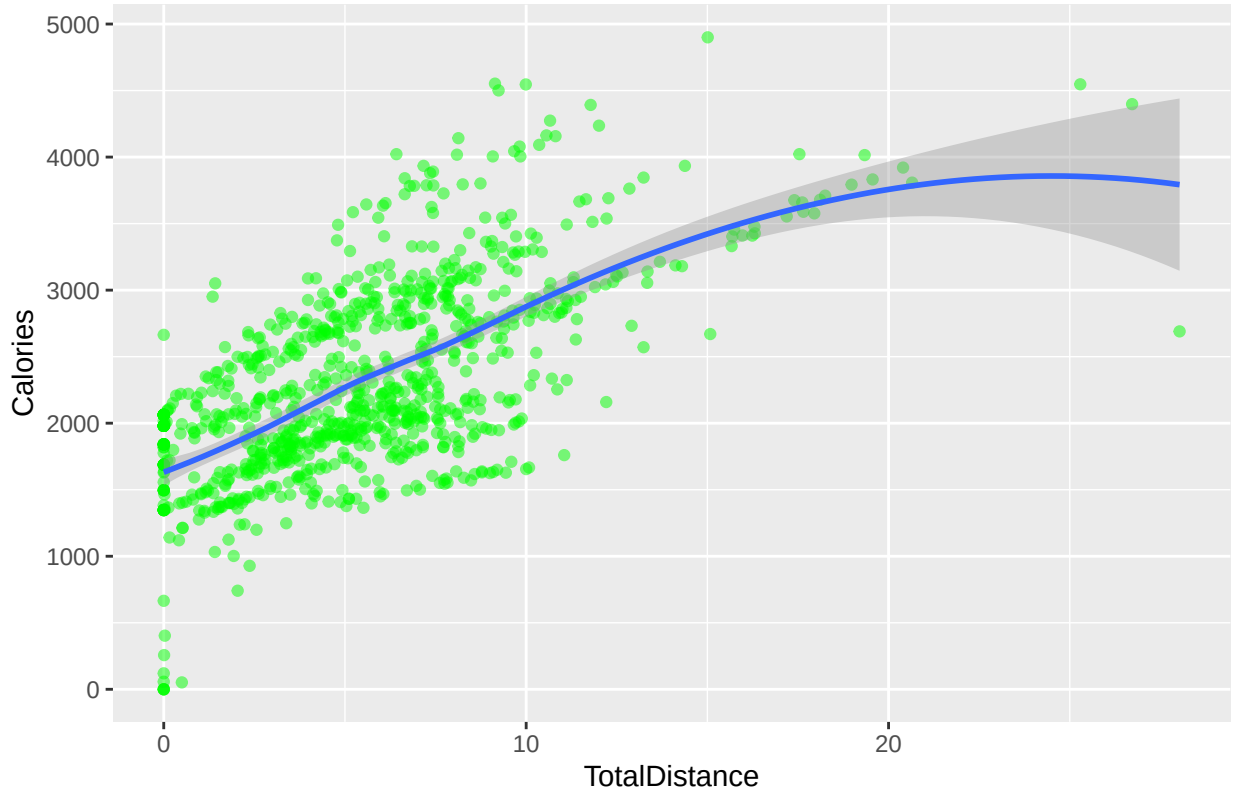
Fig 1.0 − Total Steps Vs Calories




```
ggplot(data = dailyactivity2,
mapping = aes(x=TotalDistance, y=Calories))+
geom_point(colour = "green", alpha=5/10)+
geom_smooth()+
labs(x="TotalDistance", y="Calories",
title="Figure 1.1 - TotalDistance Vs Calories")
```

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

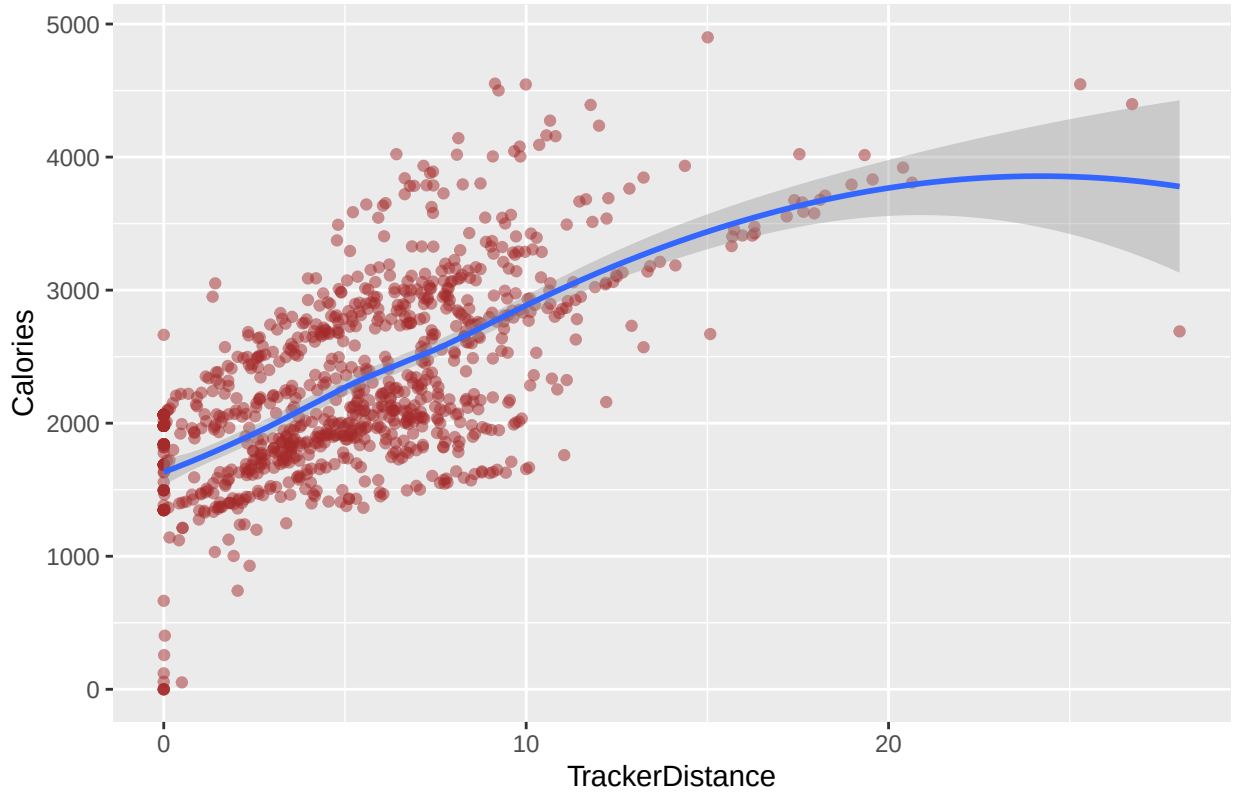
Figure 1.1 − TotalDistance Vs Calories




```
ggplot(data = dailyactivity2,
mapping = aes(x=TrackerDistance, y=Calories))+
geom_point(colour = "brown", alpha=5/10)+
geom_smooth()+
labs(x="TrackerDistance", y="Calories",
title="Figure 1.2 - TrackerDistance Vs Calories")
```

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

Figure 1.2 − TrackerDistance Vs Calories

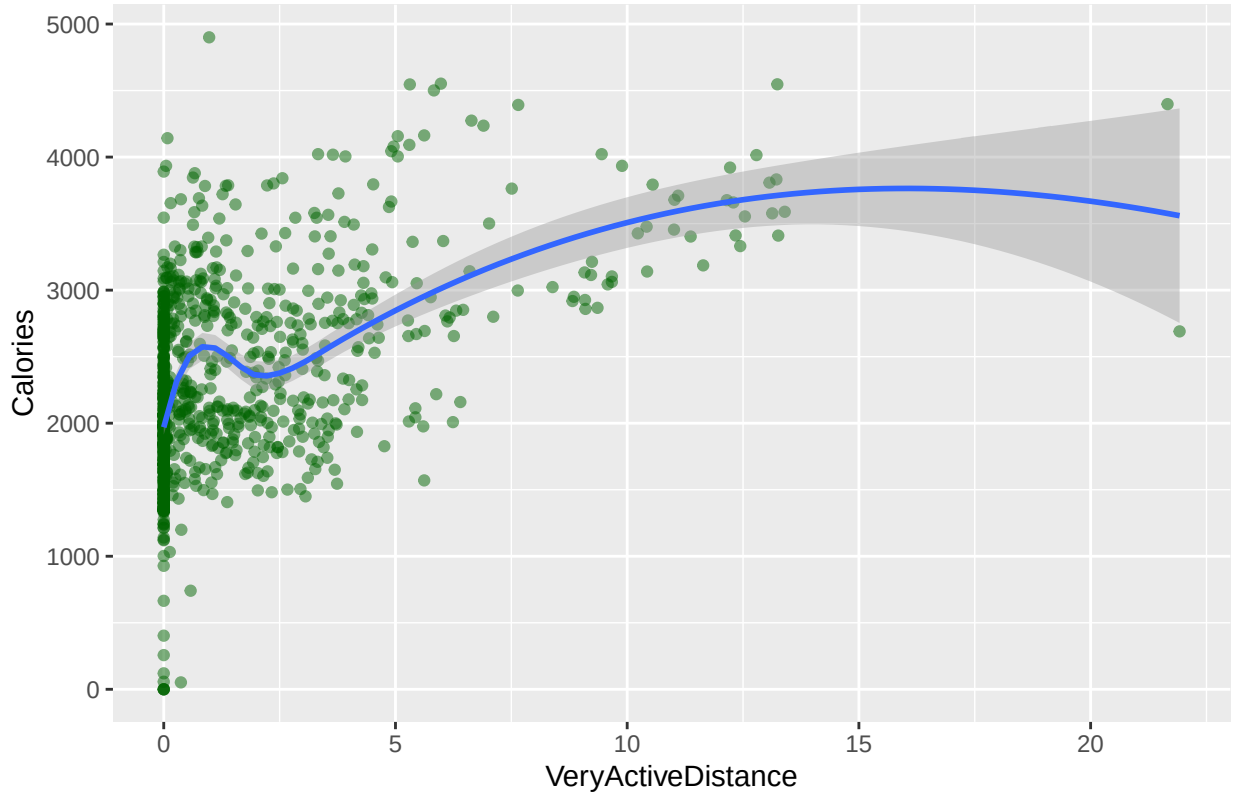


Inference: Examining the three graphs above we can infer that an increase in TrackerDistance, TotalDistance and TotalSteps has almost equal effect on the amount of Calories burnt.

```
ggplot(data = dailyactivity2,
mapping = aes(x=VeryActiveDistance, y=Calories))+
geom_point(colour = "darkgreen", alpha=5/10)+
geom_smooth()+
labs(x="VeryActiveDistance", y="Calories",
title="Figure 2.0 - VeryActiveDistance Vs Calories")
```

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

Figure 2.0 − VeryActiveDistance Vs Calories

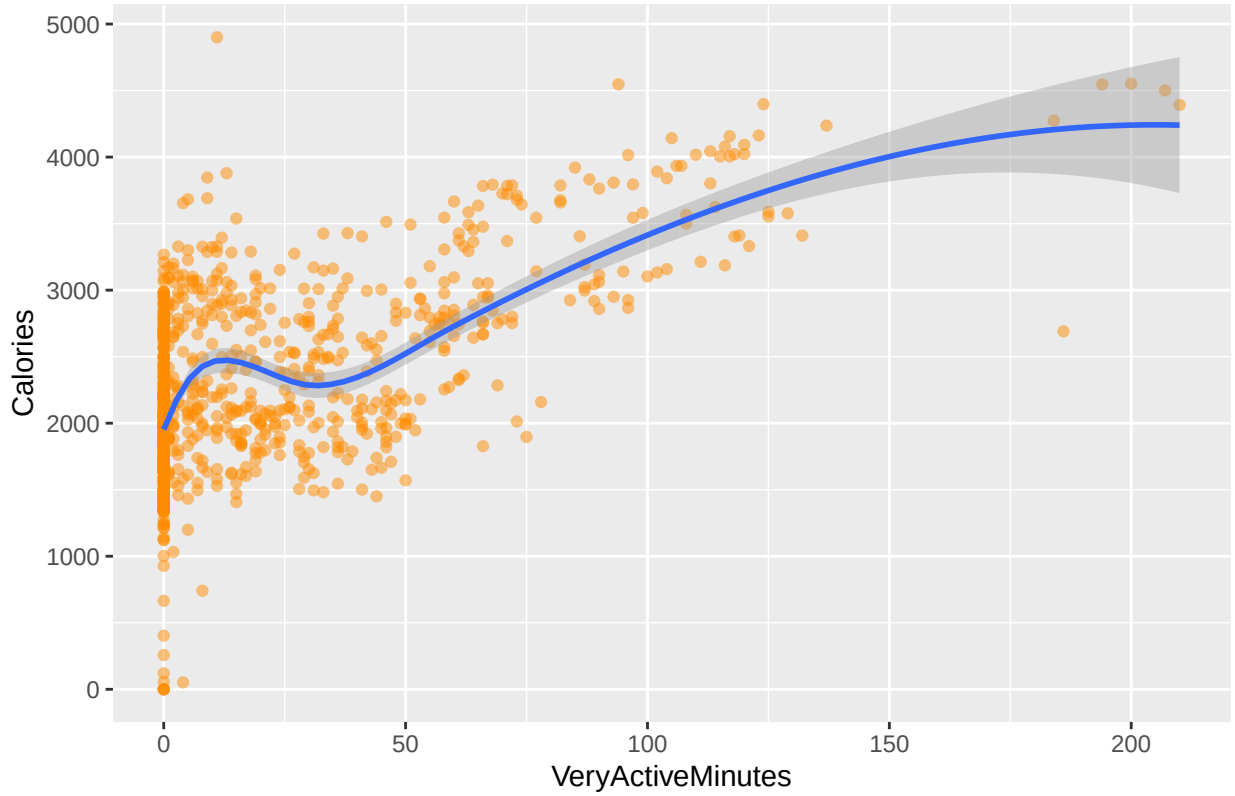


Inference: Most participants had very high calories burnt between the start at zero distance up to 4. The number of participants reduced reduced from 4 unward.

```
ggplot(data = dailyactivity2,
mapping = aes(x=VeryActiveMinutes, y=Calories))+
geom_point(colour = "darkorange", alpha=5/10)+
geom_smooth()+
labs(x="VeryActiveMinutes", y="Calories",
title="Figure 2.1 - VeryActiveMinutes Vs Calories")
```

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

Figure 2.1 − VeryActiveMinutes Vs Calories



Inference: Examining the two graphs above we can infer that first few initial distance of (0-4) within the first few minutes (20-40 mins) is when most users burn their calories. Also, as the distance and minutes increases, the calories burnt increases but of a lesser population of users.

```
dailyactivity2 %>%
summarise(unique_number_of_days = n_distinct(dailyactivity2$ActivityDay)) # Check total unique number o
```

```
##   unique_number_of_days
## 1                    31
```

```
dailyactivity2 %>%
distinct(ActivityDay) # Check for the unique number of days by Activity Days
```

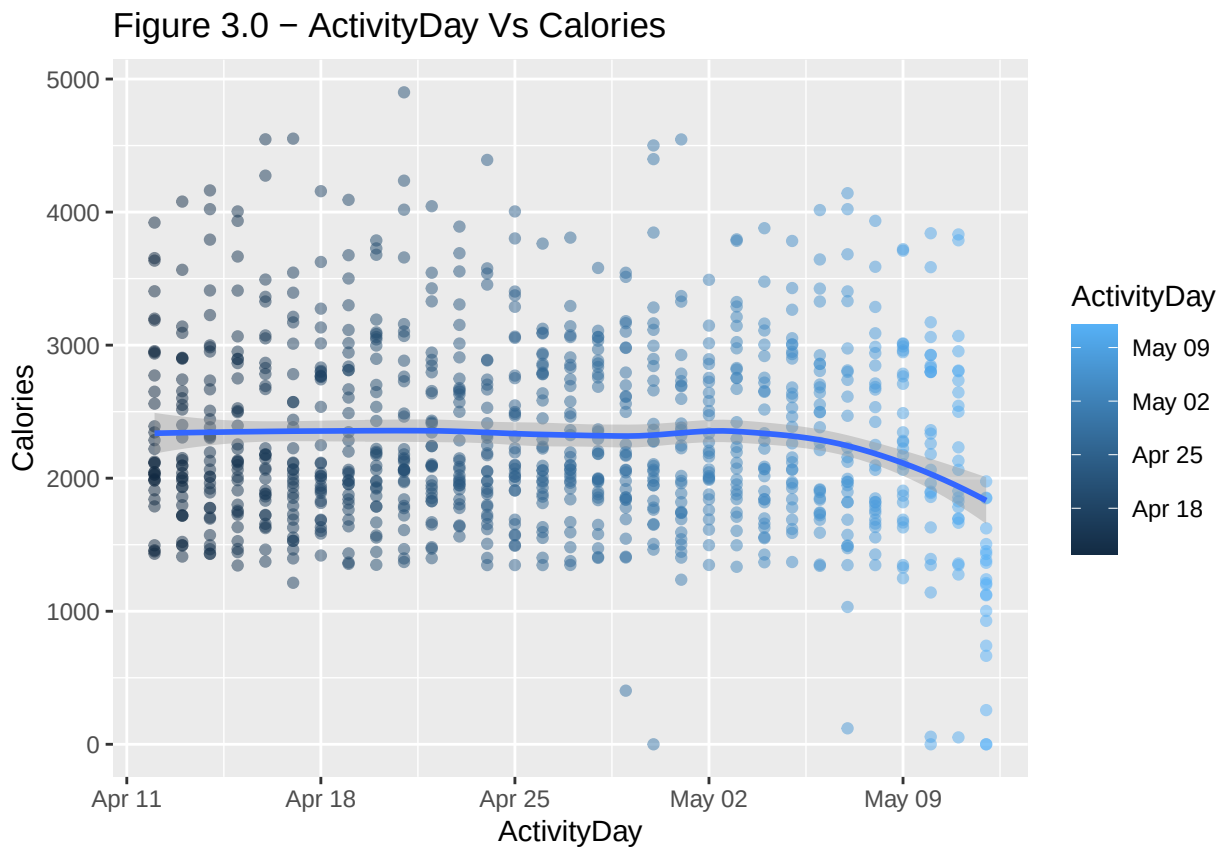
```
##    ActivityDay
## 1   2016-04-12
## 2   2016-04-13
## 3   2016-04-14
## 4   2016-04-15
## 5   2016-04-16
## 6   2016-04-17
## 7   2016-04-18
## 8   2016-04-19
## 9   2016-04-20
## 10  2016-04-21
## 11  2016-04-22
```

```
## 12  2016-04-23
## 13  2016-04-24
## 14  2016-04-25
## 15  2016-04-26
## 16  2016-04-27
## 17  2016-04-28
## 18  2016-04-29
## 19  2016-04-30
## 20  2016-05-01
## 21  2016-05-10
## 22  2016-05-11
## 23  2016-05-12
## 24  2016-05-02
## 25  2016-05-03
## 26  2016-05-04
## 27  2016-05-05
## 28  2016-05-06
## 29  2016-05-07
## 30  2016-05-08
## 31  2016-05-09
```

```
ggplot(data = dailyactivity2,
mapping = aes(x=ActivityDay, y=Calories, color=ActivityDay))+
geom_point(alpha=5/10)+
geom_smooth()+
labs(x="ActivityDay", y="Calories",
title="Figure 3.0 - ActivityDay Vs Calories")
```

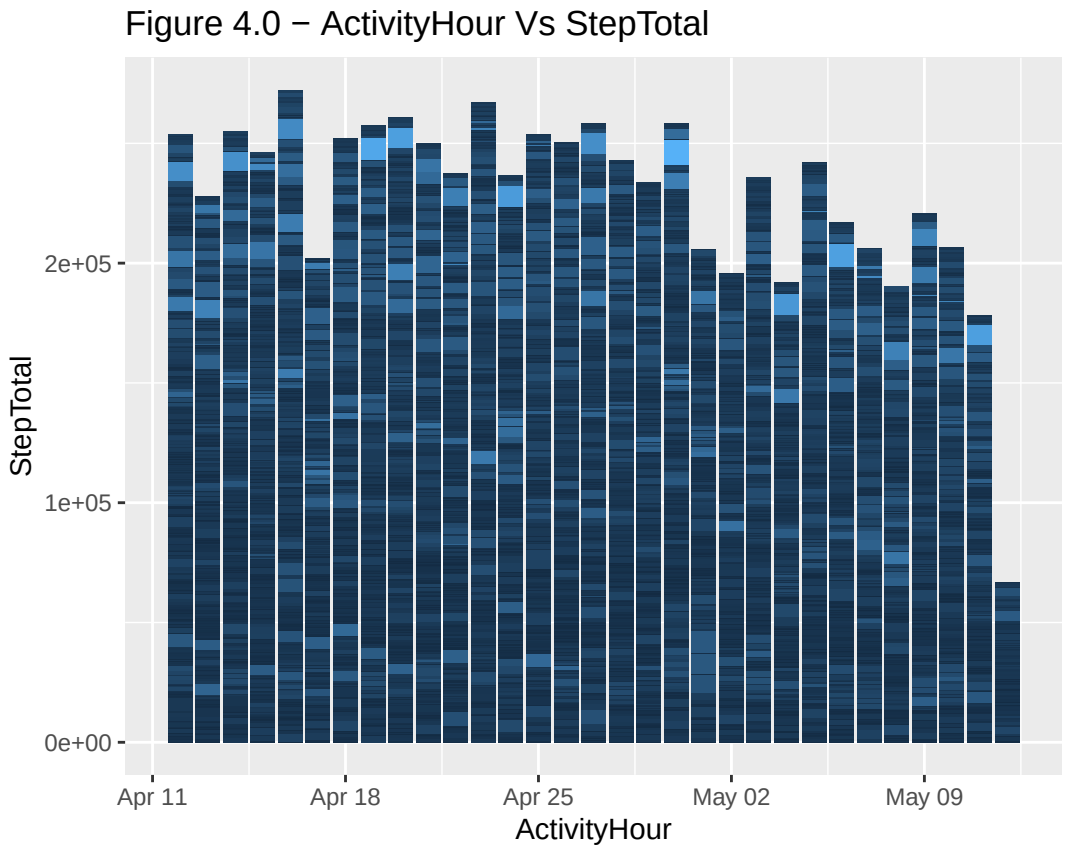
Inferance: The survey occured between Tuesday 12th April 2016 To Thursday 12th of May 2019 (Approximately one month)

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



Inference: Users don't begin to burn calories immediately. Usser's intensities are concentrated between 1400 To 3500 Calory burn levels.

```
ggplot(data = hourlycombined2,
mapping = aes(x=ActivityHour, y=StepTotal, fill=Calories))+
geom_bar(stat="identity")+
labs(x="ActivityHour", y="StepTotal",
title="Figure 4.0 - ActivityHour Vs StepTotal")
```



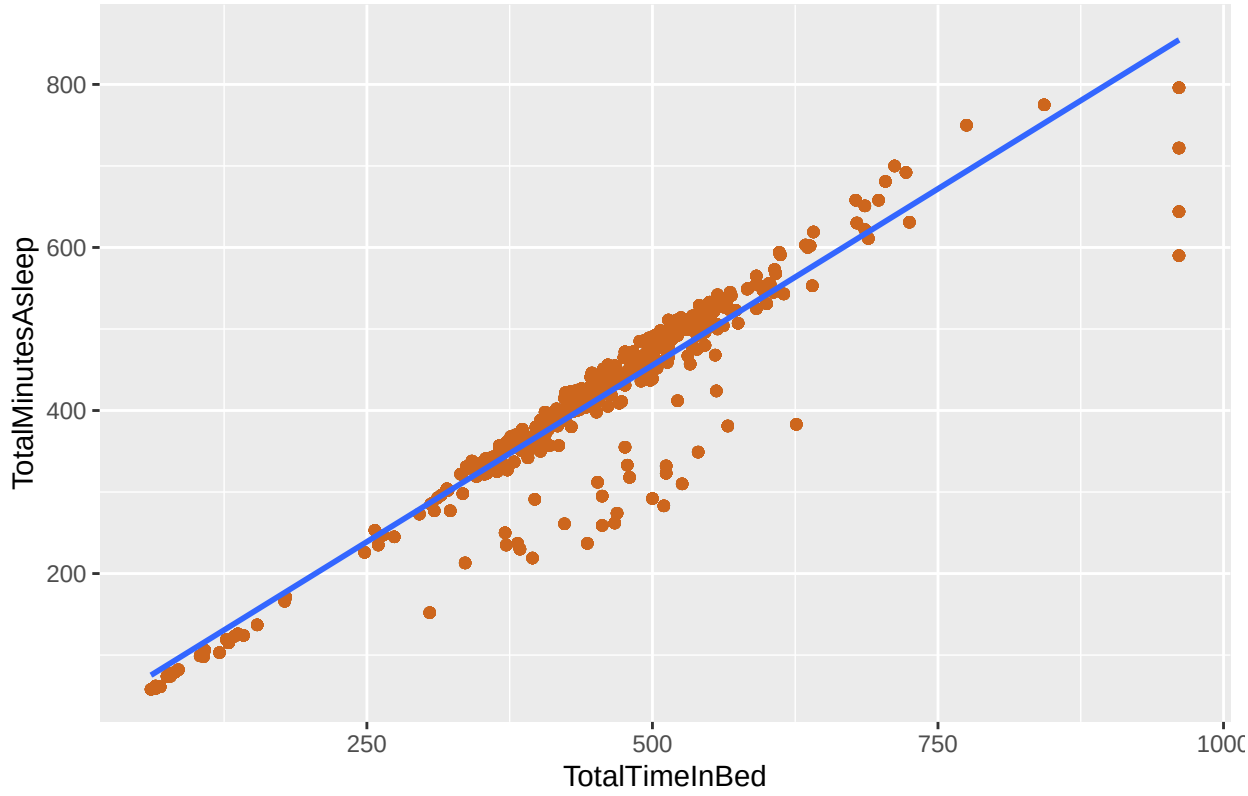
hourlycombined2

```
ggplot(data = sleepday_outer_join,
mapping = aes(x=TotalTimeInBed, y=TotalMinutesAsleep))+
geom_point(colour = "chocolate3", alpha=5/10, na.rm =TRUE)+
geom_smooth(method="lm", na.rm = TRUE, finite = TRUE,)+
labs(x="TotalTimeInBed", y="TotalMinutesAsleep",
title="Figure 5.0 - TotalTimeInBed Vs TotalMinutesAsleep")
```

```
## Warning: Ignoring unknown parameters: finite
```

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

Figure 5.0 − TotalTimeInBed Vs TotalMinutesAsleep



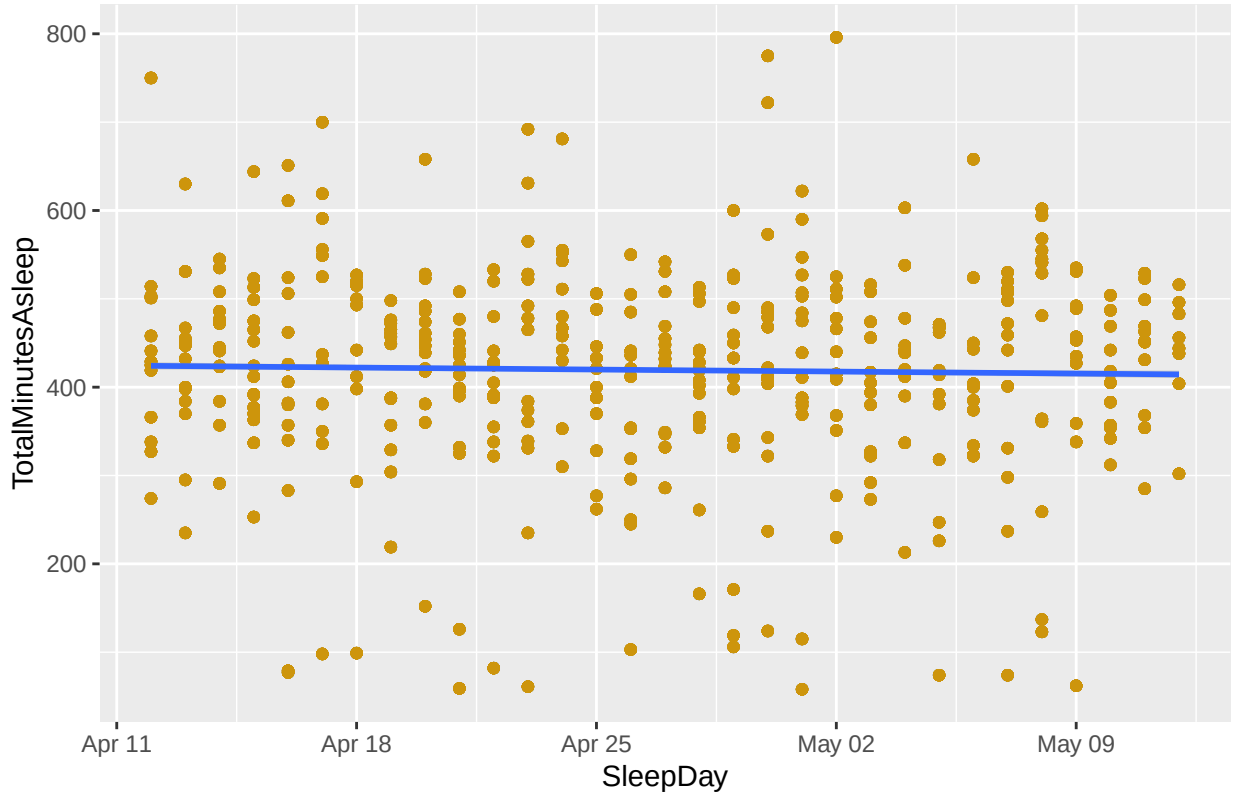

```
ggplot(data = sleepday_outer_join,
mapping = aes(x=SleepDay, y=TotalMinutesAsleep))+
geom_point(colour = "darkgoldenrod3", alpha=5/10, na.rm = TRUE)+
geom_smooth(method="lm", na.rm = TRUE, finite = TRUE,)+
labs(x="SleepDay", y="TotalMinutesAsleep",
title="Figure 5.0a - SleepDay Vs TotalMinutesAsleep")
```

Inference: TotalTimeInBed Vs TotalMinutesAsleep is not perfectly liner therfore, users aren't always asleep when in bed or at bed time.

```
## Warning: Ignoring unknown parameters: finite
```

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

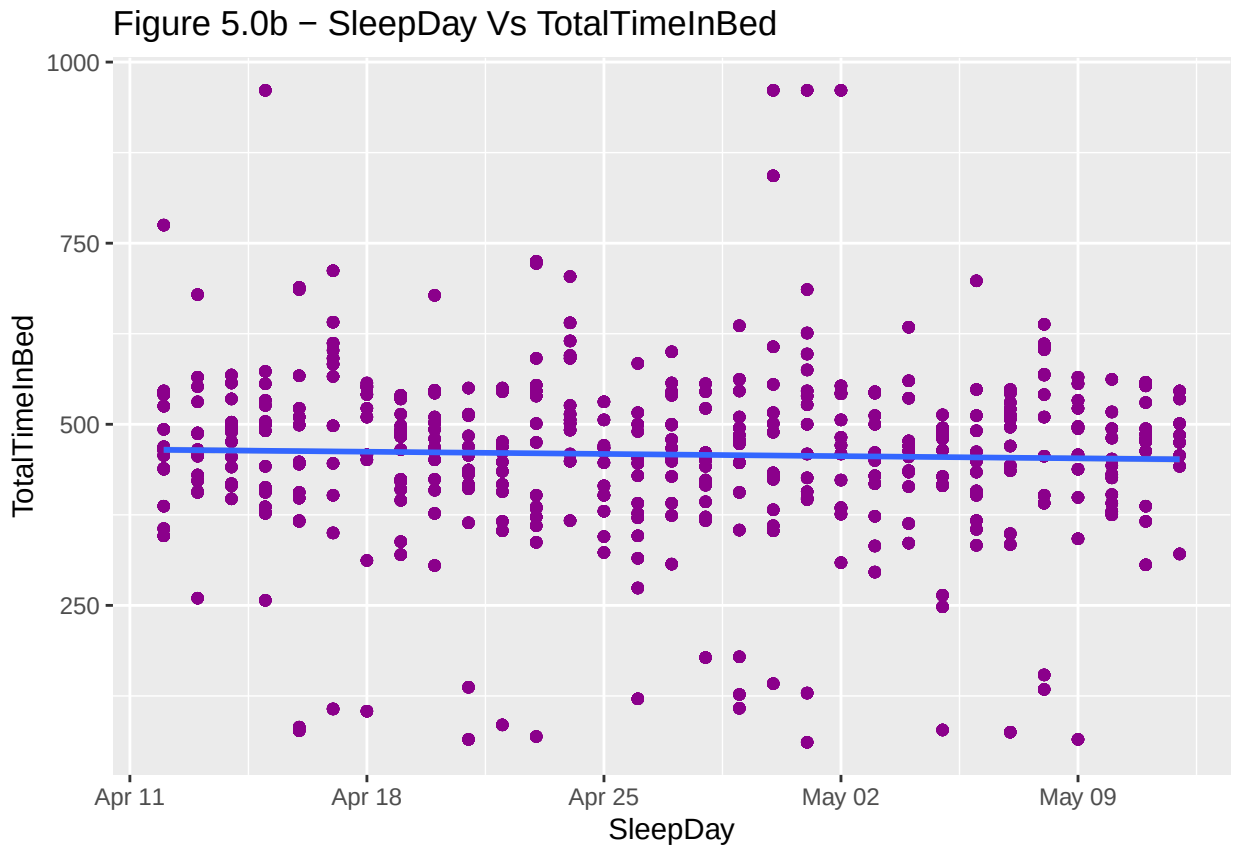
Figure 5.0a − SleepDay Vs TotalMinutesAsleep




```
ggplot(data = sleepday_outer_join,
mapping = aes(x=SleepDay, y=TotalTimeInBed))+
geom_point(colour = "darkmagenta", alpha=5/10, na.rm = TRUE)+
geom_smooth(method="lm", na.rm = TRUE, finite = TRUE,)+
labs(x="SleepDay", y="TotalTimeInBed",
title="Figure 5.0b - SleepDay Vs TotalTimeInBed")
```

```
## Warning: Ignoring unknown parameters: finite
```

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



Conclusion and Recommendation

Conclusion: The dataset is from a third party. Hence has low data quality and integrity. Recommendation: The company needs to develop a method to generate its own users' data internally, as this will produce high-quality data.

Conclusion: Insufficient amount of total daily steps and calories burnt.

Recommendation: The company needs to motivate its users to take more daily steps as this will lead to increased calorie burn.

Conclusion: Most users appear to carry out their activity in an indoor setting, e.g., home workout or gym.

Recommendation: The company needs to target potential customers who are more inclined to outdoor workouts.

Conclusion: Users are in bed but not asleep, as these users may either be working from home, at the office, or students studying overnight. Recommendation: The company needs to mainly target customers who already have a day job or a 9-5. This will enable these users to have ample time to workout in the evening hours of the day and possibly outdoor.

Conclusion: The amount of calories burned is directly proportional to the total daily steps, distance, and tracked distance. In effect, the more steps, the more calories are burned. Recommendation: The company should encourage users to take more steps daily.

Conclusion: A closer look informs us that most users have intensities after the first 20-40 minutes.

Recommendation: The company should develop campaigns to keep the user population intensity high after these minutes. (e.g., introduce Fitbit play, a play app where users can listen to or watch their favorite songs or movies respectively, as it suits them)

Conclusion: Though some calories are burned in most of the active hours, they are distortions in the degree of calories burned from high to medium to low. Compare bars to the calories key, 750: High – 500: Medium – 250: Low. In effect, users like to take breaks between their exercises. Going by Figure 4.0.

Recommendation: The company should introduce a burn calorie hourly count so that users can easily count how many calories they burn every hour. This will help them maintain a daily target and exercise until this is met, regardless of whether they have breaks in between.