

title: "Case Study using R programming" author: "Sarah" Date: 04/26/2021 output: pdf_document html_document — ## R Markdown

This is an R Markdown document.

- HTML
- PDF
- MS word document.

Summary

There is a demand for wearable devices. The purpose of the case study was to analyze smart device fitness data with the focus on the Bellabeat leaf crystal product. Bellabeat leaf tracker can connect to the Bellabeat app to track stress, activity, sleep sensitivity, and menstrual cycle. By finding new insights might help guide Bellabeat marketing strategy. The study will be presented to Bellabeat executive team.

Setting up my environment

Notes: For more details on the Fitbit Fitness Tracker Data click [herelink \(https://www.kaggle.com/arashnic/fitbit\)](https://www.kaggle.com/arashnic/fitbit). This case study focused on the dailyactivity_merged.csv file.

Installing R packages

```
install.packages("tidyverse")
```

```
## Installing package into '/home/rstudio-user/R/x86_64-pc-linux-gnu-library/4.0'  
## (as 'lib' is unspecified)
```

```
library(tidyverse)
```

```
## — Attaching packages — tidyverse 1.3.1 —
```

```
## ✓ ggplot2 3.3.3    ✓ purrr  0.3.4  
## ✓ tibble  3.1.1    ✓ dplyr  1.0.5  
## ✓ tidyr   1.1.3    ✓ stringr 1.4.0  
## ✓ readr   1.4.0    ✓ forcats 0.5.1
```

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

Packages used in data cleaning tasks

```
install.packages("here")
```

```
## Installing package into '/home/rstudio-user/R/x86_64-pc-linux-gnu-library/4.0'  
## (as 'lib' is unspecified)
```

```
install.packages("skimr")
```

```
## Installing package into '/home/rstudio-user/R/x86_64-pc-linux-gnu-library/4.0'
## (as 'lib' is unspecified)
```

```
install.packages("janitor")
```

```
## Installing package into '/home/rstudio-user/R/x86_64-pc-linux-gnu-library/4.0'
## (as 'lib' is unspecified)
```

```
library(here)
```

```
## here() starts at /cloud/project
```

```
library(skimr)
library(janitor)
```

```
##
## Attaching package: 'janitor'
```

```
## The following objects are masked from 'package:stats':
##
##   chisq.test, fisher.test
```

loading the CSV file

dataframe named dailyactivity_merged_2 was created

```
dailyactivity_merged_2 <- read.csv("dailyactivity_merged_1.csv")
```

Take a look at a few tables

dailyactivity_merged_2

```
glimpse(dailyactivity_merged_2)
```

```
## Rows: 940
## Columns: 6
## $ Id                <dbl> 1503960366, 1503960366, 1503960366, 1503960366, 1...
## $ VeryActiveMinutes <int> 25, 21, 30, 29, 36, 38, 42, 50, 28, 19, 66, 41, 3...
## $ FairlyActiveMinutes <int> 13, 19, 11, 34, 10, 20, 16, 31, 12, 8, 27, 21, 5,...
## $ LightlyActiveMinutes <int> 328, 217, 181, 209, 221, 164, 233, 264, 205, 211,...
## $ SedentaryMinutes   <int> 728, 776, 1218, 726, 773, 539, 1149, 775, 818, 83...
## $ Calories           <int> 1985, 1797, 1776, 1745, 1863, 1728, 1921, 2035, 1...
```

Summarizing data using different statistical measures

Identifying columns in the dailyIntensities_merged_2 data

```
colnames(dailyactivity_merged_2)
```

```
## [1] "Id" "VeryActiveMinutes" "FairlyActiveMinutes"
## [4] "LightlyActiveMinutes" "SedentaryMinutes" "Calories"
```

Number of Participants in the dataframe

```
n_distinct(dailyactivity_merged_2$Id)
```

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

```
summary(dailyactivity_merged_2$VeryActiveMinutes)
```

```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##      0.00   0.00   4.00  21.16  32.00  210.00
```

```
summary(dailyactivity_merged_2$FairlyActiveMinutes)
```

```
## Length Class  Mode
##      0  NULL  NULL
```

```
summary(dailyactivity_merged_2$LightlyActiveMinutes)
```

```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##      0.0   127.0   199.0   192.8   264.0   518.0
```

```
summary(dailyactivity_merged_2$SedentaryActiveMinutes)
```

```
## Length Class  Mode
##      0  NULL  NULL
```

```
summary(dailyactivity_merged_2$CaloriesMinutes)
```

```
## Length Class  Mode
##      0  NULL  NULL
```

Data Summary

```
dailyactivity_merged_2 %>%
  dplyr::group_by(Id) %>%
  skim()
```

Data summary

Name	Piped data
Number of rows	940

Number of columns 6

Column type frequency:

numeric 5

Group variables Id

Variable type: numeric

skim_variable	Id	n_missing	complete_rate	mean	sd	p0	p25	p50	p75	p100	hist
VeryActiveMinutes	1503960366	0	1	38.71	16.02	0	29.50	38.0	46.00	78	
VeryActiveMinutes	1624580081	0	1	8.68	33.41	0	0.00	0.0	0.00	186	
VeryActiveMinutes	1644430081	0	1	9.57	13.49	0	0.00	4.0	11.00	51	
VeryActiveMinutes	1844505072	0	1	0.13	0.50	0	0.00	0.0	0.00	2	
VeryActiveMinutes	1927972279	0	1	1.32	4.08	0	0.00	0.0	0.00	16	
VeryActiveMinutes	2022484408	0	1	36.29	21.55	0	22.50	36.0	48.00	104	
VeryActiveMinutes	2026352035	0	1	0.10	0.54	0	0.00	0.0	0.00	3	
VeryActiveMinutes	2320127002	0	1	1.35	4.27	0	0.00	0.0	0.00	20	
VeryActiveMinutes	2347167796	0	1	13.50	17.15	0	0.25	10.0	22.00	66	
VeryActiveMinutes	2873212765	0	1	14.10	20.69	0	0.00	2.0	25.00	75	
VeryActiveMinutes	3372868164	0	1	9.15	9.27	0	0.00	8.5	17.25	24	
VeryActiveMinutes	3977333714	0	1	18.90	16.26	0	4.25	14.5	31.00	50	
VeryActiveMinutes	4020332650	0	1	5.19	14.52	0	0.00	0.0	0.00	65	
VeryActiveMinutes	4057192912	0	1	0.75	1.50	0	0.00	0.0	0.75	3	
VeryActiveMinutes	4319703577	0	1	3.58	5.58	0	0.00	1.0	6.00	27	
VeryActiveMinutes	4388161847	0	1	23.16	29.34	0	7.50	13.0	23.50	120	
VeryActiveMinutes	4445114986	0	1	6.61	12.38	0	0.00	0.0	1.00	34	
VeryActiveMinutes	4558609924	0	1	10.39	13.22	0	0.00	7.0	16.00	66	
VeryActiveMinutes	4702921684	0	1	5.13	5.64	0	0.50	4.0	9.00	22	
VeryActiveMinutes	5553957443	0	1	23.42	24.41	0	0.00	19.0	46.50	69	
VeryActiveMinutes	5577150313	0	1	87.33	61.75	0	38.75	86.5	113.00	210	
VeryActiveMinutes	6117666160	0	1	1.57	5.36	0	0.00	0.0	0.00	26	
VeryActiveMinutes	6290855005	0	1	2.76	8.36	0	0.00	0.0	0.00	33	
VeryActiveMinutes	6775888955	0	1	11.00	17.52	0	0.00	2.0	13.50	70	
VeryActiveMinutes	6962181067	0	1	22.81	20.31	0	2.50	18.0	37.00	62	

VeryActiveMinutes	7007744171	0	1	31.04	25.78	0	0.00	39.0	53.00	64	
VeryActiveMinutes	7086361926	0	1	42.58	26.04	0	24.00	45.0	63.50	87	
VeryActiveMinutes	8053475328	0	1	85.16	35.53	0	63.00	90.0	113.50	132	
VeryActiveMinutes	8253242879	0	1	20.53	17.40	0	5.50	16.0	37.50	49	
VeryActiveMinutes	8378563200	0	1	58.68	45.06	0	9.50	65.0	86.00	137	
VeryActiveMinutes	8583815059	0	1	9.68	19.50	0	0.00	2.0	7.00	77	
VeryActiveMinutes	8792009665	0	1	0.97	2.56	0	0.00	0.0	0.00	10	
VeryActiveMinutes	8877689391	0	1	66.06	34.36	0	32.50	68.0	93.50	124	
FairlyActiveMinutes	1503960366	0	1	19.16	10.63	0	11.00	19.0	25.50	46	
FairlyActiveMinutes	1624580081	0	1	5.81	13.74	0	0.00	0.0	2.50	63	
FairlyActiveMinutes	1644430081	0	1	21.37	25.60	0	0.00	12.5	39.00	94	
FairlyActiveMinutes	1844505072	0	1	1.29	3.53	0	0.00	0.0	0.00	13	
FairlyActiveMinutes	1927972279	0	1	0.77	2.33	0	0.00	0.0	0.00	9	
FairlyActiveMinutes	2022484408	0	1	19.35	15.47	0	8.00	17.0	26.50	63	
FairlyActiveMinutes	2026352035	0	1	0.26	1.44	0	0.00	0.0	0.00	8	
FairlyActiveMinutes	2320127002	0	1	2.58	4.27	0	0.00	0.0	5.50	11	
FairlyActiveMinutes	2347167796	0	1	20.56	19.83	0	7.00	14.5	30.75	72	
FairlyActiveMinutes	2873212765	0	1	6.13	7.48	0	0.00	5.0	8.00	23	
FairlyActiveMinutes	3372868164	0	1	4.10	6.23	0	0.00	2.0	7.00	25	
FairlyActiveMinutes	3977333714	0	1	61.27	41.04	0	25.25	56.5	95.00	143	
FairlyActiveMinutes	4020332650	0	1	5.35	11.82	0	0.00	0.0	2.50	46	
FairlyActiveMinutes	4057192912	0	1	1.50	3.00	0	0.00	0.0	1.50	6	
FairlyActiveMinutes	4319703577	0	1	12.32	12.42	0	0.00	11.0	18.00	47	
FairlyActiveMinutes	4388161847	0	1	20.35	15.91	0	8.50	16.0	33.00	56	
FairlyActiveMinutes	4445114986	0	1	1.74	4.34	0	0.00	0.0	1.00	22	
FairlyActiveMinutes	4558609924	0	1	13.71	12.43	0	0.00	11.0	23.00	41	
FairlyActiveMinutes	4702921684	0	1	26.03	29.54	0	6.50	16.0	38.50	125	
FairlyActiveMinutes	5553957443	0	1	13.00	14.12	0	0.00	9.0	20.00	42	
FairlyActiveMinutes	5577150313	0	1	29.83	20.15	0	16.00	27.0	37.75	74	
FairlyActiveMinutes	6117666160	0	1	2.04	4.93	0	0.00	0.0	0.00	19	
FairlyActiveMinutes	6290855005	0	1	3.79	17.69	0	0.00	0.0	0.00	95	
FairlyActiveMinutes	6775888955	0	1	14.81	23.56	0	0.00	7.0	22.50	113	
FairlyActiveMinutes	6962181067	0	1	18.52	15.04	0	5.50	15.0	33.50	42	
FairlyActiveMinutes	7007744171	0	1	16.27	14.70	0	0.00	15.0	24.75	50	

FairlyActiveMinutes	7086361926	0	1	25.35	18.91	0	9.00	26.0	37.50	69	
FairlyActiveMinutes	8053475328	0	1	9.58	7.02	0	5.50	8.0	12.00	33	
FairlyActiveMinutes	8253242879	0	1	14.32	15.59	0	3.00	14.0	17.00	54	
FairlyActiveMinutes	8378563200	0	1	10.26	6.99	0	4.50	10.0	15.50	23	
FairlyActiveMinutes	8583815059	0	1	22.19	26.27	0	0.00	10.0	35.50	91	
FairlyActiveMinutes	8792009665	0	1	4.03	9.84	0	0.00	0.0	0.00	45	
FairlyActiveMinutes	8877689391	0	1	9.94	7.56	0	4.00	8.0	14.00	29	
LightlyActiveMinutes	1503960366	0	1	219.94	57.01	0	204.00	217.0	250.50	328	
LightlyActiveMinutes	1624580081	0	1	153.48	40.94	91	117.50	150.0	183.50	236	
LightlyActiveMinutes	1644430081	0	1	178.47	93.20	38	118.50	157.5	239.00	402	
LightlyActiveMinutes	1844505072	0	1	115.45	122.72	0	0.00	87.0	208.00	373	
LightlyActiveMinutes	1927972279	0	1	38.58	50.62	0	0.00	12.0	72.50	192	
LightlyActiveMinutes	2022484408	0	1	257.45	49.00	135	240.50	271.0	282.00	361	
LightlyActiveMinutes	2026352035	0	1	256.65	107.07	17	181.50	258.0	337.00	475	
LightlyActiveMinutes	2320127002	0	1	198.19	84.25	40	136.50	206.0	254.50	335	
LightlyActiveMinutes	2347167796	0	1	252.50	85.09	4	206.50	258.5	292.25	382	
LightlyActiveMinutes	2873212765	0	1	308.00	87.66	52	258.00	330.0	368.00	448	
LightlyActiveMinutes	3372868164	0	1	327.90	62.10	172	298.00	339.0	372.25	416	
LightlyActiveMinutes	3977333714	0	1	174.77	47.40	9	151.50	176.0	202.75	258	
LightlyActiveMinutes	4020332650	0	1	76.94	108.19	0	0.00	2.0	173.50	346	
LightlyActiveMinutes	4057192912	0	1	103.00	77.04	0	66.00	124.0	161.00	164	
LightlyActiveMinutes	4319703577	0	1	228.77	121.00	0	164.50	287.0	313.50	390	
LightlyActiveMinutes	4388161847	0	1	229.35	60.17	0	217.00	239.0	259.00	306	
LightlyActiveMinutes	4445114986	0	1	209.10	62.77	58	180.00	215.0	234.50	350	
LightlyActiveMinutes	4558609924	0	1	284.97	68.02	127	237.50	283.0	327.50	432	
LightlyActiveMinutes	4702921684	0	1	237.48	87.51	0	201.00	253.0	268.50	439	
LightlyActiveMinutes	5553957443	0	1	206.19	67.29	46	186.00	227.0	250.00	288	
LightlyActiveMinutes	5577150313	0	1	147.93	58.76	0	132.50	158.5	187.75	235	
LightlyActiveMinutes	6117666160	0	1	288.36	176.18	0	152.25	330.5	423.50	518	
LightlyActiveMinutes	6290855005	0	1	227.45	111.94	0	227.00	258.0	287.00	363	
LightlyActiveMinutes	6775888955	0	1	40.15	49.85	0	0.00	17.0	70.75	178	
LightlyActiveMinutes	6962181067	0	1	245.81	67.02	86	206.50	254.0	291.50	369	
LightlyActiveMinutes	7007744171	0	1	280.73	105.67	0	239.50	304.0	344.50	424	

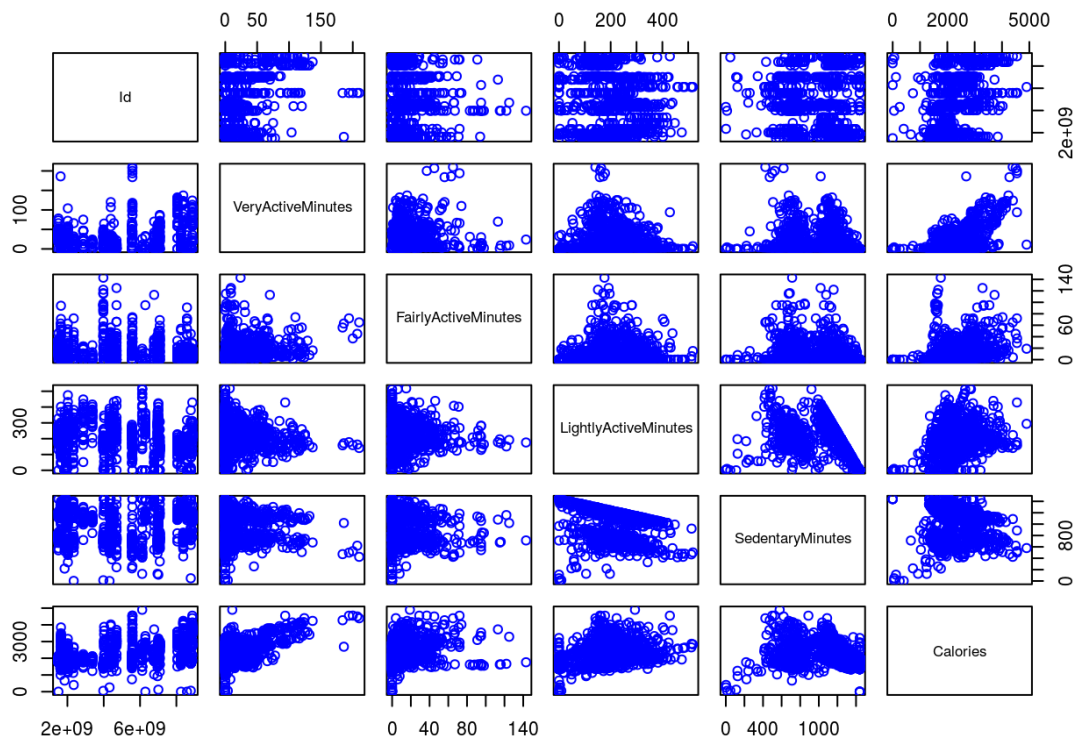
LightlyActiveMinutes	7086361926	0	1	143.84	59.92	0	126.50	145.0	158.00	308	
LightlyActiveMinutes	8053475328	0	1	150.97	46.76	39	123.00	158.0	184.50	228	
LightlyActiveMinutes	8253242879	0	1	116.89	55.90	0	100.00	118.0	155.50	216	
LightlyActiveMinutes	8378563200	0	1	156.10	26.44	93	140.00	158.0	171.50	214	
LightlyActiveMinutes	8583815059	0	1	138.29	86.95	0	87.50	162.0	199.50	317	
LightlyActiveMinutes	8792009665	0	1	91.79	106.57	0	0.00	80.0	129.00	380	
LightlyActiveMinutes	8877689391	0	1	234.71	57.74	105	213.50	226.0	251.50	429	
SedentaryMinutes	1503960366	0	1	848.16	202.94	539	731.00	798.0	836.50	1440	
SedentaryMinutes	1624580081	0	1	1257.74	93.98	890	1235.50	1288.0	1310.50	1349	
SedentaryMinutes	1644430081	0	1	1161.87	187.35	682	1103.00	1179.0	1304.00	1402	
SedentaryMinutes	1844505072	0	1	1206.61	316.16	218	1127.50	1301.0	1440.00	1440	
SedentaryMinutes	1927972279	0	1	1317.42	186.65	734	1299.00	1413.0	1440.00	1440	
SedentaryMinutes	2022484408	0	1	1112.58	94.58	728	1085.00	1112.0	1150.00	1305	
SedentaryMinutes	2026352035	0	1	689.42	181.84	330	577.50	665.0	738.50	1062	
SedentaryMinutes	2320127002	0	1	1220.10	112.70	830	1161.50	1206.0	1294.00	1400	
SedentaryMinutes	2347167796	0	1	687.17	218.61	2	629.25	691.5	763.25	1011	
SedentaryMinutes	2873212765	0	1	1097.19	102.52	720	1059.00	1087.0	1145.50	1302	
SedentaryMinutes	3372868164	0	1	1077.55	75.62	842	1043.50	1076.5	1116.00	1234	
SedentaryMinutes	3977333714	0	1	707.53	167.61	13	676.00	712.5	771.25	1159	
SedentaryMinutes	4020332650	0	1	1237.26	289.71	531	1086.00	1438.0	1440.00	1440	
SedentaryMinutes	4057192912	0	1	1217.25	241.88	873	1175.25	1278.0	1320.00	1440	
SedentaryMinutes	4319703577	0	1	735.81	290.33	0	585.50	671.0	788.00	1440	
SedentaryMinutes	4388161847	0	1	836.68	227.17	508	660.50	837.0	964.50	1440	
SedentaryMinutes	4445114986	0	1	829.90	194.68	380	721.00	787.0	880.50	1247	
SedentaryMinutes	4558609924	0	1	1093.61	106.81	736	1059.50	1111.0	1146.00	1287	
SedentaryMinutes	4702921684	0	1	766.42	236.53	241	696.50	738.0	780.50	1440	
SedentaryMinutes	5553957443	0	1	668.35	144.97	222	610.00	693.0	753.00	943	
SedentaryMinutes	5577150313	0	1	754.43	276.34	257	624.00	711.5	773.00	1440	
SedentaryMinutes	6117666160	0	1	796.29	398.72	125	479.00	687.5	1108.75	1440	
SedentaryMinutes	6290855005	0	1	1193.03	136.13	800	1135.00	1180.0	1201.00	1440	
SedentaryMinutes	6775888955	0	1	1299.42	221.16	551	1306.00	1396.0	1440.00	1440	
SedentaryMinutes	6962181067	0	1	662.32	125.17	127	635.50	680.0	718.50	862	
SedentaryMinutes	7007744171	0	1	1055.35	218.36	111	1021.00	1065.5	1135.75	1440	

SedentaryMinutes	7086361926	0	1	850.45	263.76	343	716.00	761.0	853.50	1440	
SedentaryMinutes	8053475328	0	1	1148.00	148.76	695	1118.00	1182.0	1217.00	1389	
SedentaryMinutes	8253242879	0	1	1287.37	64.58	1193	1250.50	1278.0	1316.50	1440	
SedentaryMinutes	8378563200	0	1	716.13	88.80	433	678.50	729.0	768.00	851	
SedentaryMinutes	8583815059	0	1	1267.23	111.49	1069	1189.00	1250.0	1340.50	1440	
SedentaryMinutes	8792009665	0	1	1060.48	371.13	48	806.00	916.0	1440.00	1440	
SedentaryMinutes	8877689391	0	1	1112.87	100.71	770	1075.00	1127.0	1163.50	1335	
Calories	1503960366	0	1	1816.42	352.57	0	1787.00	1837.0	1954.00	2159	
Calories	1624580081	0	1	1483.35	256.58	1002	1381.50	1435.0	1525.50	2690	
Calories	1644430081	0	1	2811.30	507.49	1276	2491.00	2802.5	3180.00	3846	
Calories	1844505072	0	1	1573.48	307.99	665	1347.00	1549.0	1803.50	2130	
Calories	1927972279	0	1	2172.81	220.92	1383	2063.00	2100.0	2331.00	2638	
Calories	2022484408	0	1	2509.97	297.18	1848	2385.00	2529.0	2720.50	3158	
Calories	2026352035	0	1	1540.65	186.38	1141	1410.00	1521.0	1662.50	1926	
Calories	2320127002	0	1	1724.16	211.79	1125	1621.50	1779.0	1865.00	2124	
Calories	2347167796	0	1	2043.44	472.91	403	1944.50	2071.5	2197.00	2670	
Calories	2873212765	0	1	1916.97	158.31	1431	1880.00	1907.0	1993.00	2241	
Calories	3372868164	0	1	1933.10	196.82	1237	1908.00	1978.5	2047.25	2124	
Calories	3977333714	0	1	1513.67	291.99	52	1484.50	1572.0	1632.25	1760	
Calories	4020332650	0	1	2385.81	625.40	1120	1980.00	1990.0	2877.00	3879	
Calories	4057192912	0	1	1973.75	385.82	1527	1713.75	2031.0	2291.00	2306	
Calories	4319703577	0	1	2037.68	415.61	257	1885.00	2175.0	2268.00	2530	
Calories	4388161847	0	1	3093.87	397.58	1623	2962.00	3069.0	3278.50	4022	
Calories	4445114986	0	1	2186.19	234.22	1212	2116.50	2196.0	2313.50	2499	
Calories	4558609924	0	1	2033.26	238.03	1452	1899.00	2085.0	2152.00	2666	
Calories	4702921684	0	1	2965.55	466.00	1240	2877.50	3006.0	3155.00	3691	
Calories	5553957443	0	1	1875.68	343.92	741	1695.50	1922.0	2110.50	2335	
Calories	5577150313	0	1	3359.63	792.75	1665	3006.50	3389.5	3964.00	4552	
Calories	6117666160	0	1	2261.14	692.60	1248	1868.75	2290.0	2564.00	4900	
Calories	6290855005	0	1	2599.62	578.50	0	2664.00	2718.0	2806.00	3327	
Calories	6775888955	0	1	2131.77	483.98	1032	1841.00	2023.0	2379.75	3727	
Calories	6962181067	0	1	1982.03	296.19	928	1852.50	2039.0	2167.50	2571	
Calories	7007744171	0	1	2544.00	629.07	120	2308.75	2752.5	2922.00	3180	

Calories	7086361926	0	1	2566.35	435.89	1199	2489.50	2735.0	2790.50	2997	
Calories	8053475328	0	1	2945.81	477.96	1505	2827.50	3023.0	3199.50	3589	
Calories	8253242879	0	1	1788.00	466.68	0	1734.00	1880.0	1992.00	2218	
Calories	8378563200	0	1	3436.58	578.59	1976	2945.00	3635.0	3787.50	4236	
Calories	8583815059	0	1	2732.03	570.75	0	2621.50	2804.0	2945.50	3513	
Calories	8792009665	0	1	1962.31	544.86	57	1688.00	1934.0	2067.00	3101	
Calories	8877689391	0	1	3420.26	624.95	1849	2853.50	3566.0	3820.00	4547	

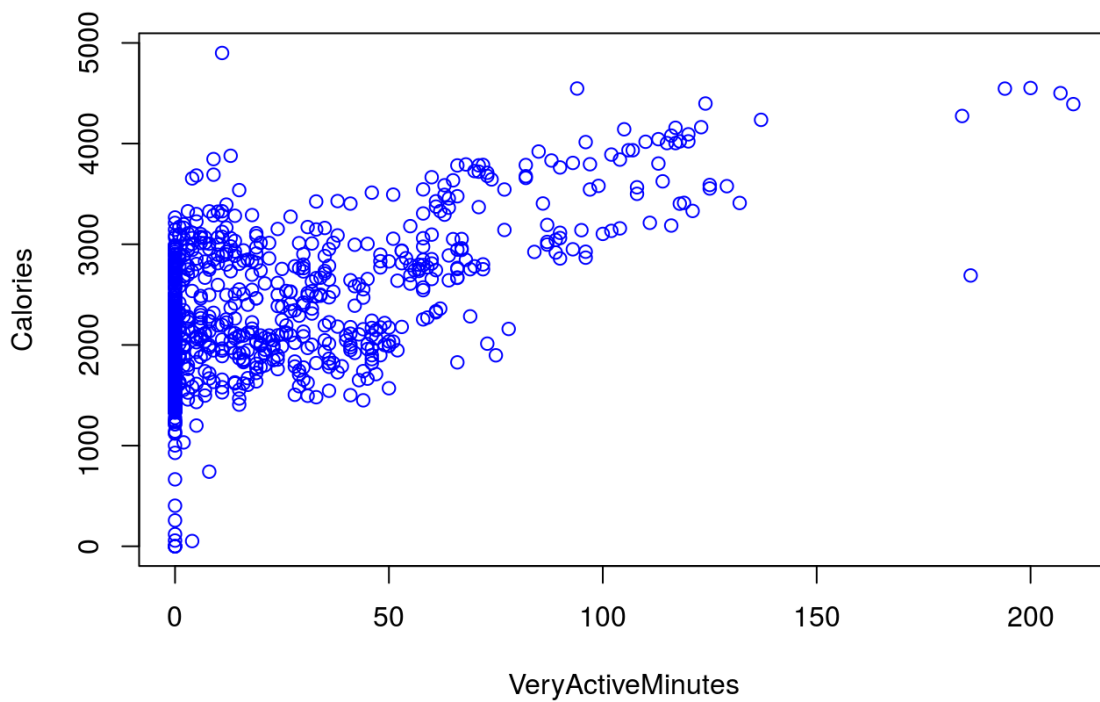
Visualization of the data

```
plot(dailyactivity_merged_2, col = "blue")
```



Here the association between VeryActiveMinutes and Calories was examined using scatter plot. This followed by looking at the correlation coefficient, which was a positive return.

```
plot(dailyactivity_merged_2$VeryActiveMinutes, col = "blue", dailyactivity_merged_2$Calories, xlab = "VeryActiveMinutes", ylab = "Calories")
```

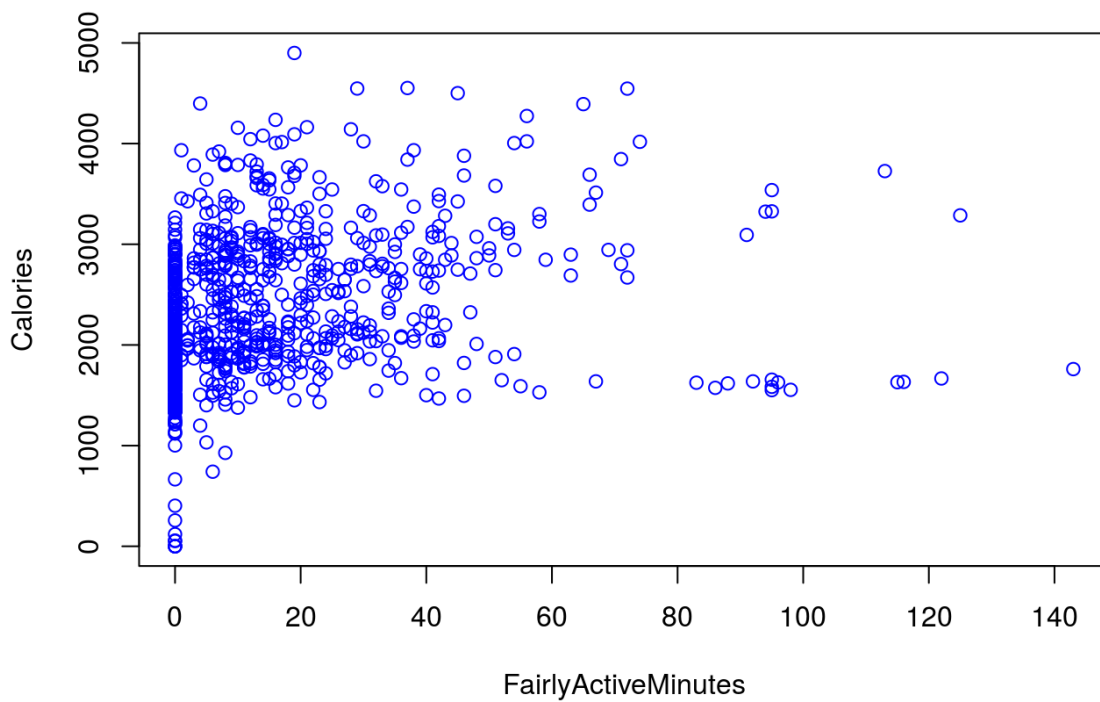


```
cor(dailyactivity_merged_2$VeryActiveMinutes, dailyactivity_merged_2$Calories, use = "complete.obs")
```

```
## [1] 0.6158383
```

A scatter plot for FairlyActiveMinutes and Calories, plus correlation coefficient with a positive return.

```
plot(dailyactivity_merged_2$FairlyActiveMinutes, col = "blue", dailyactivity_merged_2$Calories, xlab = "FairlyActiveMinutes", ylab = "Calories")
```

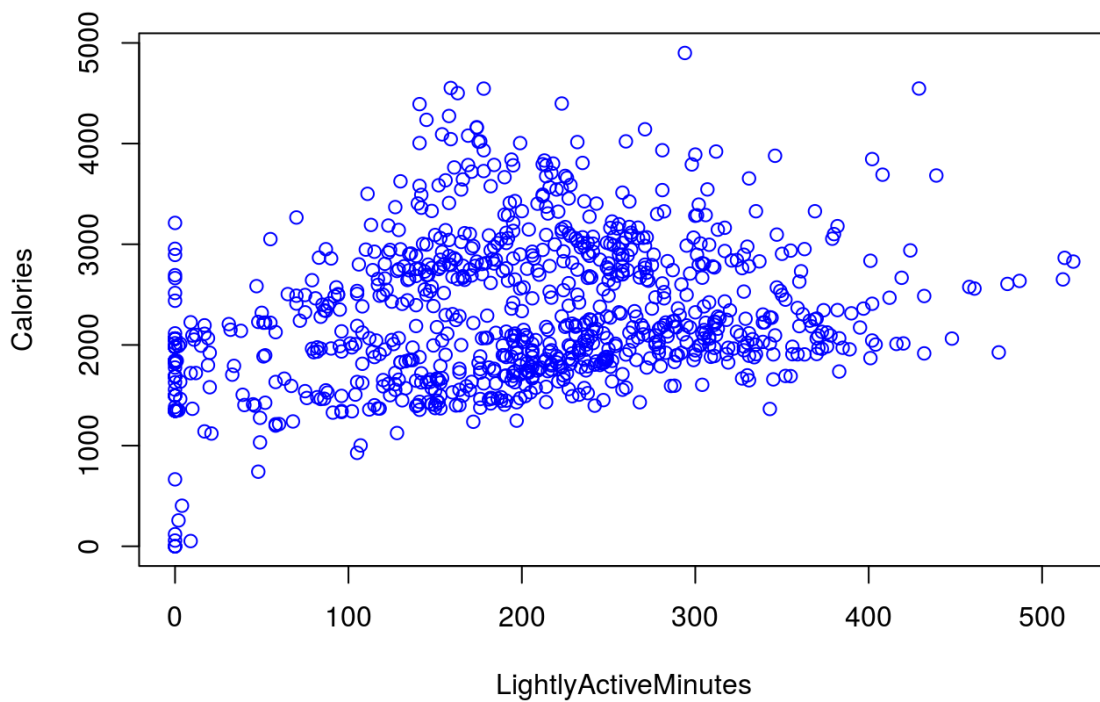


```
cor(dailyactivity_merged_2$FairlyActiveMinutes, dailyactivity_merged_2$Calories, use = "complete.obs")
```

```
## [1] 0.2976235
```

A scatter plot for FairlyActiveMinutes and Calories. Followed by looking at the correlation coefficient which was a positive return.

```
plot(dailyactivity_merged_2$LightlyActiveMinutes, col = "blue", dailyactivity_merged_2$Calories, xlab = "LightlyActiveMinutes", ylab = "Calories")
```

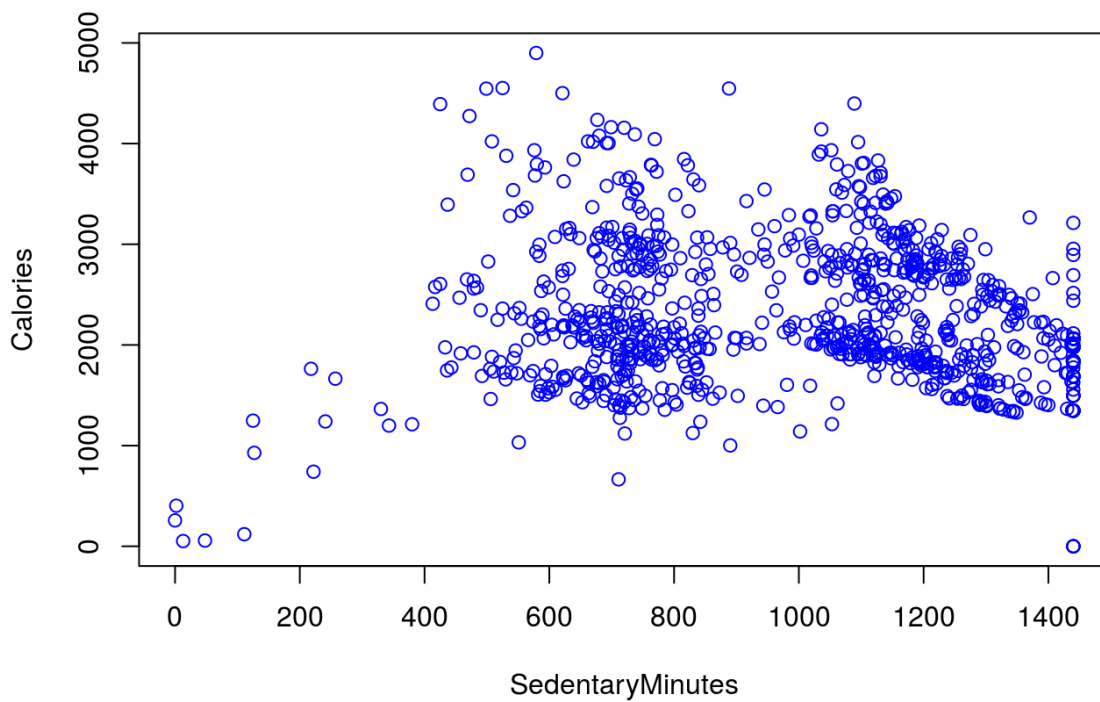


```
cor(dailyactivity_merged_2$LightlyActiveMinutes, dailyactivity_merged_2$Calories, use = "complete.obs")
```

```
## [1] 0.2867175
```

A scatter plot for SedentaryMinutes and Calories, followed by looking at the correlation coefficient, which was a negative return.

```
plot(dailyactivity_merged_2$SedentaryMinutes, col = "blue", dailyactivity_merged_2$Calories, xlab = "SedentaryMinutes", ylab = "Calories")
```



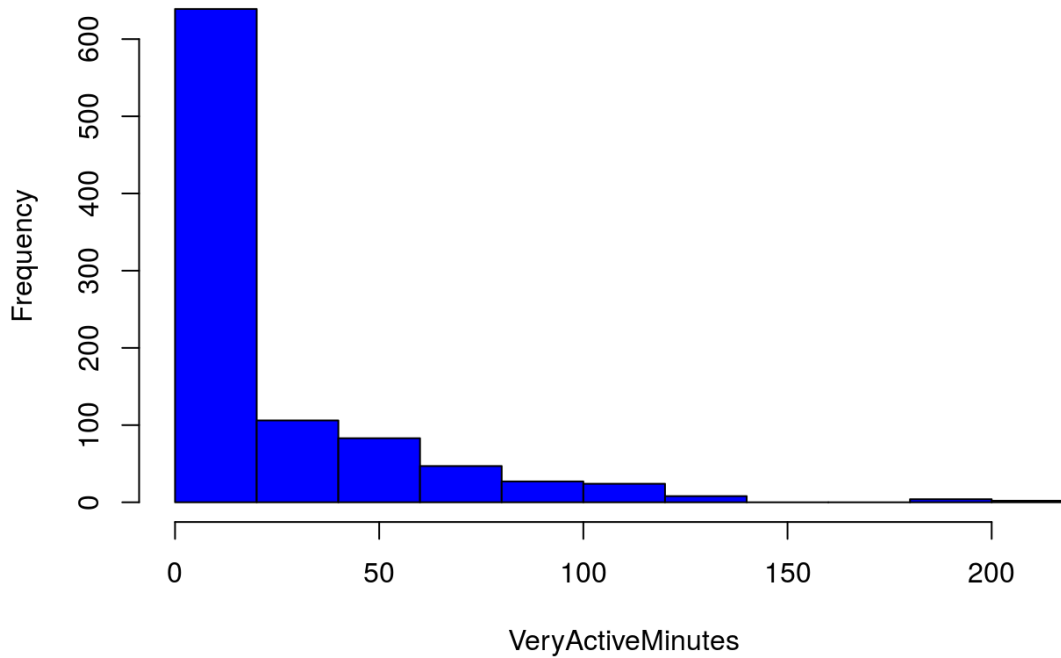
```
cor(dailyactivity_merged_2$SedentaryMinutes, dailyactivity_merged_2$Calories, use = "complete.obs")
```

```
## [1] -0.106973
```

Frequency count of VeryActiveMinutes using histogram

```
```r  
hist(dailyactivity_merged_2$ VeryActiveMinutes, col = "blue", xlab = "VeryActiveMinutes", main = "Histogram of VeryActiveMinutes Count")
```

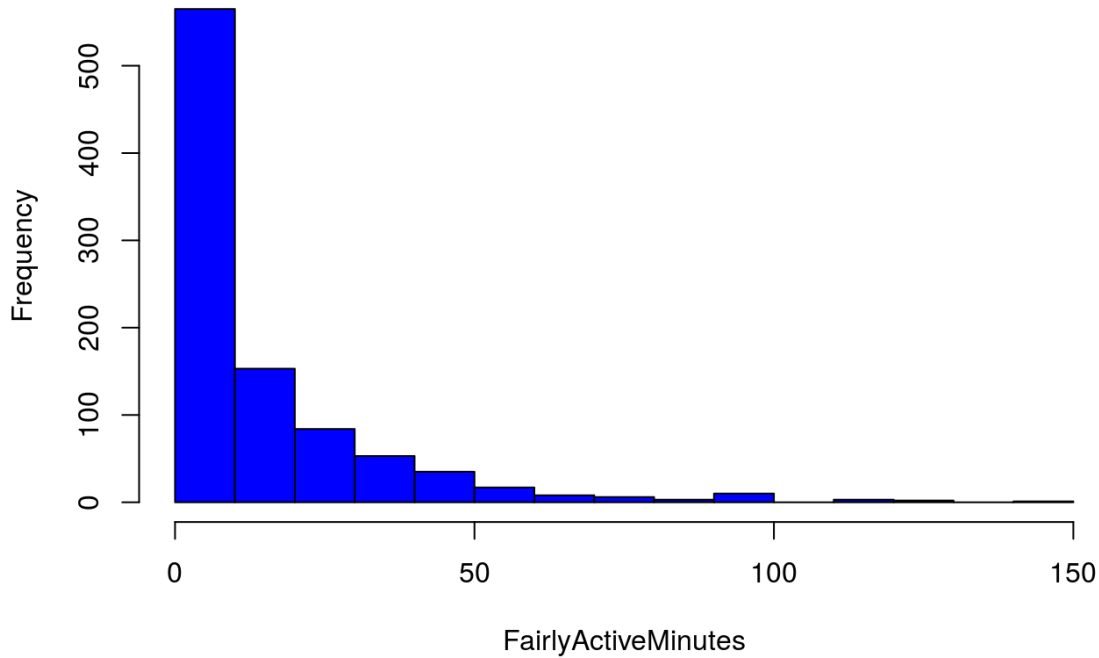
## Histogram of VeryActiveMinutes Count



Frequency count of FairlyActiveMinutes using histogram

```
hist(dailyactivity_merged_2$ FairlyActiveMinutes, col = "blue", xlab = "FairlyActiveMinutes", main = "Histogram of FairlyActiveMinutes Count")
```

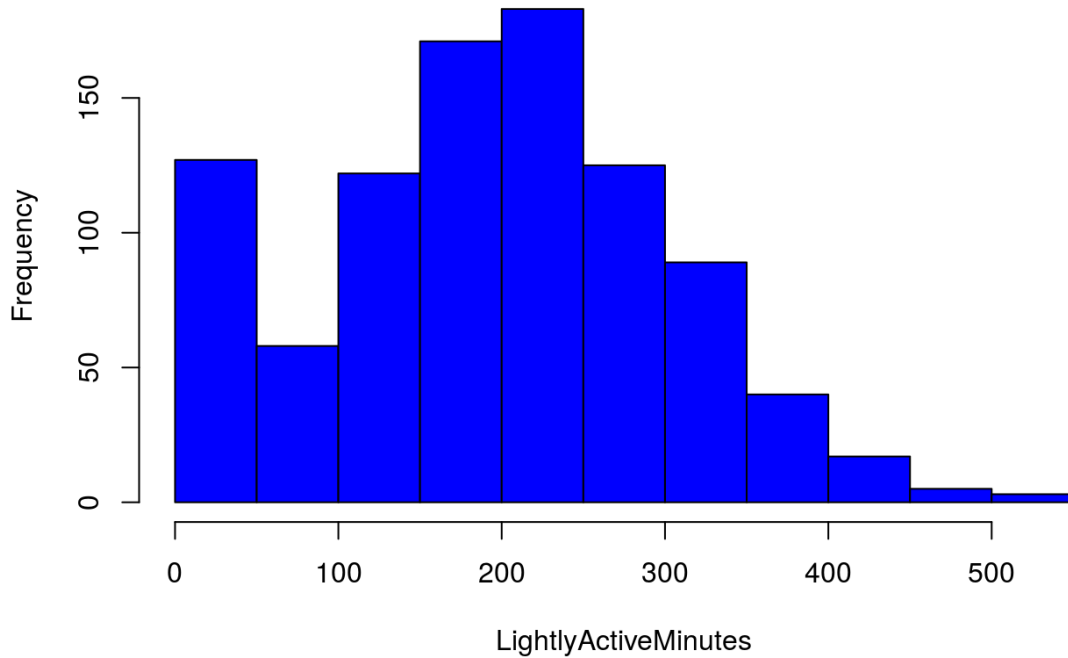
## Histogram of FairlyActiveMinutes Count



Frequency count of LightlyActiveMinutes using histogram

```
hist(dailyactivity_merged_2$ LightlyActiveMinutes, col = "blue", xlab = "LightlyActiveMinutes", main = "Histogram of LightlyActiveMinutes Count")
```

## Histogram of LightlyActiveMinutes Count

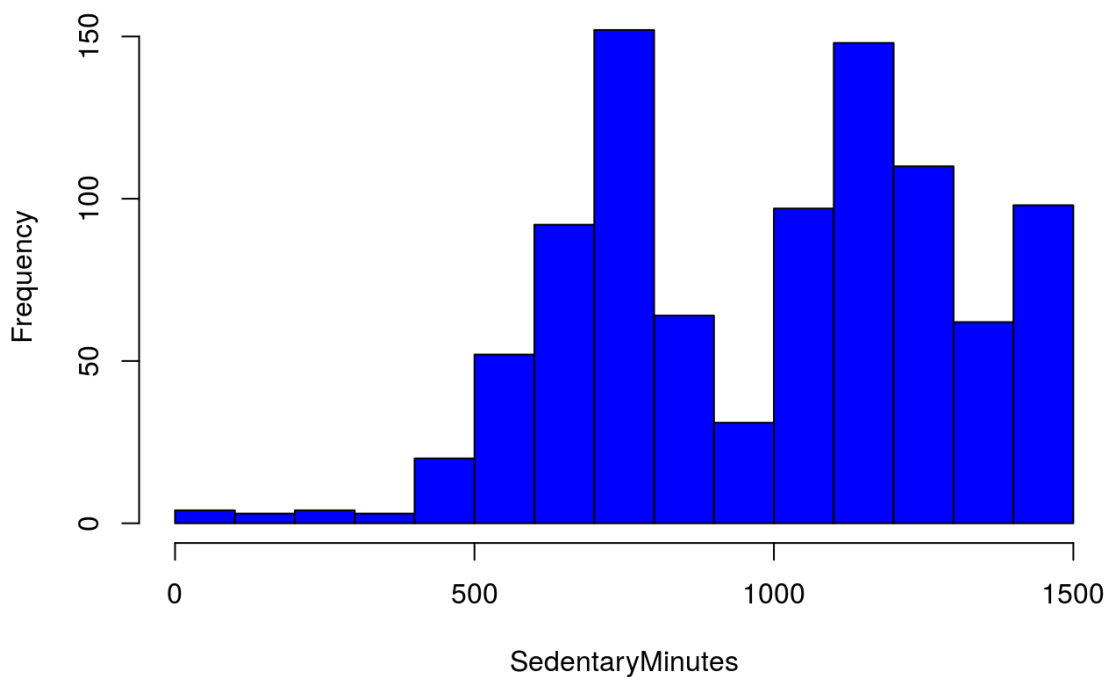


Frequency count of SedentaryMinutes using histogram

```
hist(dailyactivity_merged_2$ SedentaryMinutes, col = "blue", xlab = "SedentaryMinutes", main = "Histogram of SedentaryMinutes Count")
```



## Histogram of SedentaryMinutes Count



## Summary

Based on this finding, there was a positive correlation between an activity and calories. The independent variable which is the activity seems to cause a change in calories. A negative return was seen between Sedentary and Calories, may imply that there is no relationship between those two variables.

## Recommendation

The leaf crystal product might be a good fit for athletes who want to track their activity and calories..