

PREPINSTA WINTER INTERNSHIP – WEEK-8

Capstone Project - Fitbit Consumer Behaviour Analysis

Objective:

Imagine you are a data analyst at “Health Trackers Inc.,” a fictional company operating in the Fitbit industry. Your company is dedicated to understanding consumer behaviour to enhance product offerings and optimize marketing strategies. You have been tasked with analysing a comprehensive dataset obtained from Fitbit users to uncover trends and insights. The business objective is to identify key trends, understand their implications for customers, and leverage these insights to shape an effective marketing strategy.

Tasks:

- Exploratory Data Analysis (EDA)
- Consumer Behaviour Trends
- Customer Segmentation
- Implications for Customers
- Marketing Strategy Recommendations
- Visualization and Dashboard

Deliverables:

- Project Proposal
- Exploratory Data Analysis Report
- Customer Segmentation Analysis
- Implications for Customers Report
- Marketing Strategy Recommendations
- Tableau Dashboard

Data Analytics Tools Used:

1. Python
2. Pandas
3. JUPYTER Notebook

Cleaned data:

	Id	Date	TotalSteps	TotalDistance	VeryActiveDistance	ModeratelyActiveDistance	LightActiveDistance	SedentaryActiveDistance	VeryActiveMinutes	FairlyActiveMinutes	LightlyActiveMinutes	SedentaryMinutes	Day
0	1503960366	2016-04-12	13162	8.50	1.88	0.55	6.06	0.00	25	13	328	728	Tuesday
1	1503960366	2016-04-13	10735	6.97	1.57	0.69	4.71	0.00	21	19	217	776	Wednesday
2	1503960366	2016-04-14	10460	6.74	2.44	0.40	3.91	0.00	30	11	181	1218	Thursday
3	1503960366	2016-04-15	9762	6.28	2.14	1.26	2.83	0.00	29	34	209	726	Friday
4	1503960366	2016-04-16	12669	8.16	2.71	0.41	5.04	0.00	36	10	221	773	Saturday
...
935	8877689391	2016-05-08	10686	8.11	1.08	0.20	6.80	0.00	17	4	245	1174	Sunday
936	8877689391	2016-05-09	20226	18.25	11.10	0.80	6.24	0.05	73	19	217	1131	Monday
937	8877689391	2016-05-10	10733	8.15	1.35	0.46	6.28	0.00	18	11	224	1187	Tuesday
938	8877689391	2016-05-11	21420	19.56	13.22	0.41	5.89	0.00	88	12	213	1127	Wednesday
939	8877689391	2016-05-12	8064	6.12	1.82	0.04	4.25	0.00	23	1	137	770	Thursday

	Id	Date	Heart_rate(BPM)
0	1503960366	12-04-2016	NaN
1	1503960366	13-04-2016	NaN
2	1503960366	14-04-2016	NaN
3	1503960366	15-04-2016	NaN
4	1503960366	16-04-2016	NaN
...
935	8877689391	08-05-2016	72.6
936	8877689391	09-05-2016	89.6
937	8877689391	10-05-2016	71.5
938	8877689391	11-05-2016	89.1
939	8877689391	12-05-2016	71.1

	Id	Date	Month	Day	TotalSteps	TotalDistance	Calories	WeightKg	BMI	BMI Category	SleepInMinutes	SleepInHours	Heart_rate(BPM)
0	1503960366	12-04-2016	April	Tuesday	13162	8.5	1985	NaN	NaN	NaN	327.0	5h 27min	NaN
1	1503960366	13-04-2016	April	Wednesday	10735	7.0	1797	NaN	NaN	NaN	384.0	6h 24min	NaN
2	1503960366	14-04-2016	April	Thursday	10460	6.7	1776	NaN	NaN	NaN	NaN	NaN	NaN
3	1503960366	15-04-2016	April	Friday	9762	6.3	1745	NaN	NaN	NaN	412.0	6h 52min	NaN
4	1503960366	16-04-2016	April	Saturday	12669	8.2	1863	NaN	NaN	NaN	340.0	5h 40min	NaN
...
935	8877689391	08-05-2016	May	Sunday	10686	8.1	2847	85.4	25.6	OverWeight	NaN	NaN	72.6
936	8877689391	09-05-2016	May	Monday	20226	18.2	3710	85.5	25.6	OverWeight	NaN	NaN	89.6
937	8877689391	10-05-2016	May	Tuesday	10733	8.1	2832	NaN	NaN	NaN	NaN	NaN	71.5
938	8877689391	11-05-2016	May	Wednesday	21420	19.6	3832	85.4	25.6	OverWeight	NaN	NaN	89.1
939	8877689391	12-05-2016	May	Thursday	8064	6.1	1849	84.0	25.1	OverWeight	NaN	NaN	71.1

	Id	Date	Hour	TotalIntensity	StepTotal	Calories
0	1503960366	2016-04-12	0	20	373	81
1	1503960366	2016-04-12	1	8	160	61
2	1503960366	2016-04-12	2	7	151	59
3	1503960366	2016-04-12	3	0	0	47
4	1503960366	2016-04-12	4	0	0	48
...
22094	8877689391	2016-05-12	10	12	514	126
22095	8877689391	2016-05-12	11	29	1407	192
22096	8877689391	2016-05-12	12	93	3135	321
22097	8877689391	2016-05-12	13	6	307	101
22098	8877689391	2016-05-12	14	9	457	113

	Id	Date	Hour	Minute	Calories	Steps	Intensity	METs
0	1503960366	2016-04-12	12	0	0.79	0	0	10
1	1503960366	2016-04-12	12	1	0.79	0	0	10
2	1503960366	2016-04-12	12	2	0.79	0	0	10
3	1503960366	2016-04-12	12	3	0.79	0	0	10
4	1503960366	2016-04-12	12	4	0.79	0	0	10
...
1325575	8877689391	2016-05-12	1	55	1.33	0	0	11
1325576	8877689391	2016-05-12	1	56	1.33	0	0	11
1325577	8877689391	2016-05-12	1	57	1.33	0	0	11
1325578	8877689391	2016-05-12	1	58	1.33	0	0	11
1325579	8877689391	2016-05-12	1	59	1.33	0	0	11

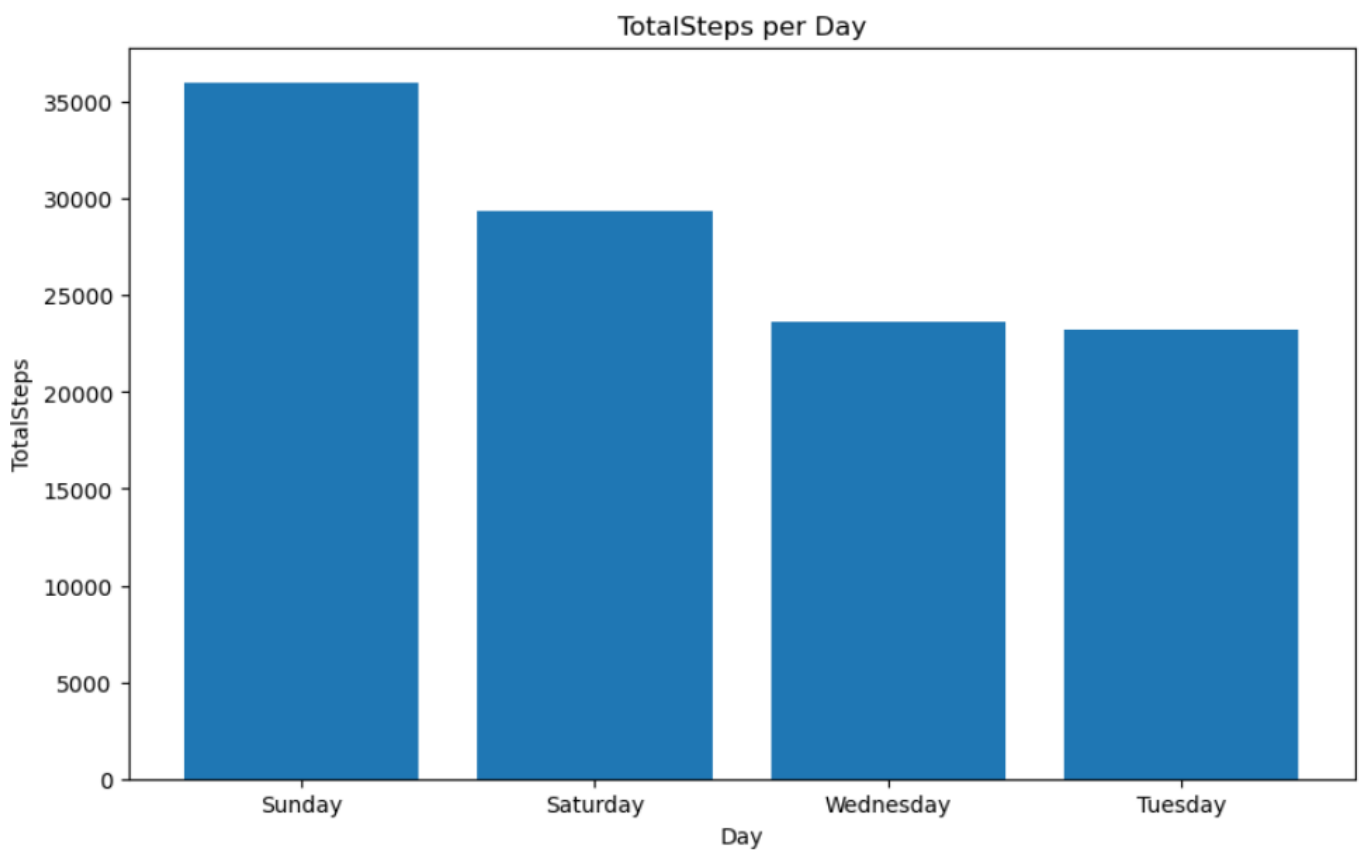
1325580 rows × 8 columns

	Id	Date	SleepInMinutes	SleepInHours
0	1503960366	12-04-2016	327.0	5h 27min
1	1503960366	13-04-2016	384.0	6h 24min
2	1503960366	14-04-2016	NaN	NaN
3	1503960366	15-04-2016	412.0	6h 52min
4	1503960366	16-04-2016	340.0	5h 40min
...
935	8877689391	08-05-2016	NaN	NaN
936	8877689391	09-05-2016	NaN	NaN
937	8877689391	10-05-2016	NaN	NaN
938	8877689391	11-05-2016	NaN	NaN
939	8877689391	12-05-2016	NaN	NaN

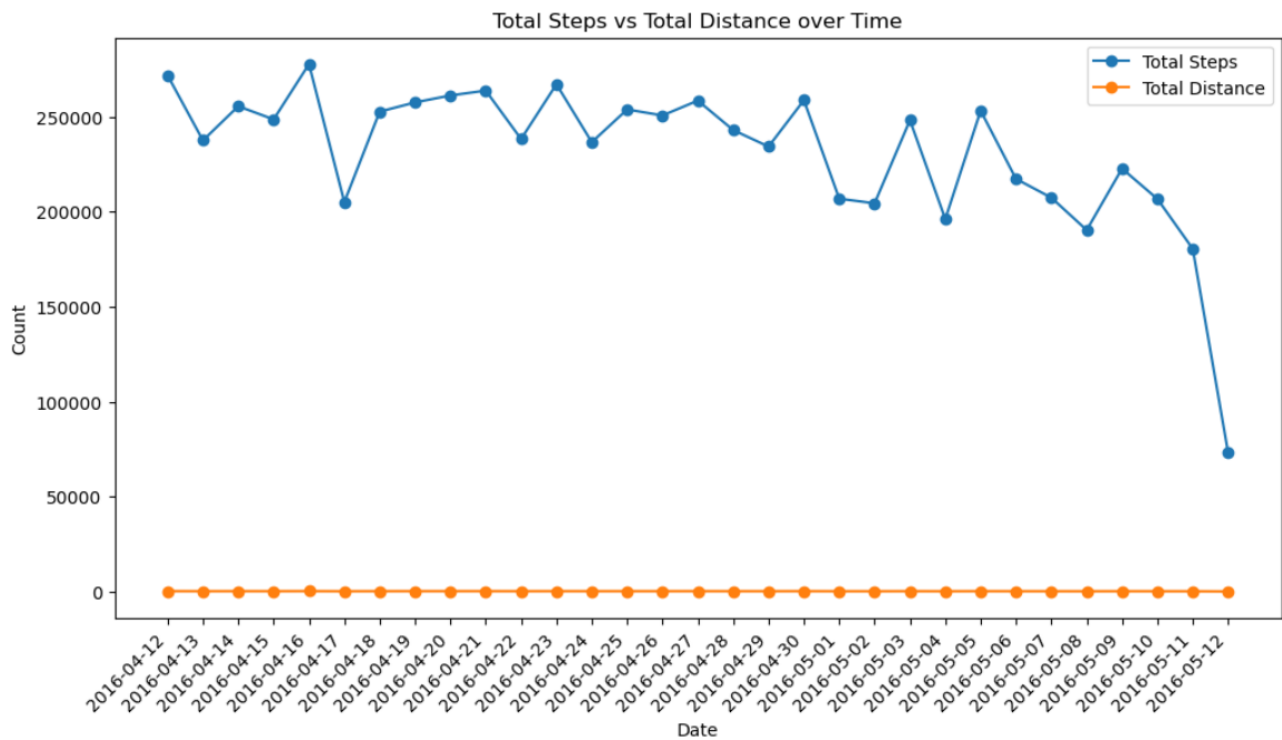
	Id	Date	WeightKg	BMI
0	1503960366	12-04-2016	NaN	NaN
1	1503960366	13-04-2016	NaN	NaN
2	1503960366	14-04-2016	NaN	NaN
3	1503960366	15-04-2016	NaN	NaN
4	1503960366	16-04-2016	NaN	NaN
...
935	8877689391	08-05-2016	85.4	25.6
936	8877689391	09-05-2016	85.5	25.6
937	8877689391	10-05-2016	NaN	NaN
938	8877689391	11-05-2016	85.4	25.6
939	8877689391	12-05-2016	84.0	25.1

Exploratory Data Analysis:

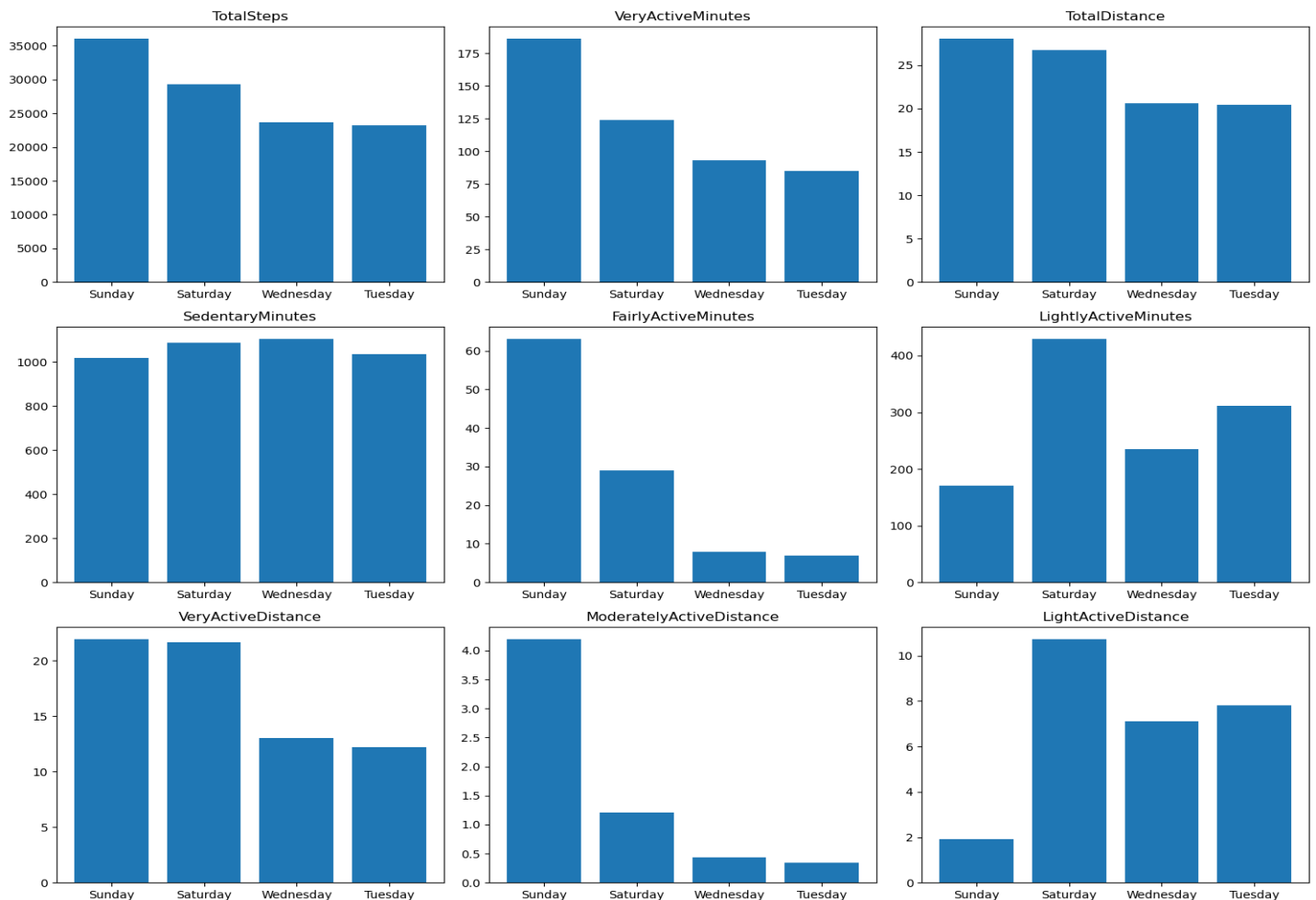
1.Bar chart for Total steps per day



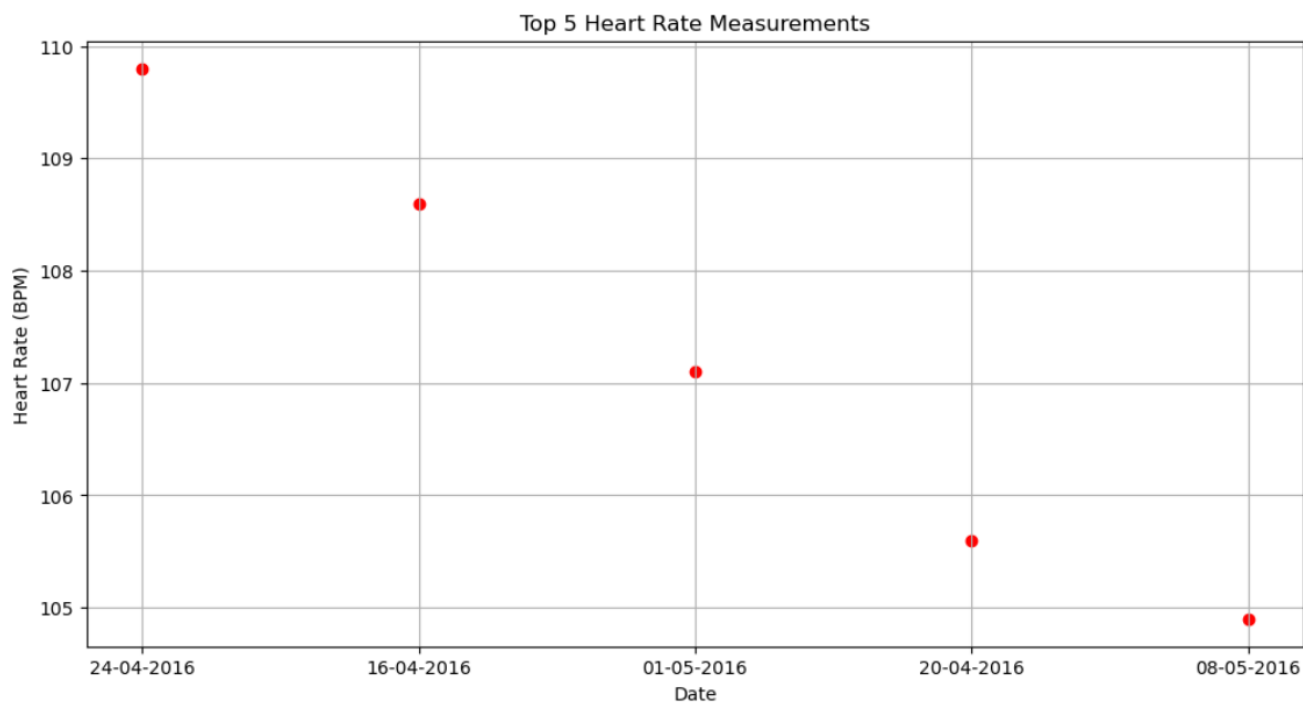
2.Line chart for Total steps vs Total distance



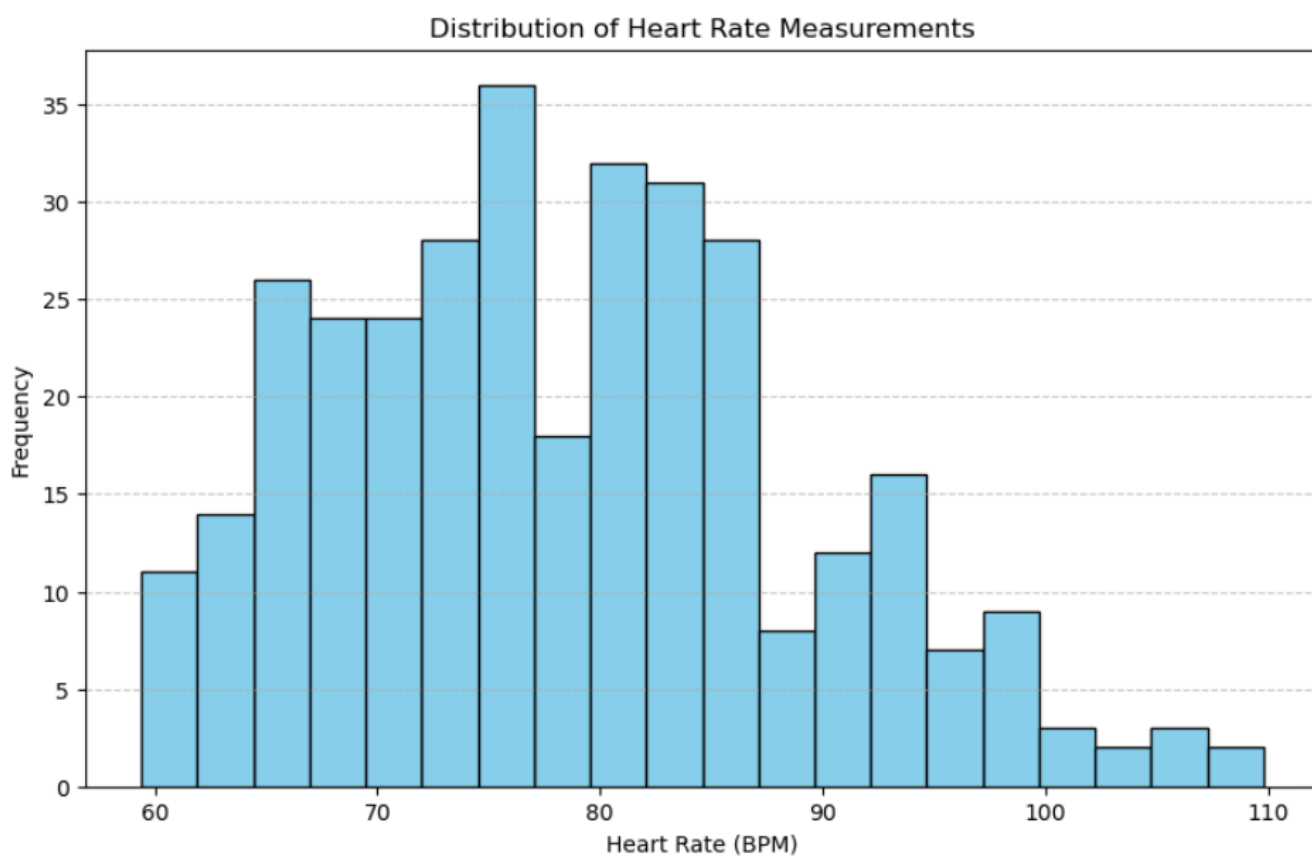
3.Sorting the Data Frame by Total Steps in descending order and selecting the top 5 rows to create bar chart.



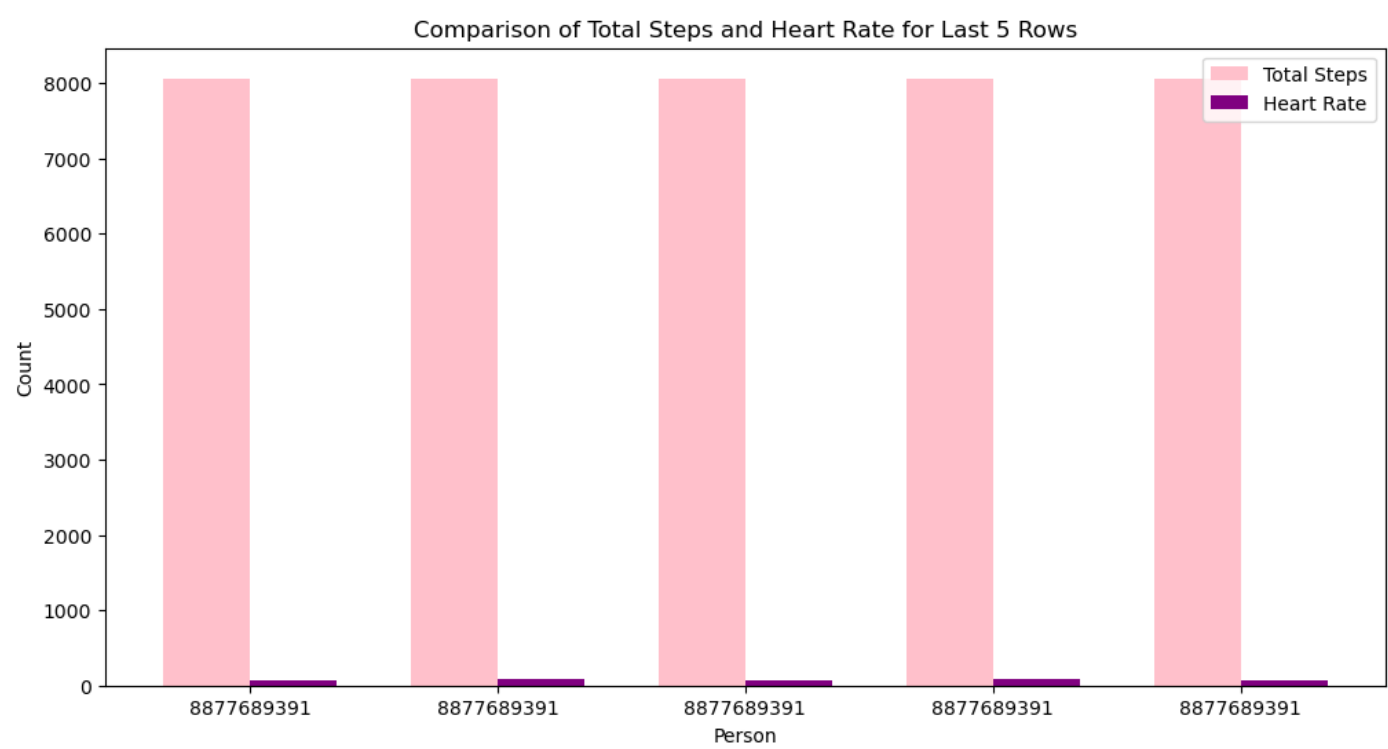
4. Creating a scatter plot for Heart rate (BPM)



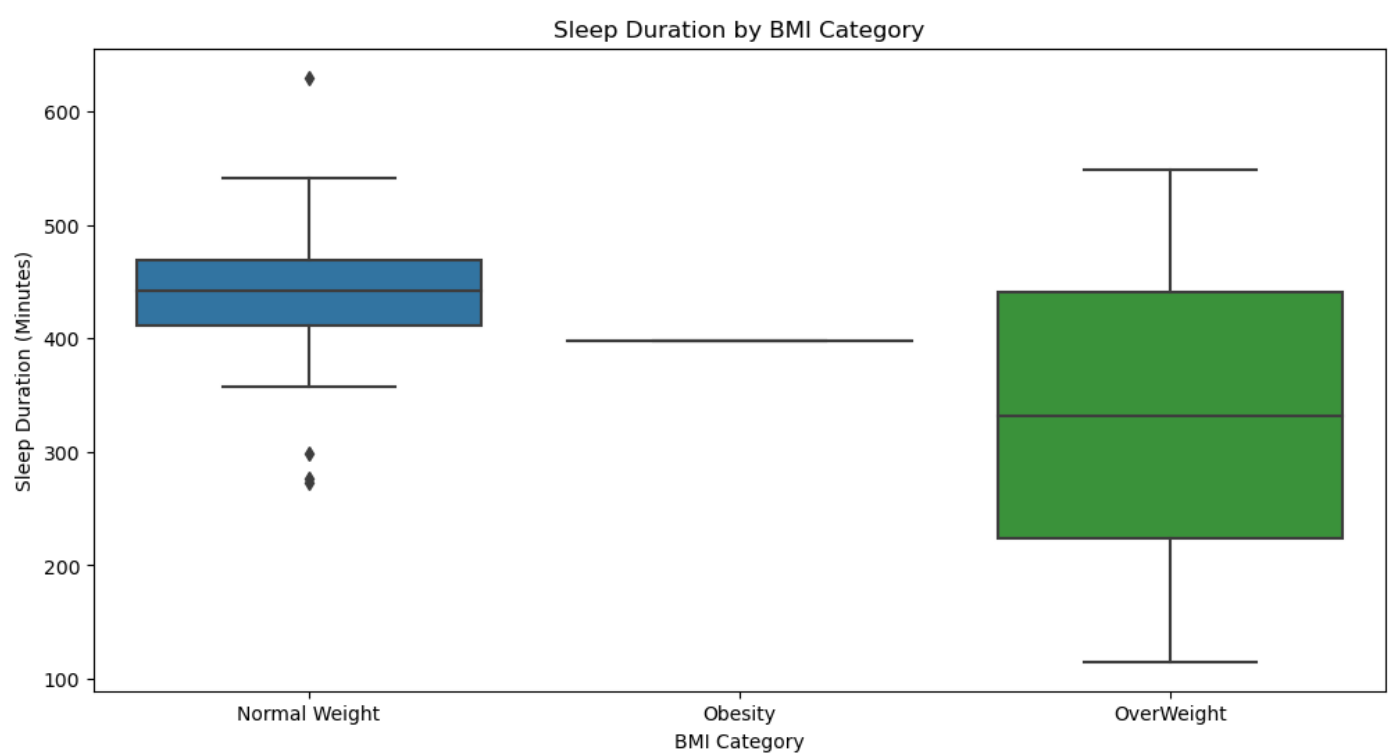
5. Creating a histogram for Heart rate (BPM)



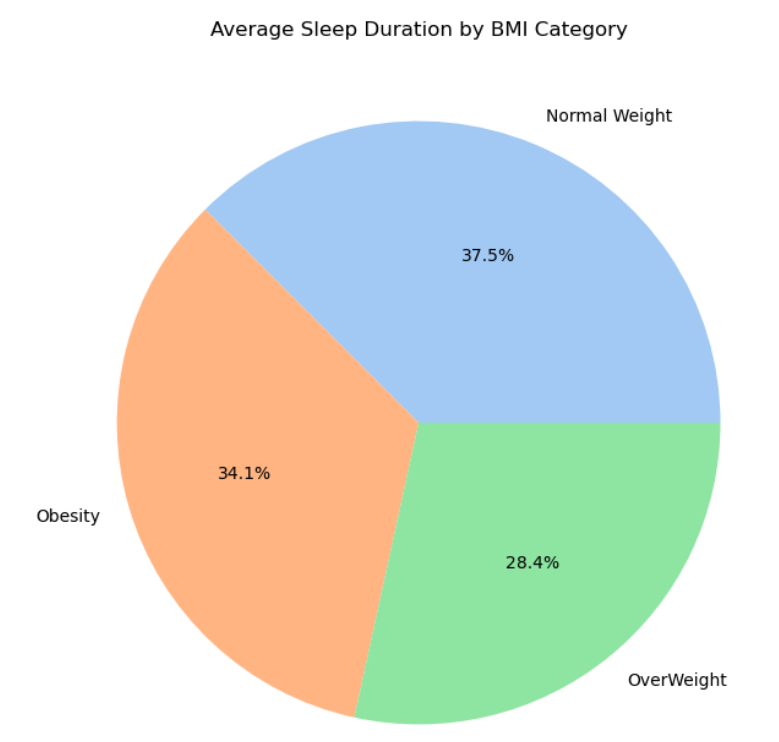
6. Create a bar chart for Total Steps and Heart Rate for the last 5 rows



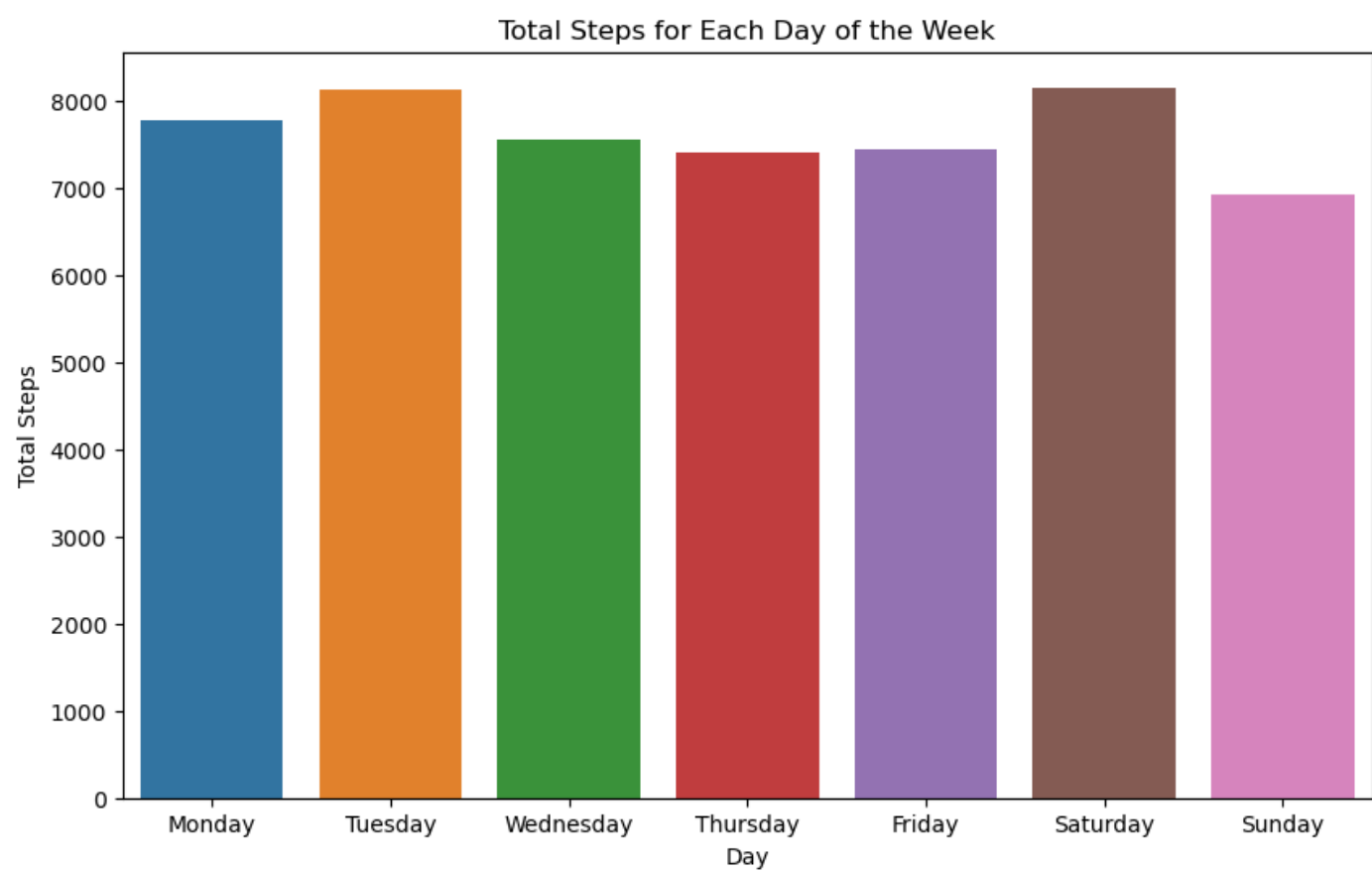
7. Box Plot for Sleep Duration by BMI Category



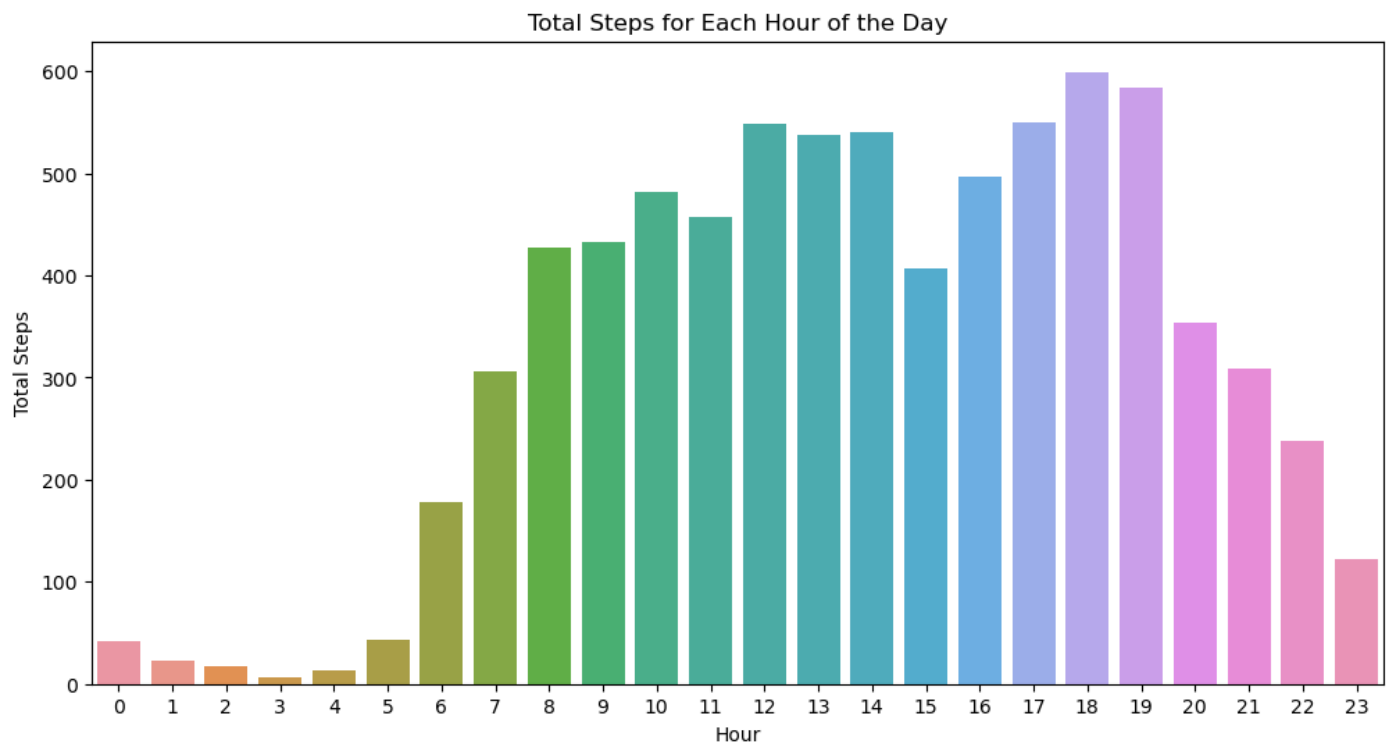
8. Pie Chart for Sleep Duration by BMI Category



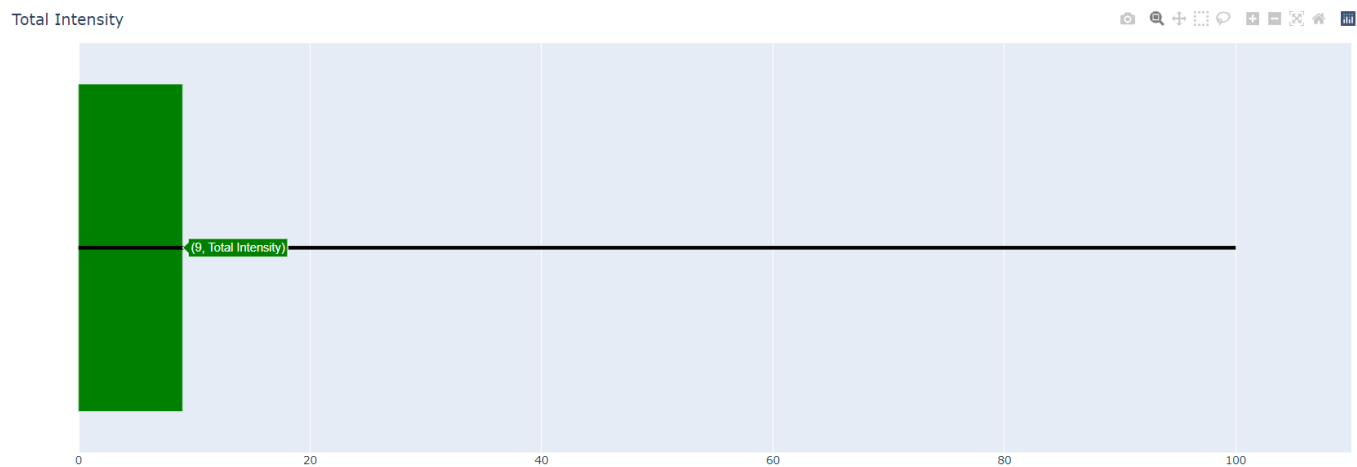
9. Bar Chart for Total Steps for Each Day of the Week



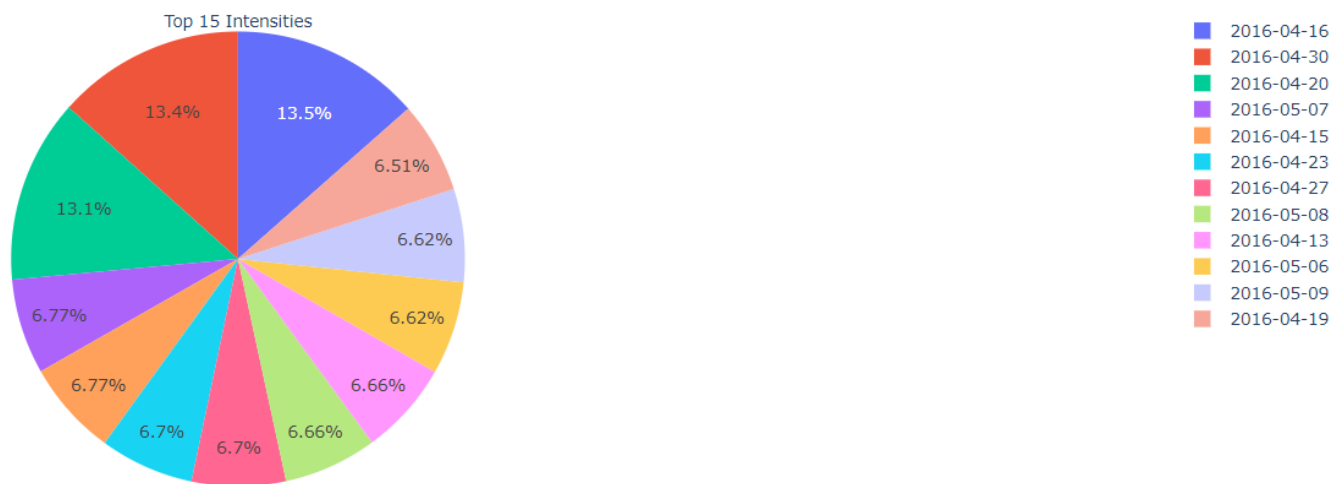
10. Bar Chart for Total Steps for Each Hour of the Day



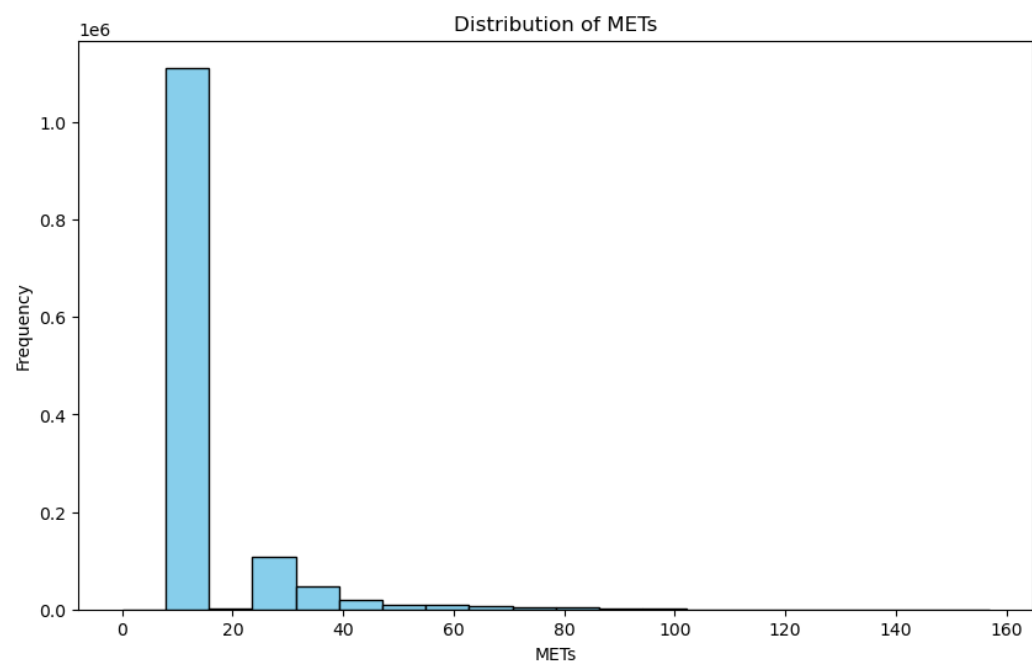
11. Create a sample bullet graph for Total intensity



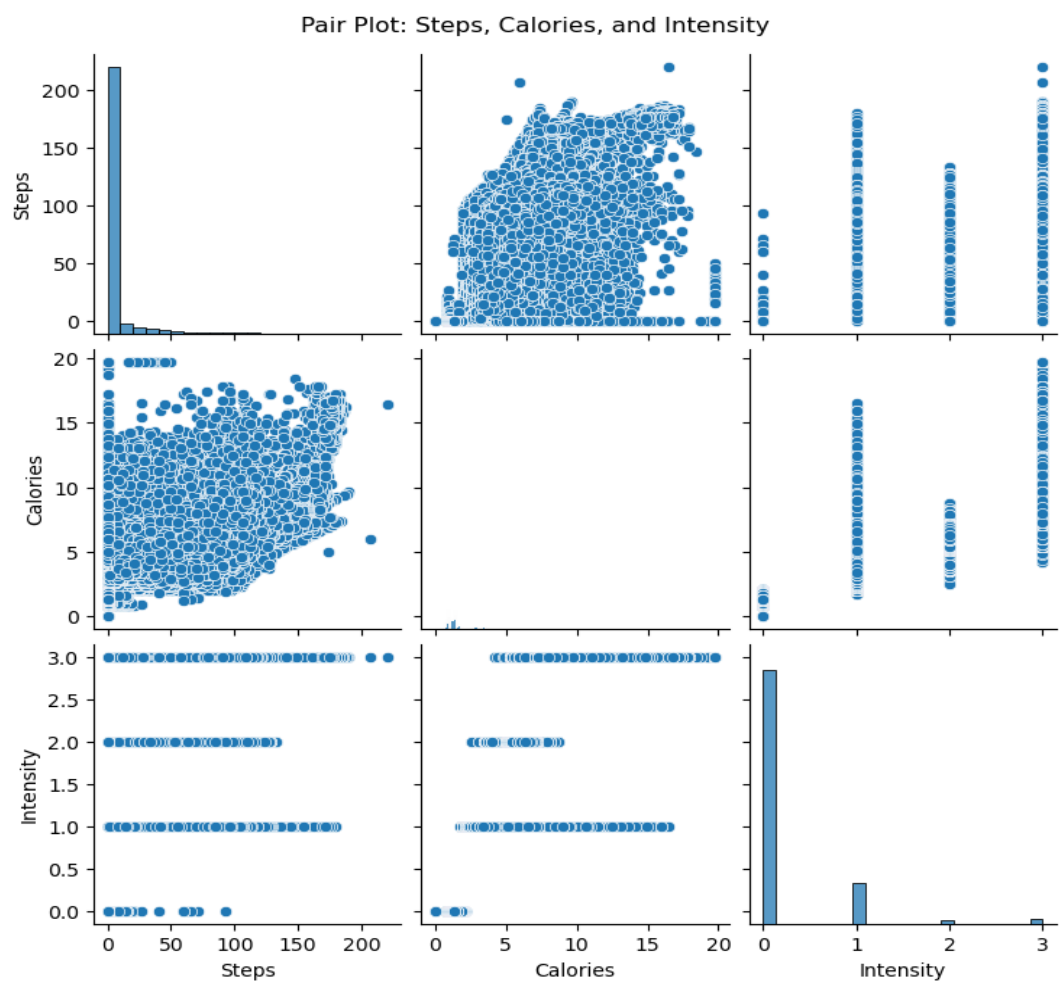
12. Create a pie chart for 'Total Intensity'



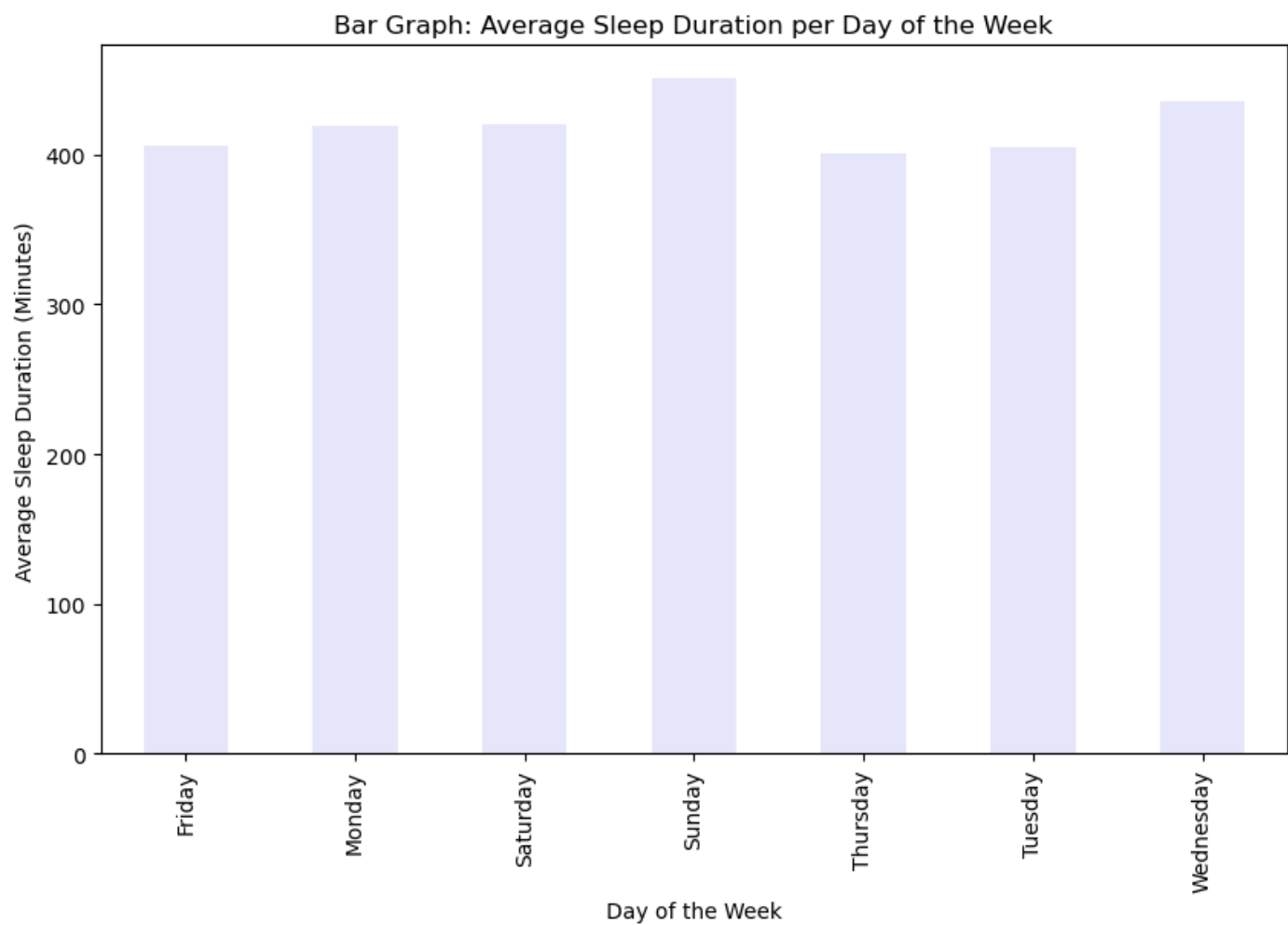
13. Histogram for Distribution of METs



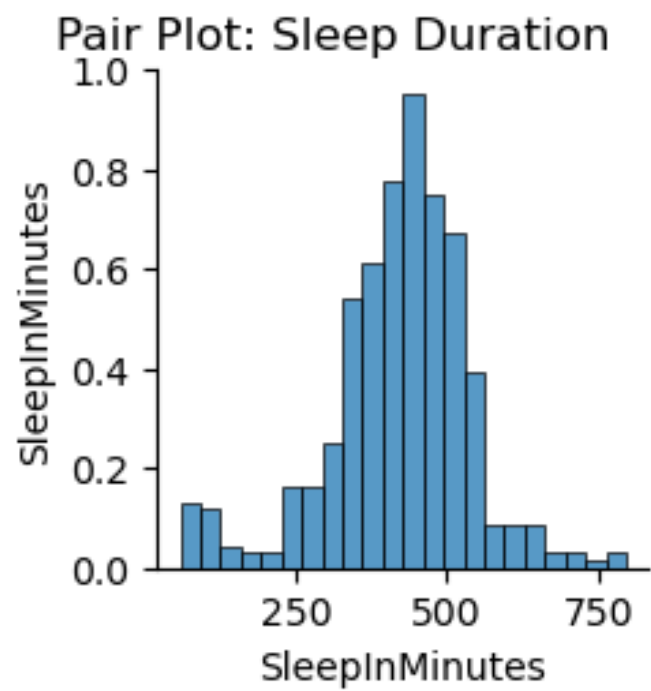
14. Pair Plot for Steps, Calories and intensity



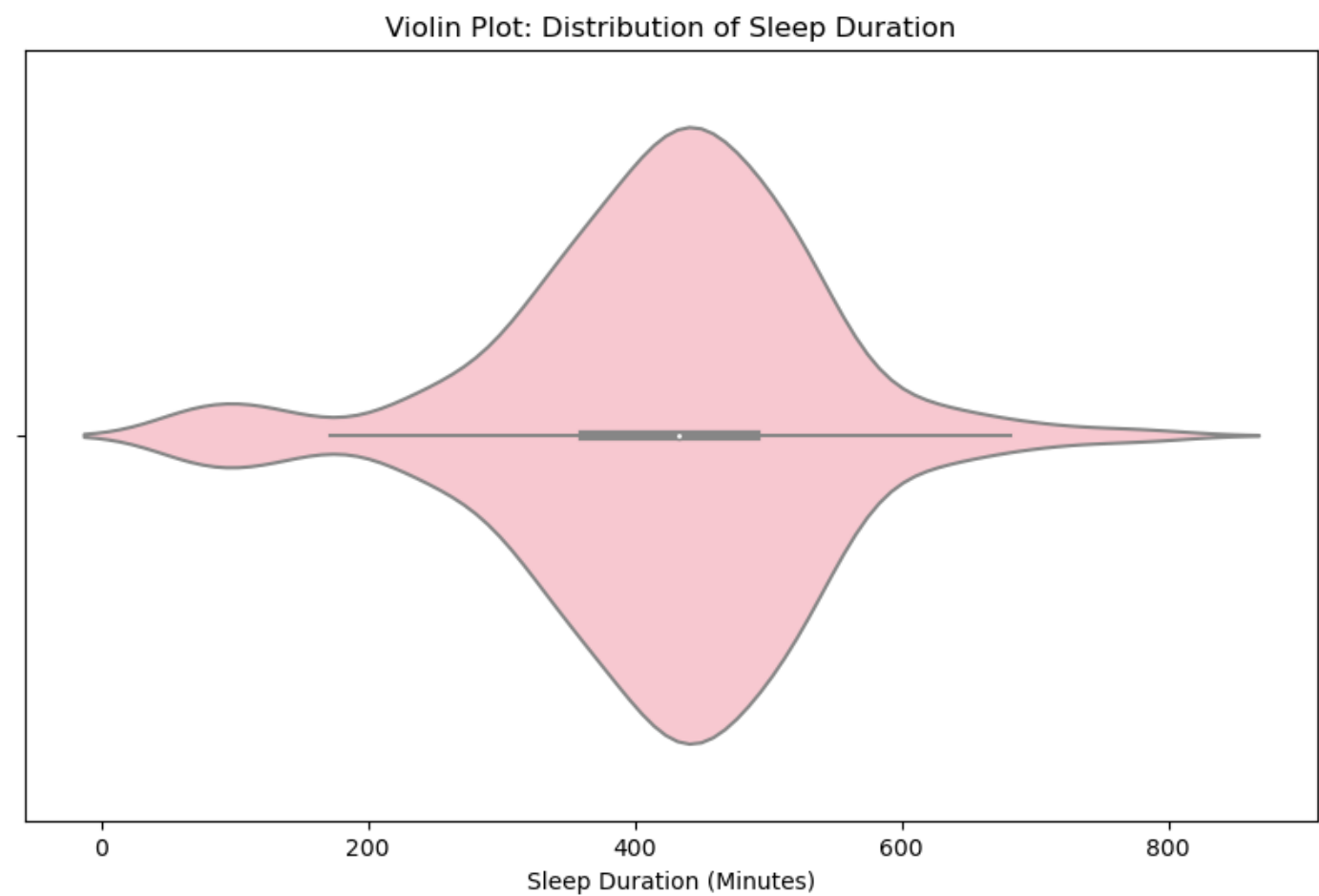
15. Bar Graph for Average Sleep Duration per Day of the Week



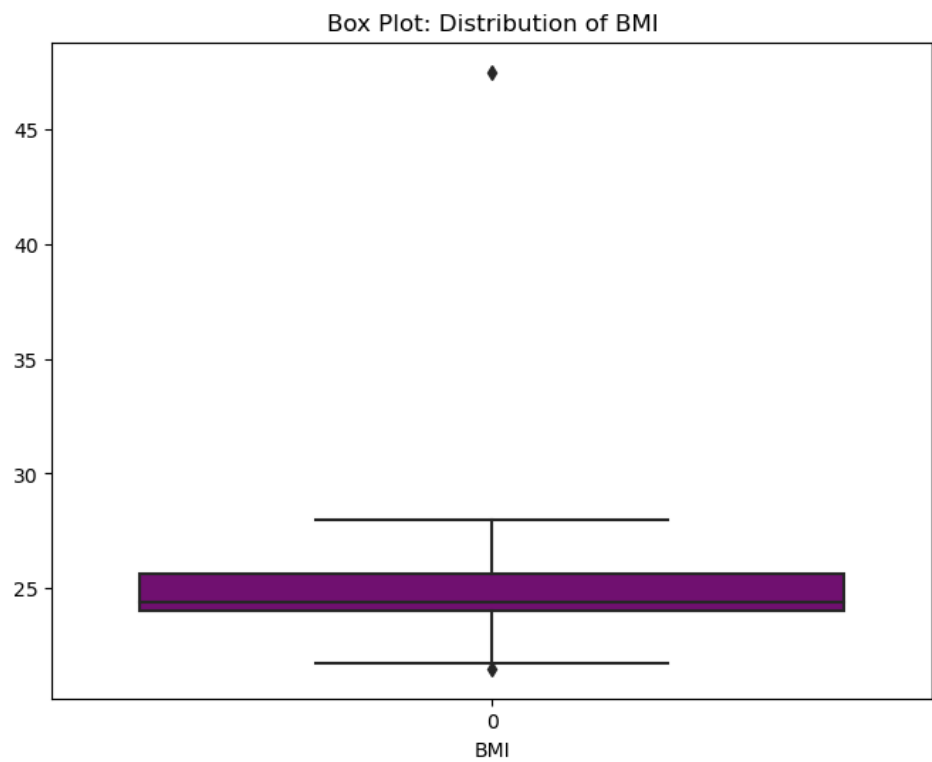
16. Pair Plot for Sleep Duration



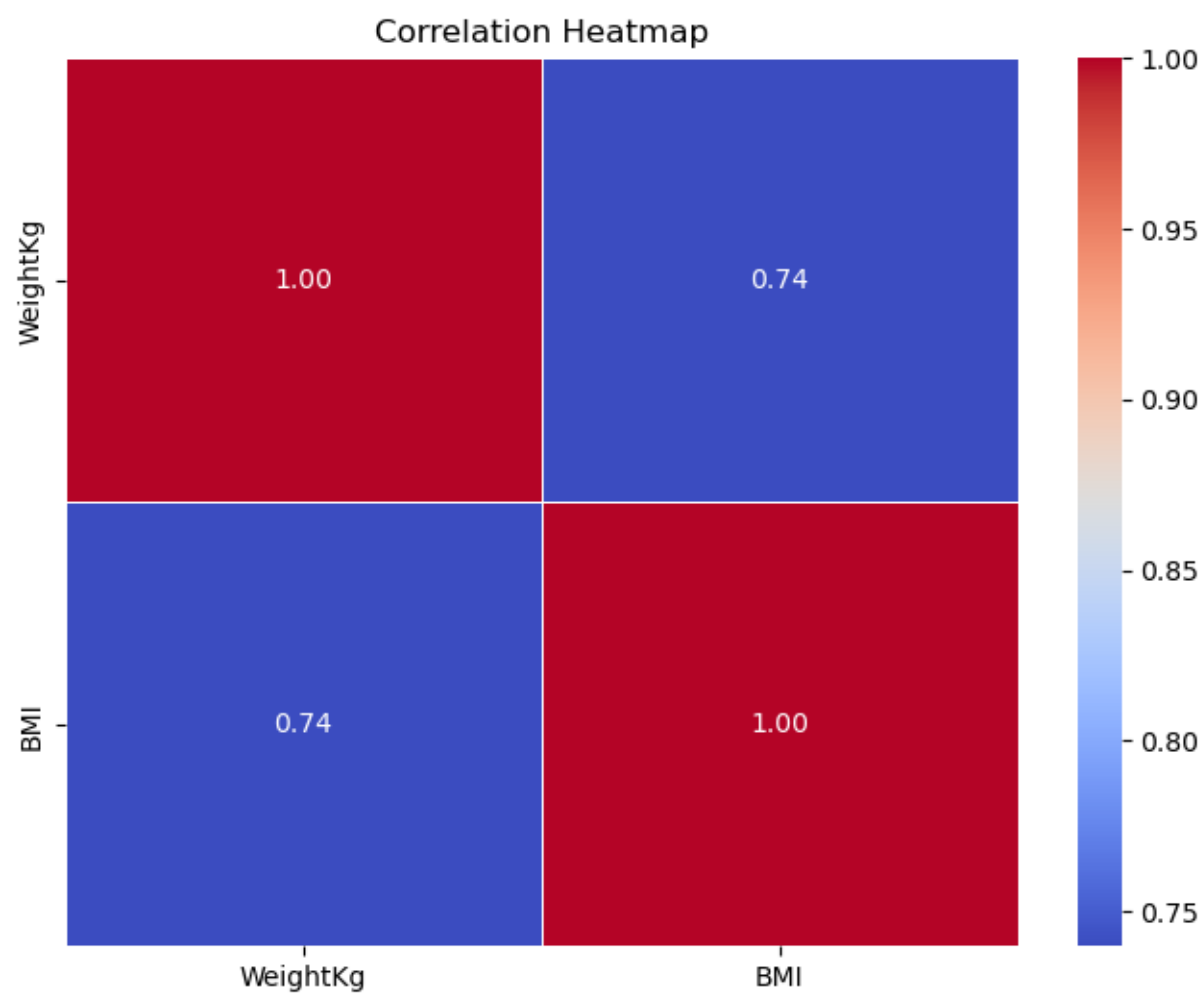
17. Violin Plot for Sleep Duration



18. Box Plot for Distribution of BMI



19. Creating a heatmap for weight and BMI



20. Pair Plot for Weight and BMI

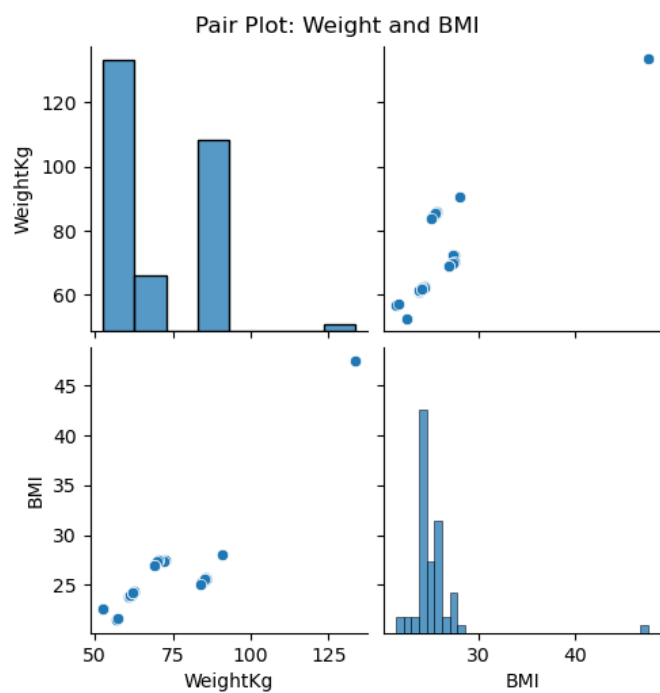
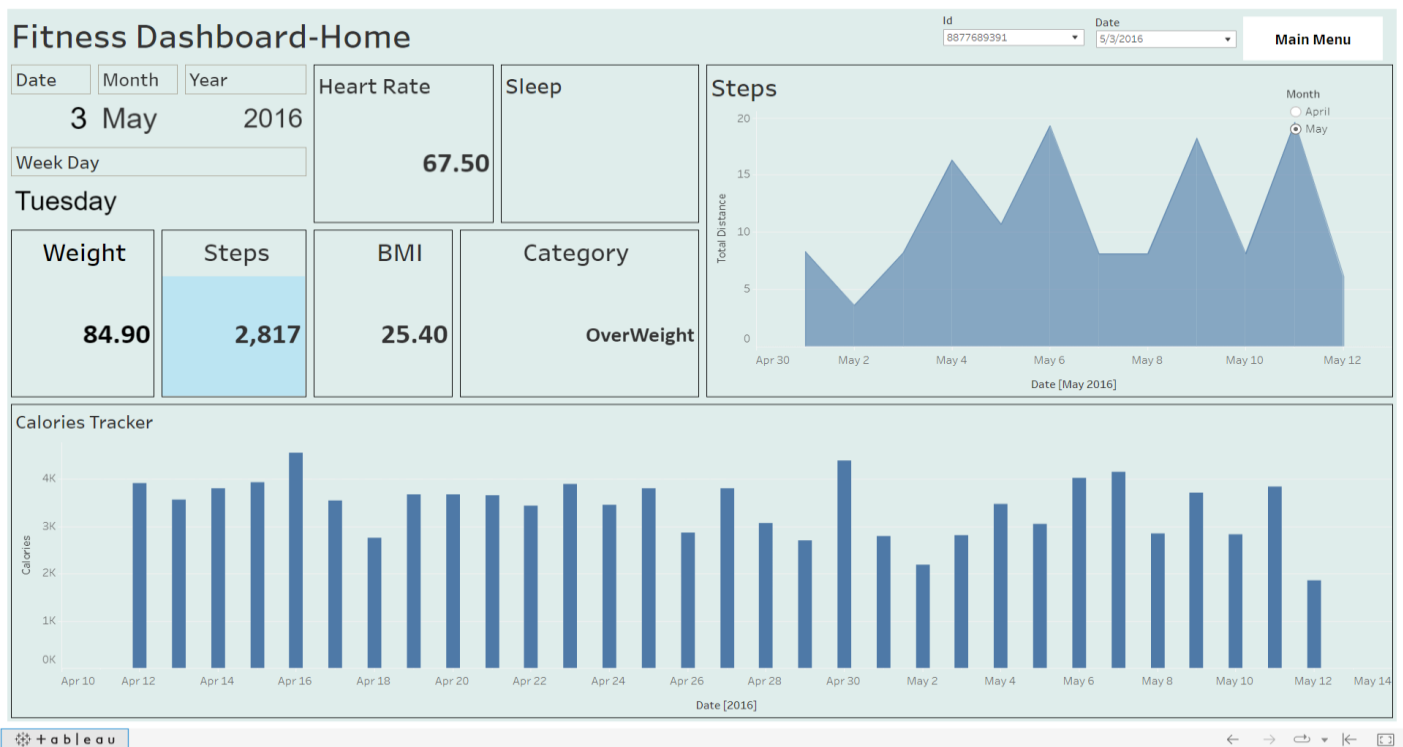
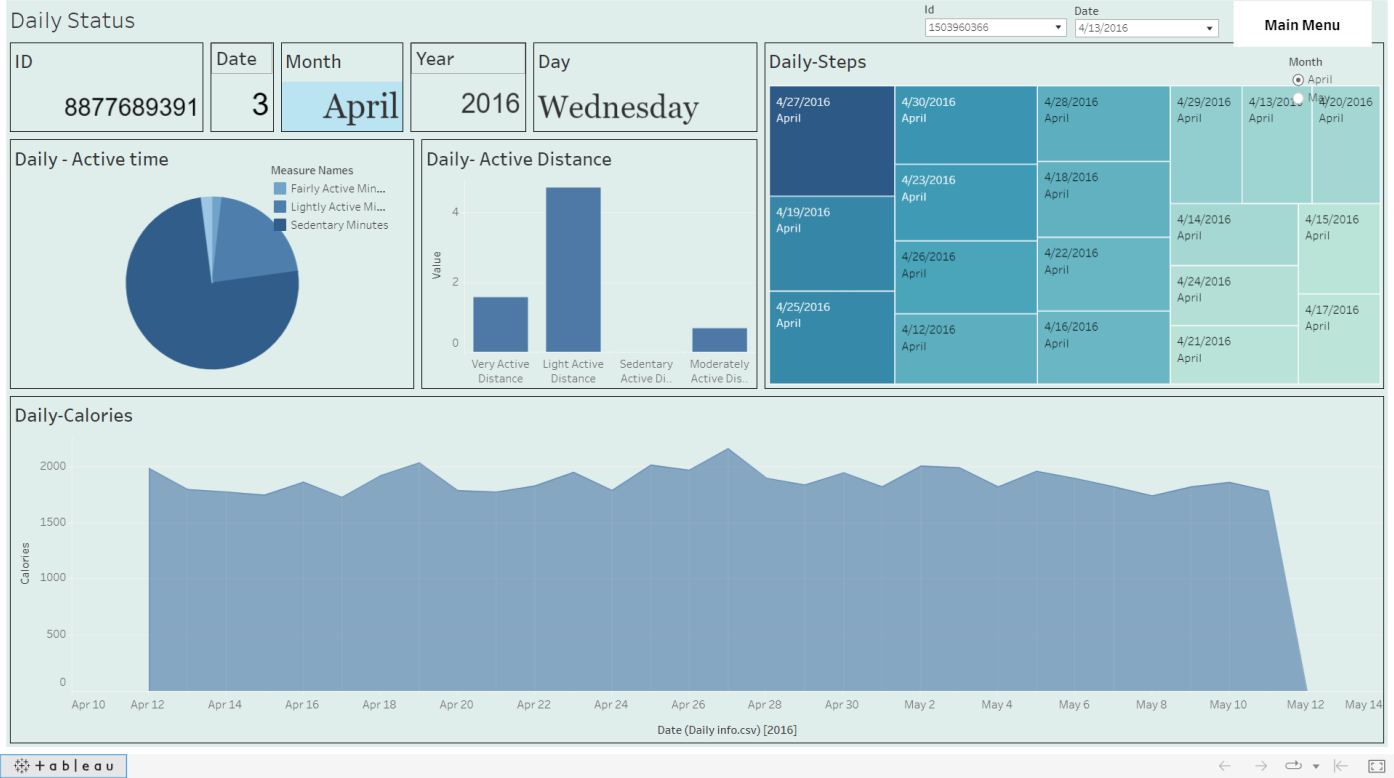


Tableau Dash Board:

Fitness Dashboard





Daily-Steps

Month

April

4/27/2016 April	4/30/2016 April	4/28/2016 April	4/29/2016 April	4/13/2016 April	4/20/2016 April
4/19/2016 April	4/23/2016 April	4/18/2016 April	4/14/2016 April	4/15/2016 April	
4/25/2016 April	4/26/2016 April	4/22/2016 April	4/24/2016 April	4/21/2016 April	4/17/2016 April

Daily - Active time

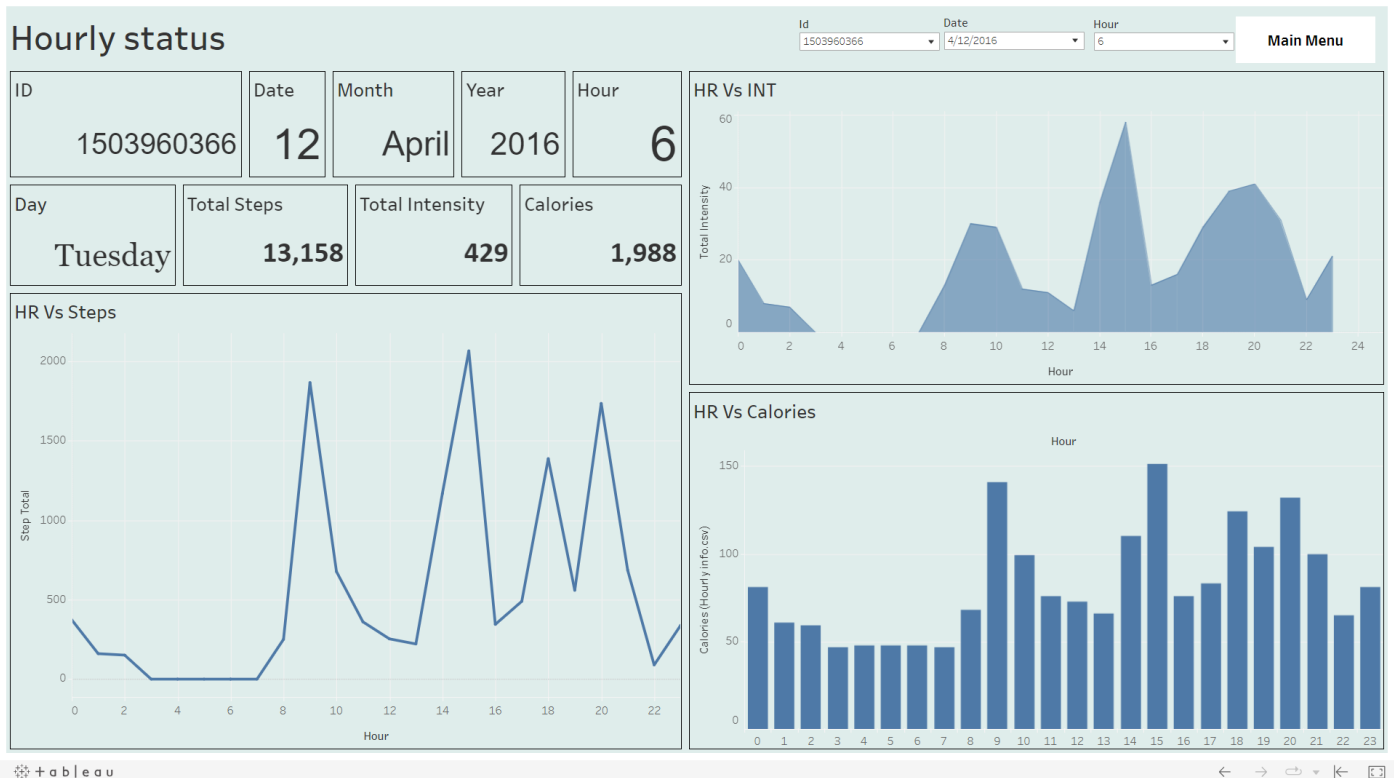
Measure Names

- Fairly Active Min...
- Lightly Active Mi...
- Sedentary Minutes

Daily- Active Distance

Daily-Calories

Date (Daily info.csv) [2016]



Day

Tuesday

Total Steps

13,158

Total Intensity

429

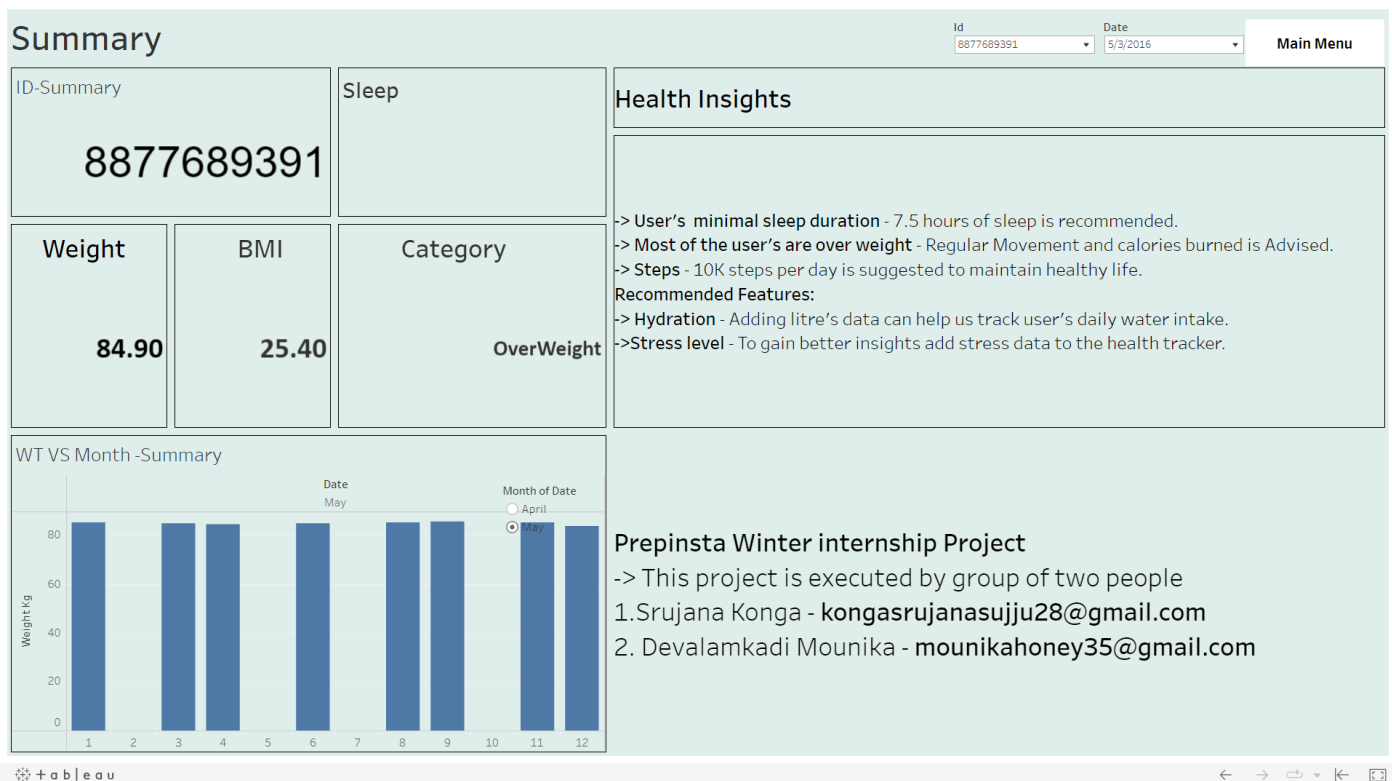
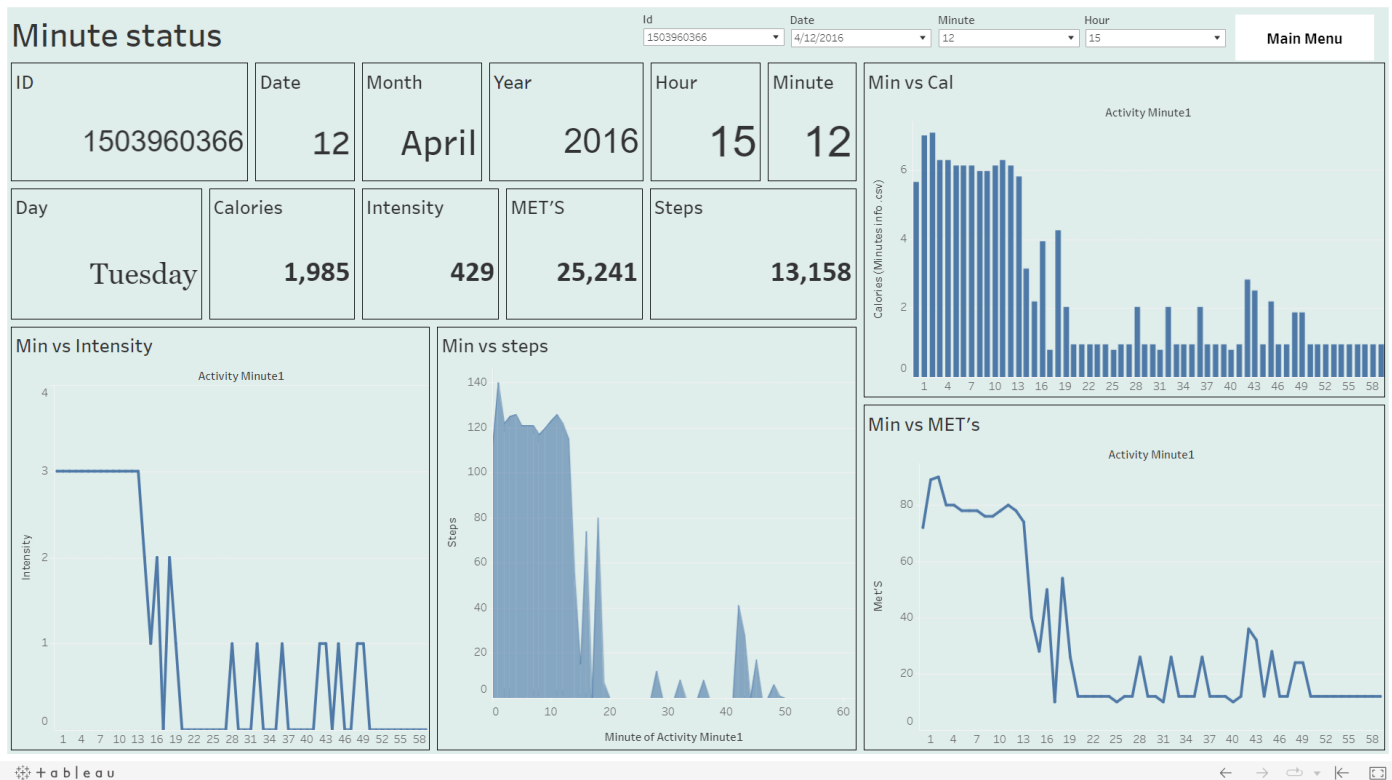
Calories

1,988

HR Vs INT

HR Vs Steps

HR Vs Calories



Thank you

Mounika Devalamkadi