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

4. Tableau

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

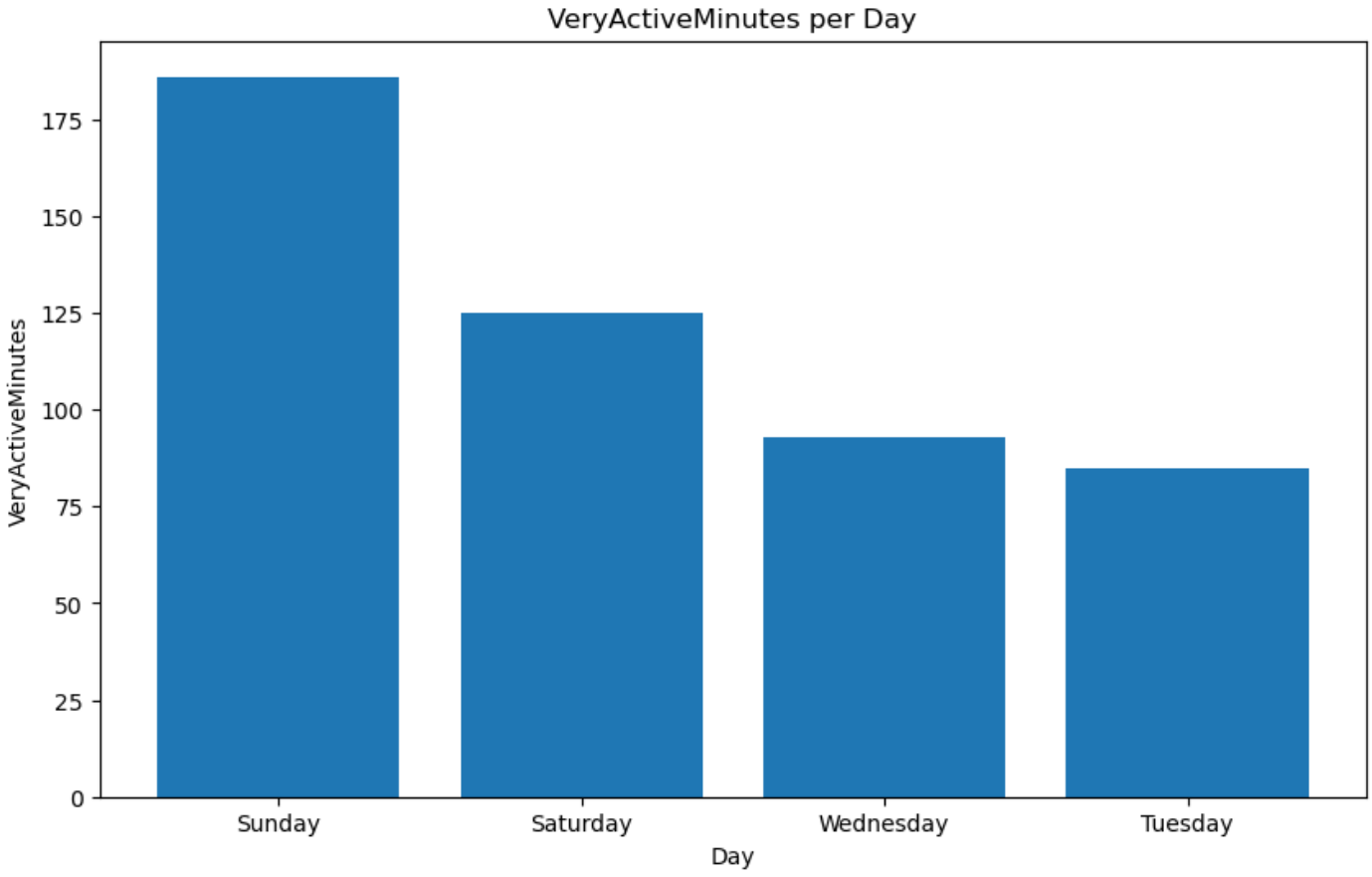
1325580 rows × 8 columns

	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

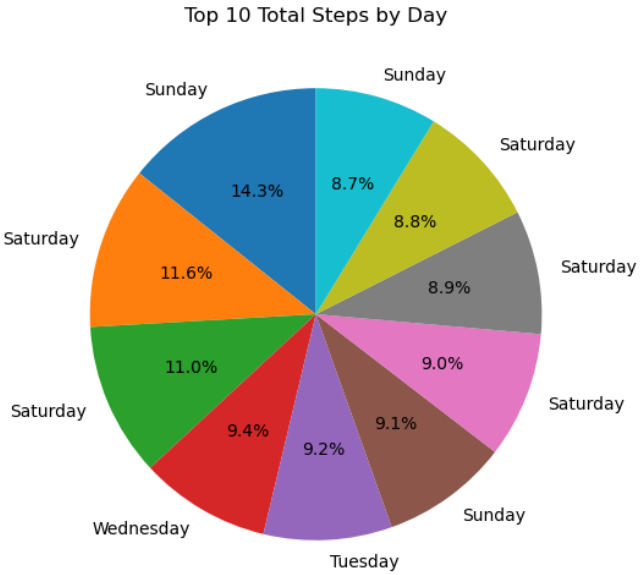
	Id	Date	WeightKg	BMI
0	1503960366	12-04-2016	NaN	NaN
1	1503960366	13-04-2016	NaN	NaN
2	1503960366	14-04-2016	NaN	NaN
3	1503960366	15-04-2016	NaN	NaN
4	1503960366	16-04-2016	NaN	NaN
...	...	...	...	...
935	8877689391	08-05-2016	85.4	25.6
936	8877689391	09-05-2016	85.5	25.6
937	8877689391	10-05-2016	NaN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

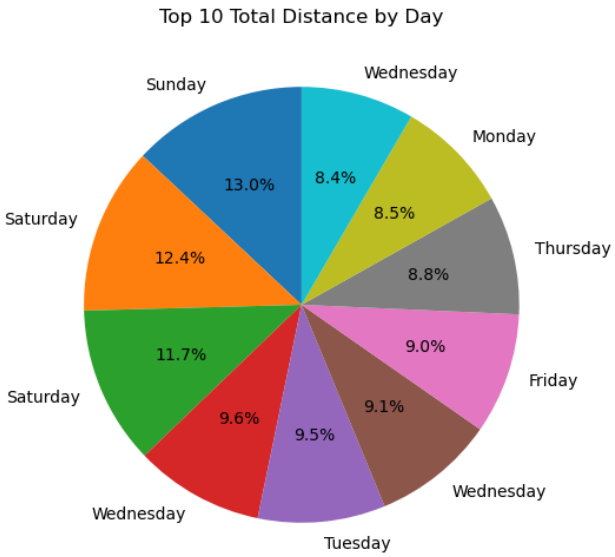
Exploratory Data Analysis:

1.Bar chart for very active minutes per day

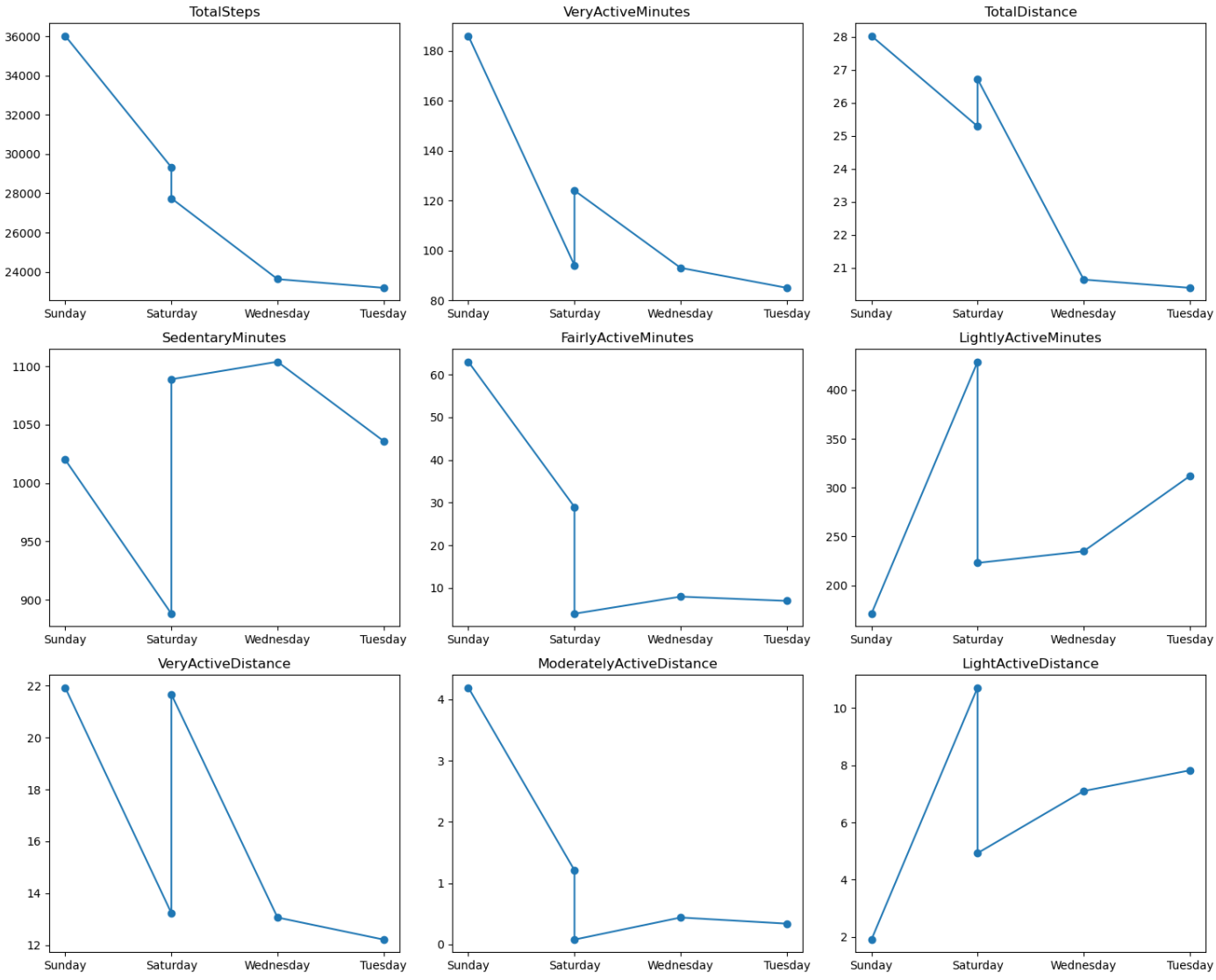


2. Plot pie chart for total steps vs total distance

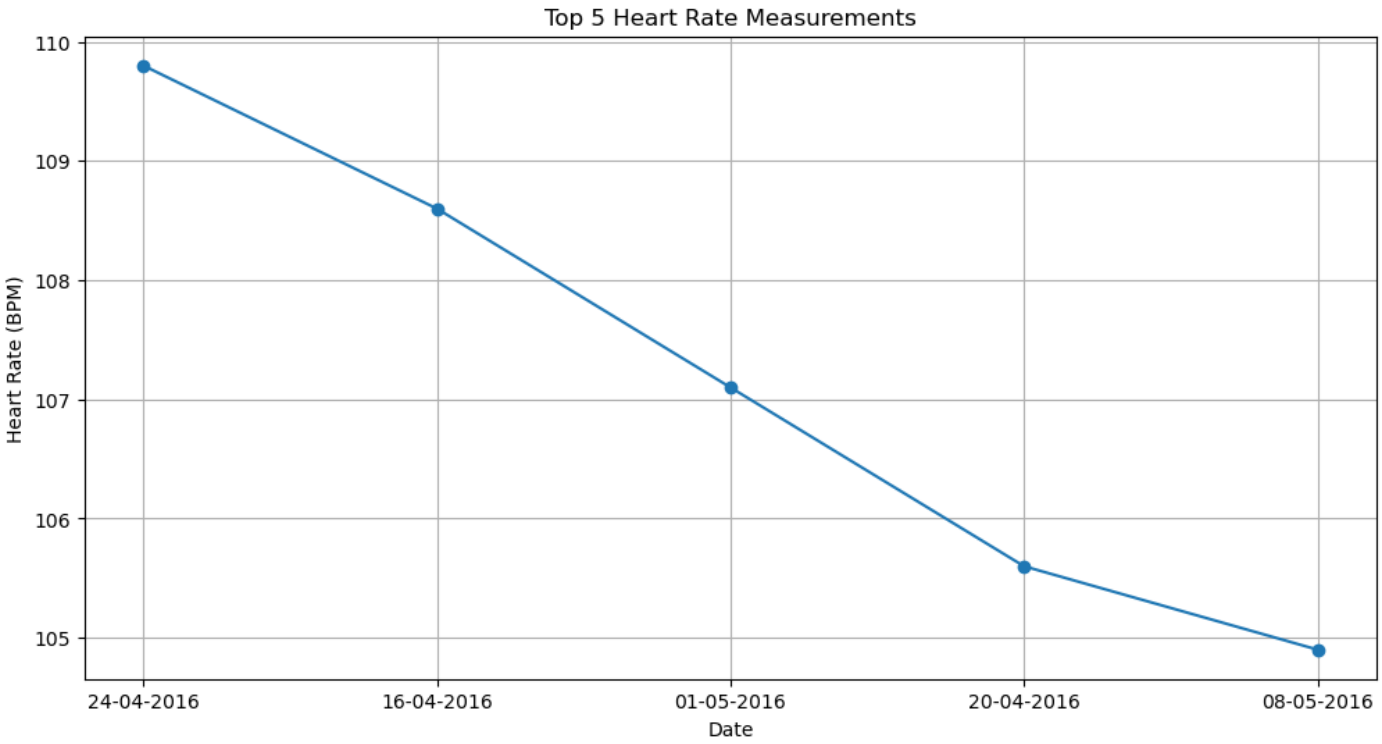




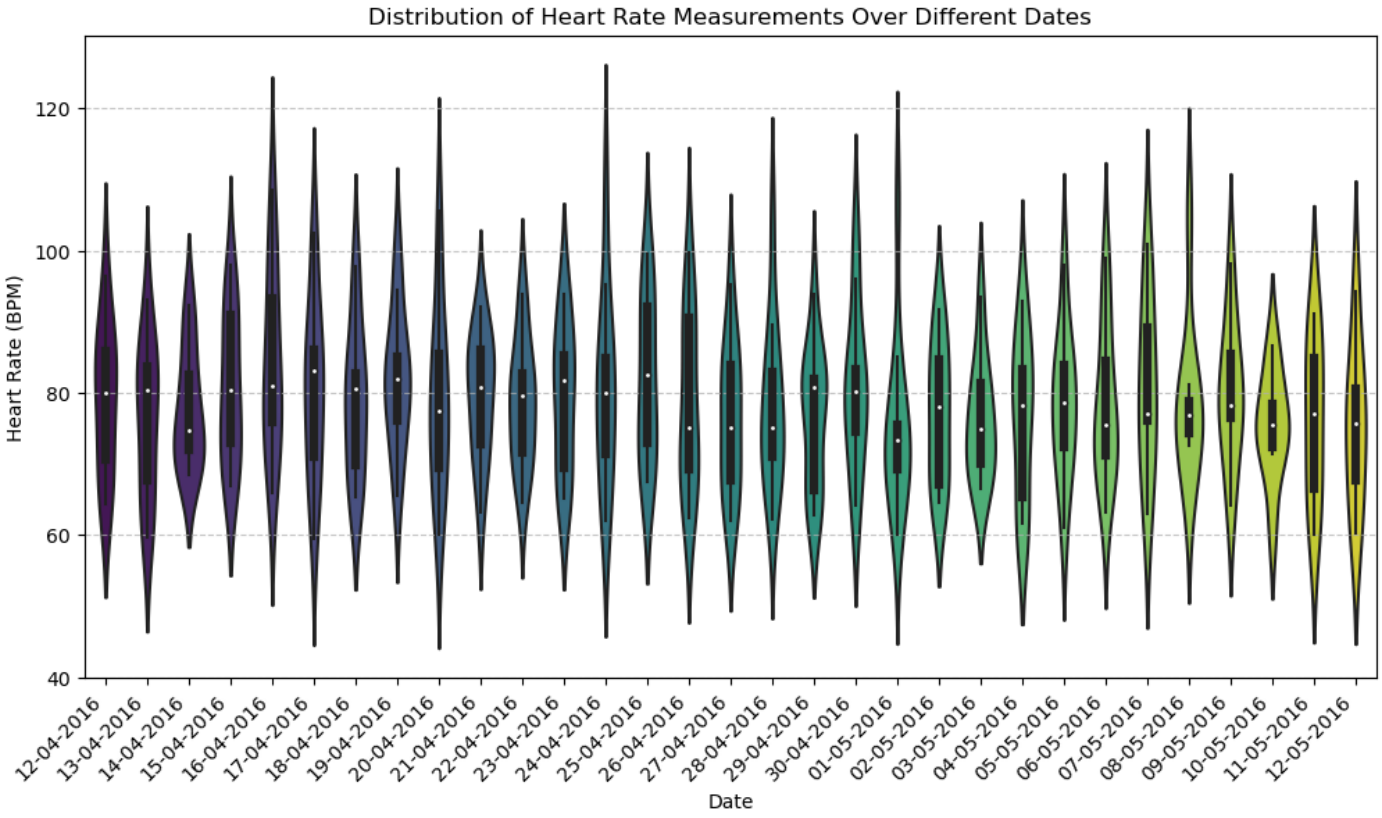
3. Creating subplots for each metric using Line Chart



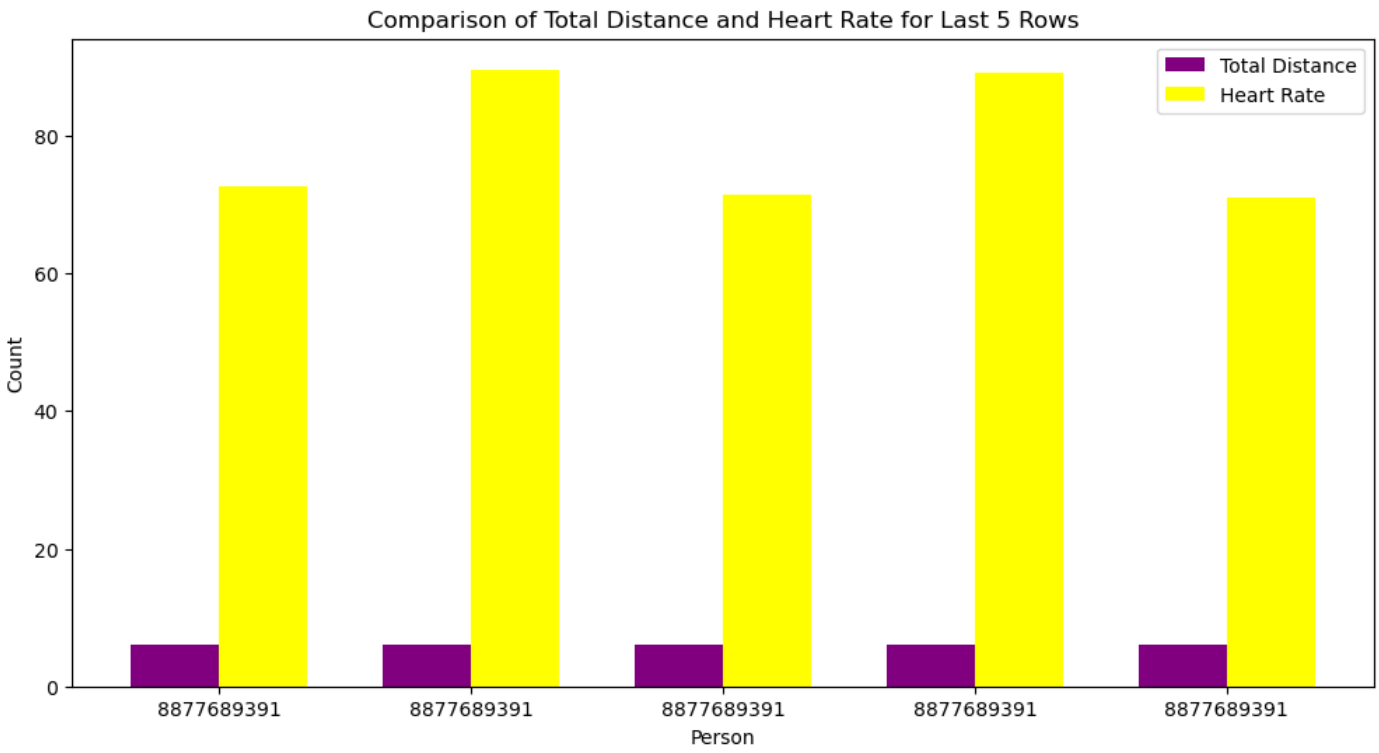
4. Creating a line chart for Heart rate (BPM)



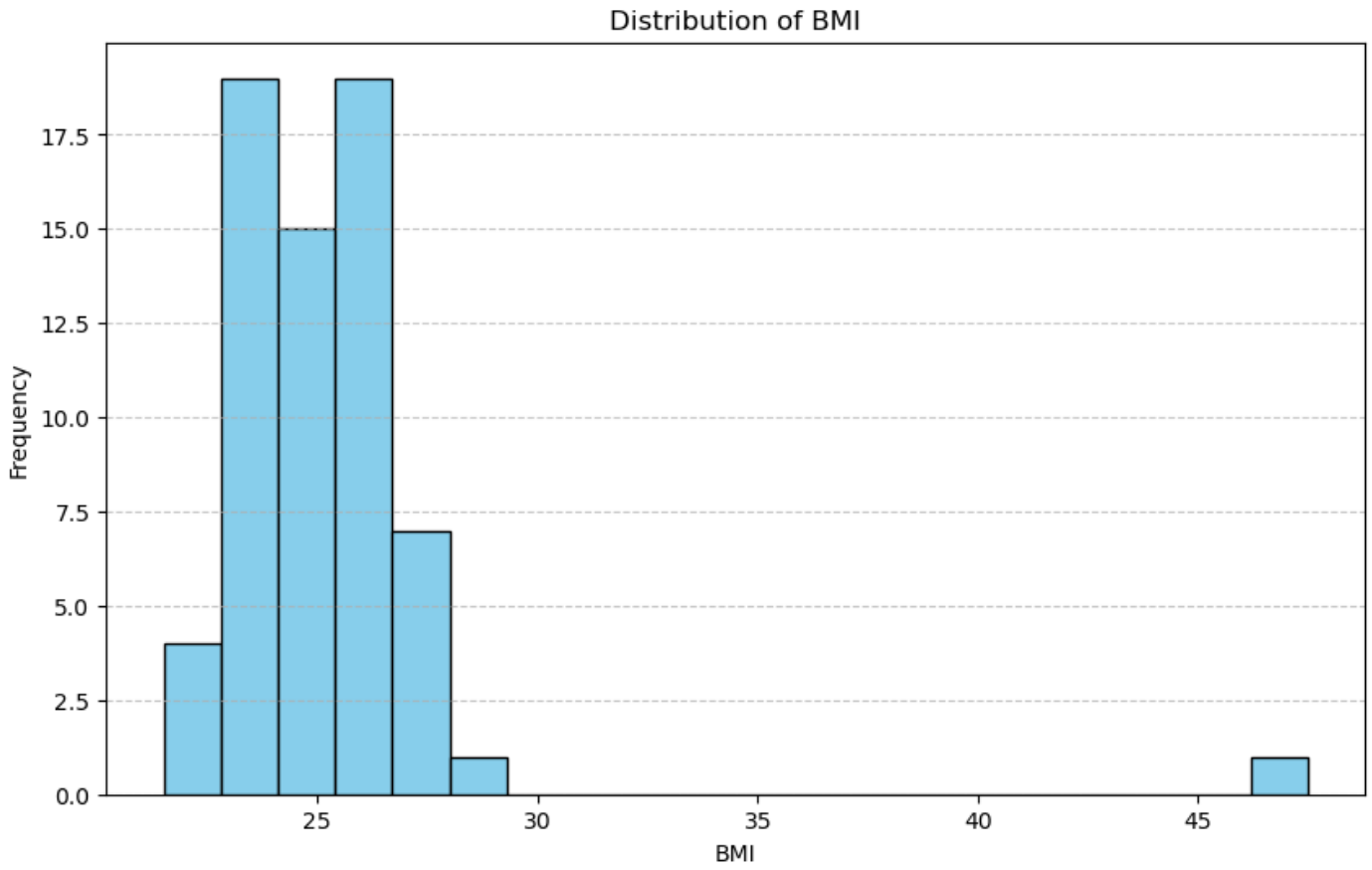
5. Creating a violin plot for Heart rate (BPM) over different dates



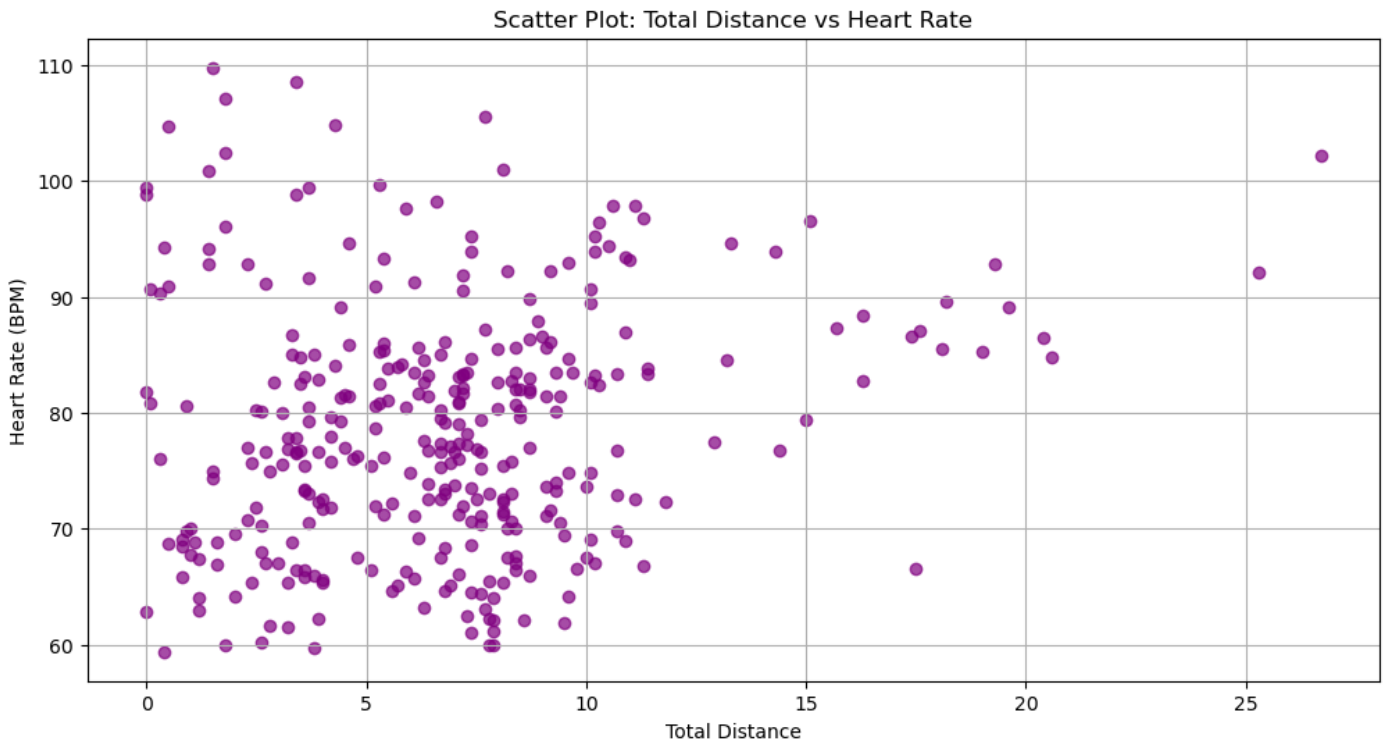
6. Create a grouped bar chart for Total Distance and Heart Rate for the last 5 rows



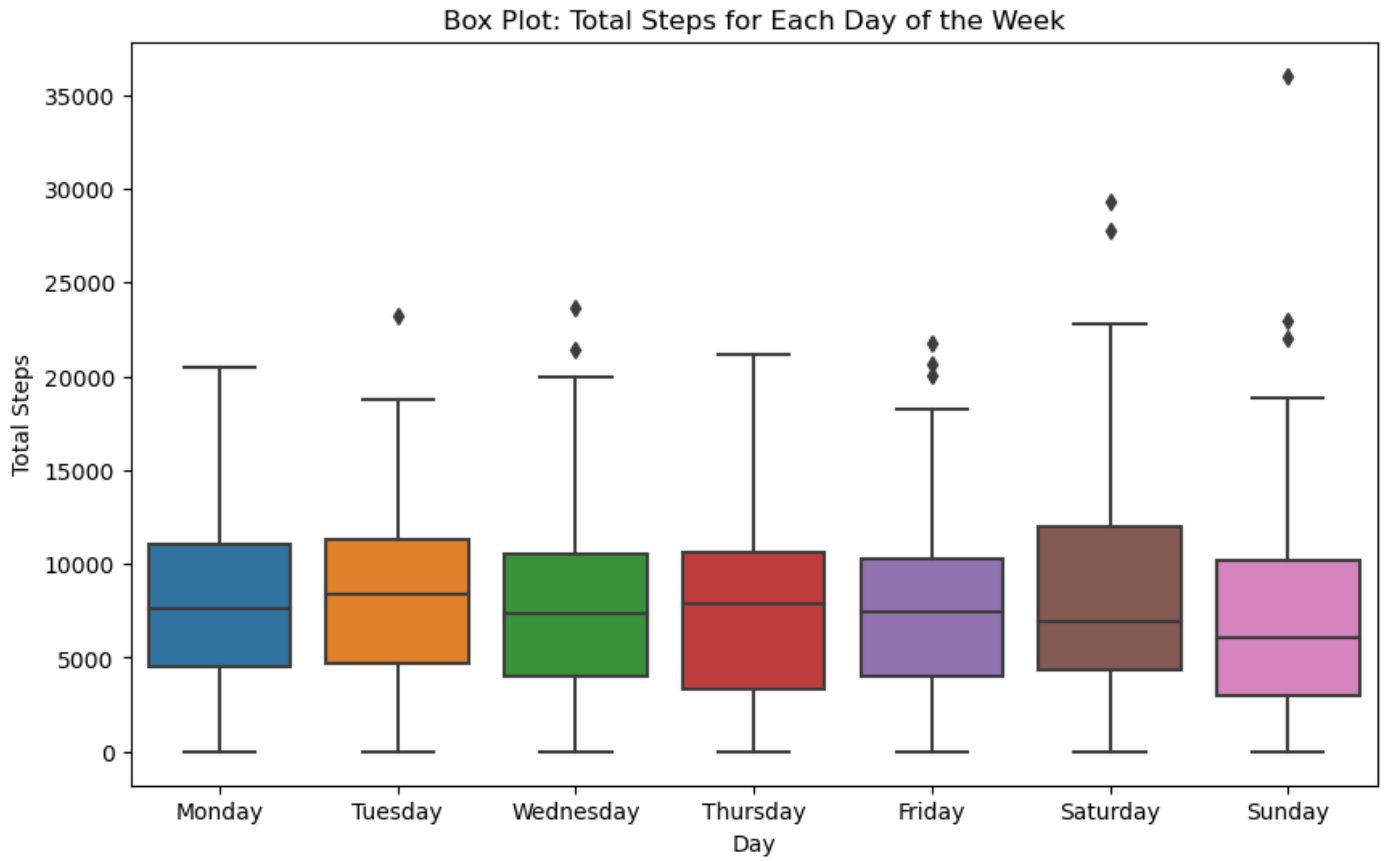
7. Histogram for Distribution of BMI



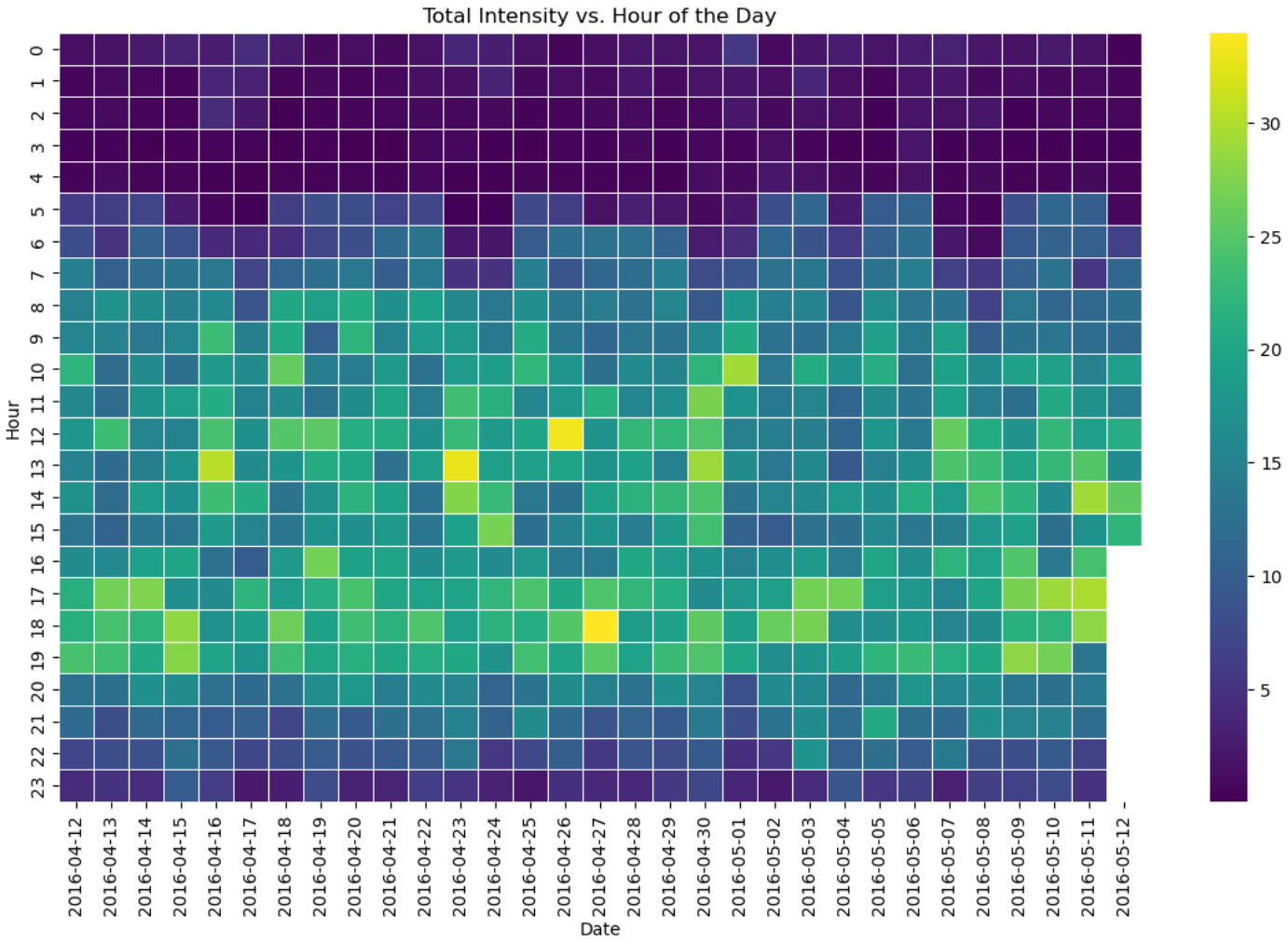
8. Scatter Plot for Total Distance vs Heart Rate



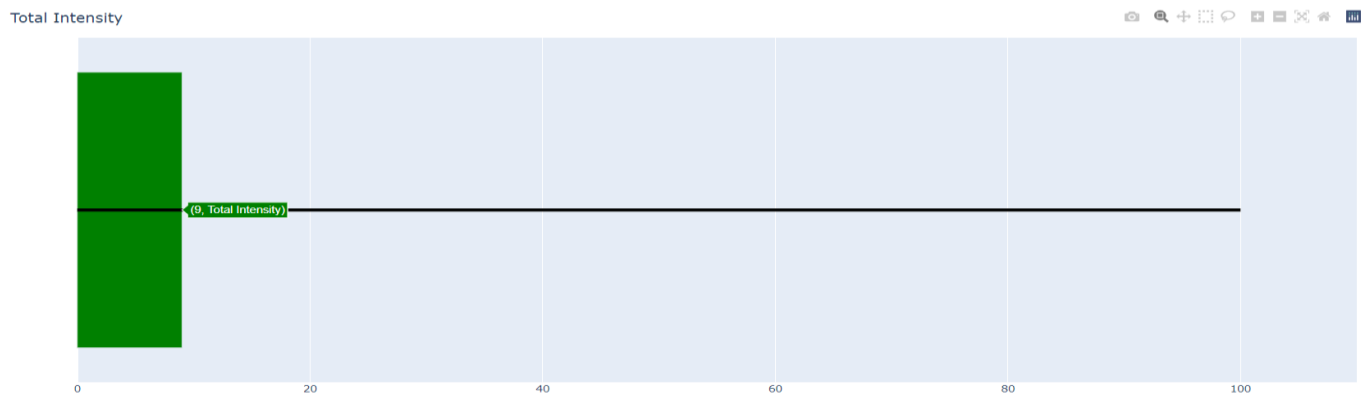
9. Box Plot for Total Steps for Each Day of the Week

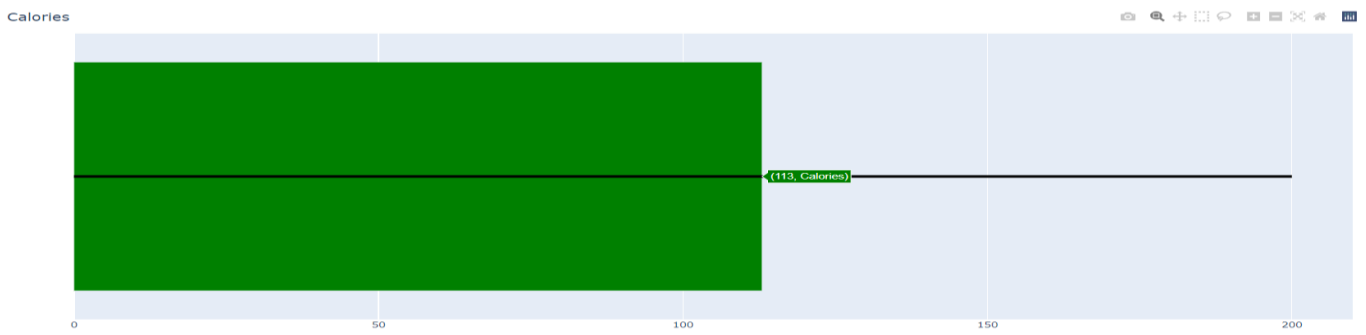


10. Heatmap for Total Intensity vs. Hour of the Day

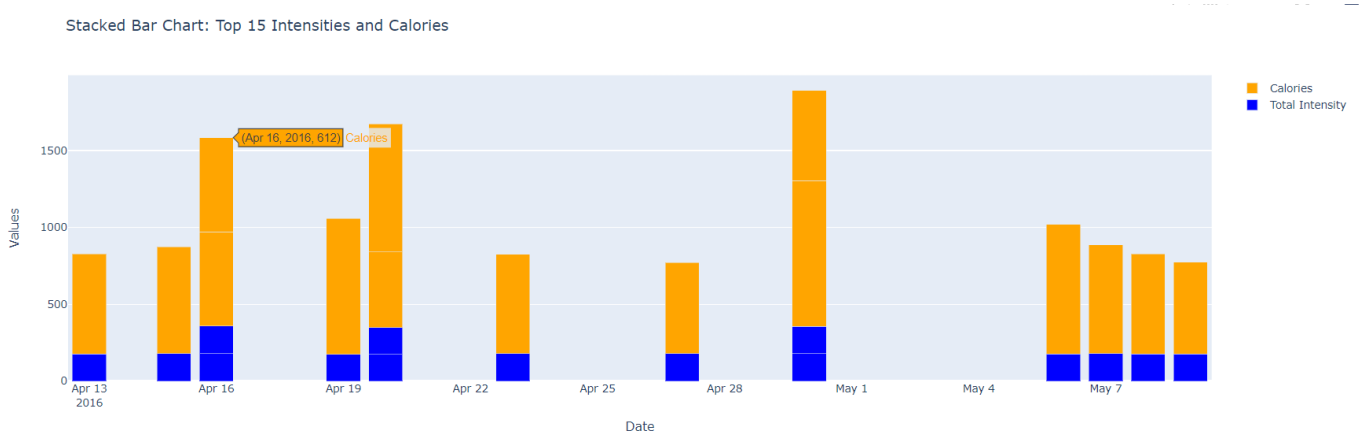


11. Create a bullet graph for Total Intensity



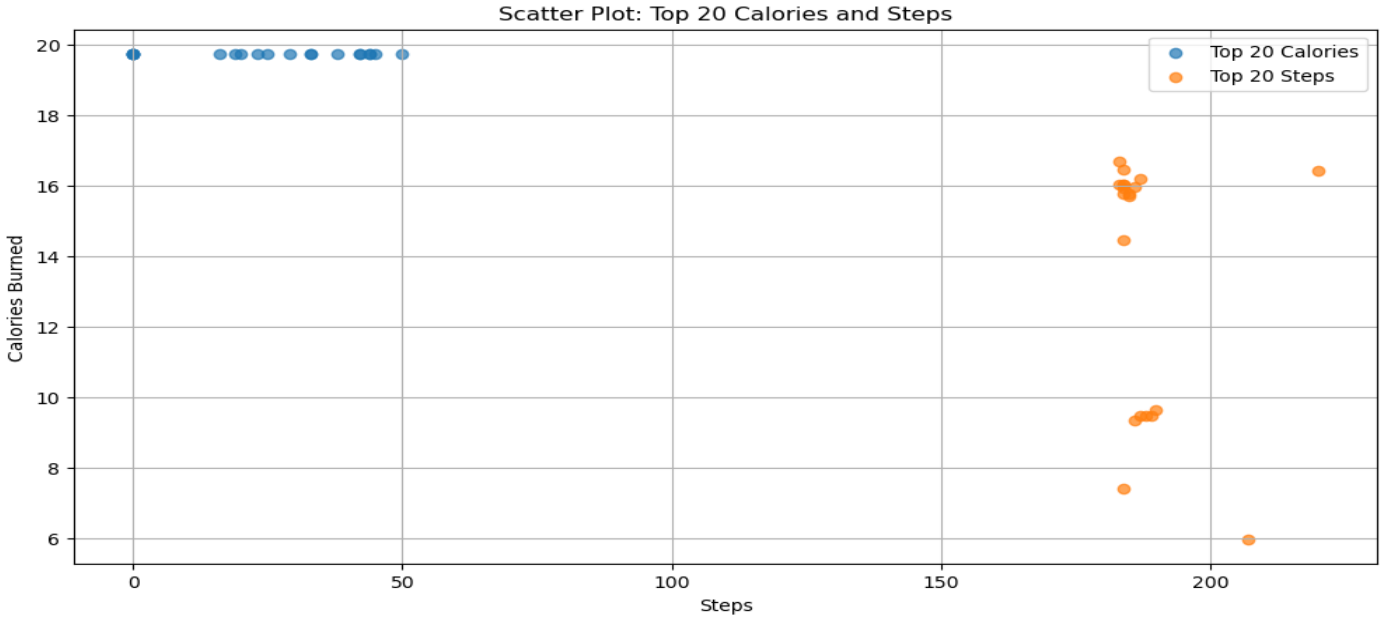


12. Create a stacked bar chart for 'Total Intensity' and 'Calories'

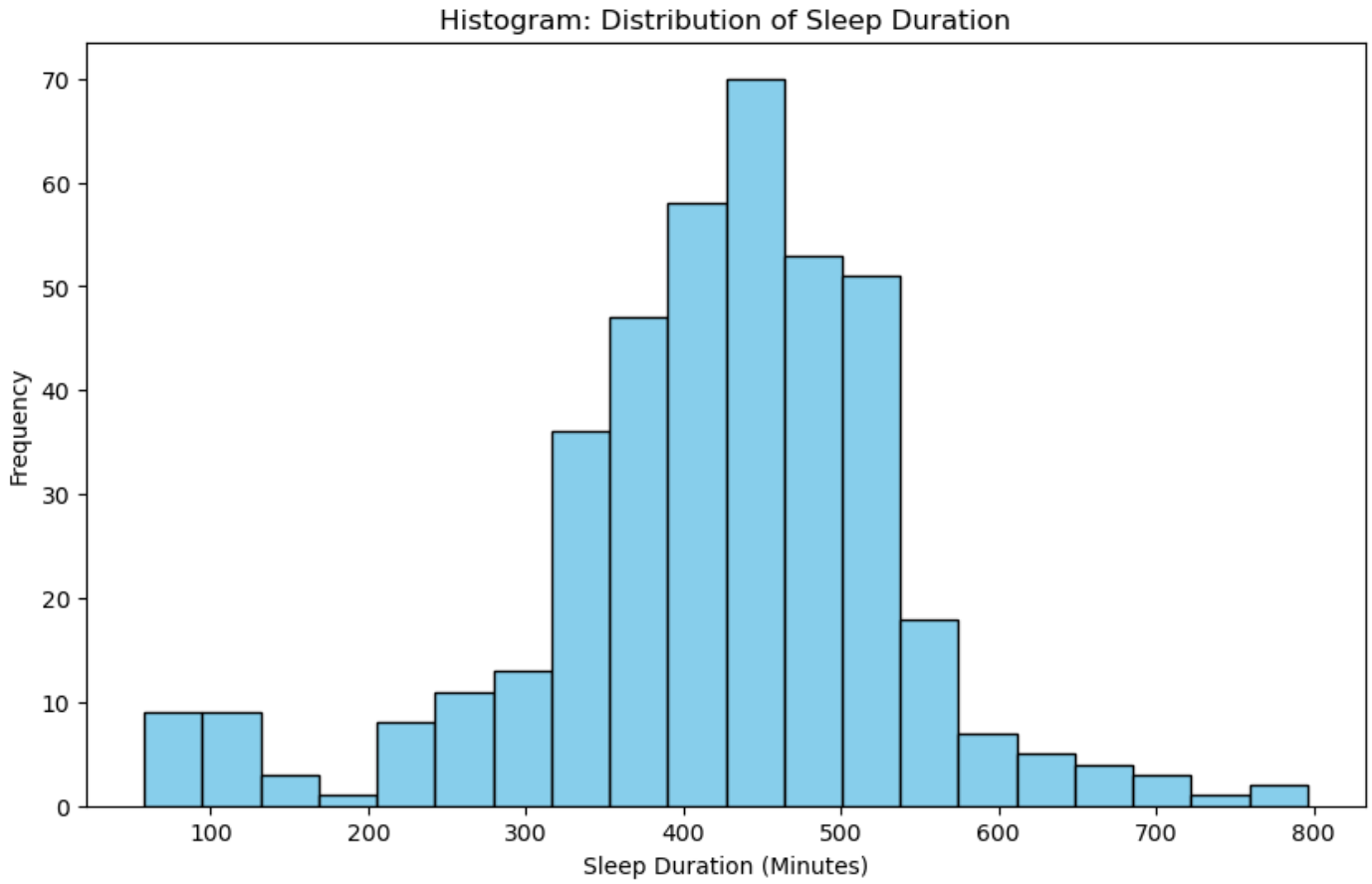


13. Column Chart for Total Calories Burned per Hour

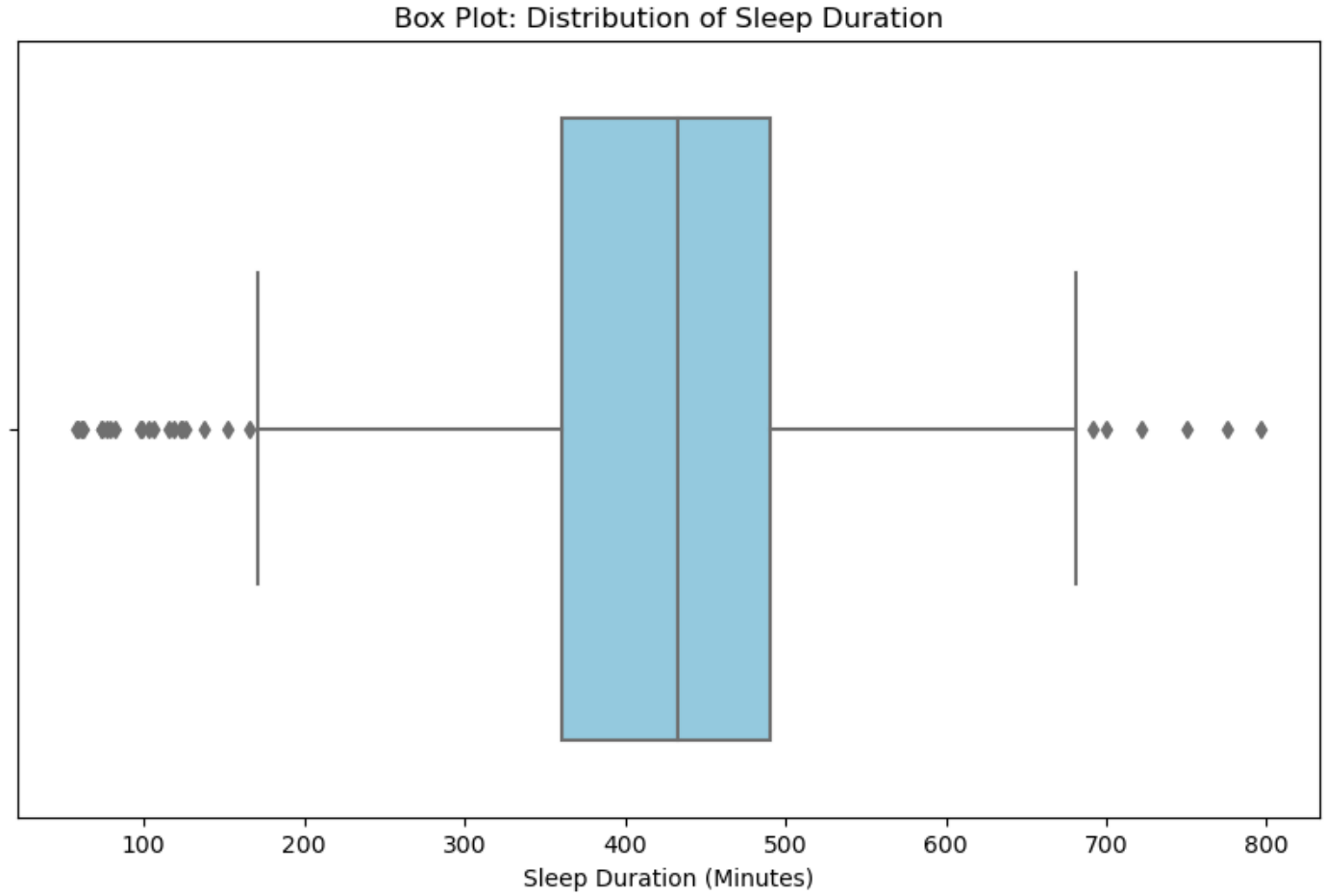
14. Scatter Plot for Top 20 Calories vs Steps



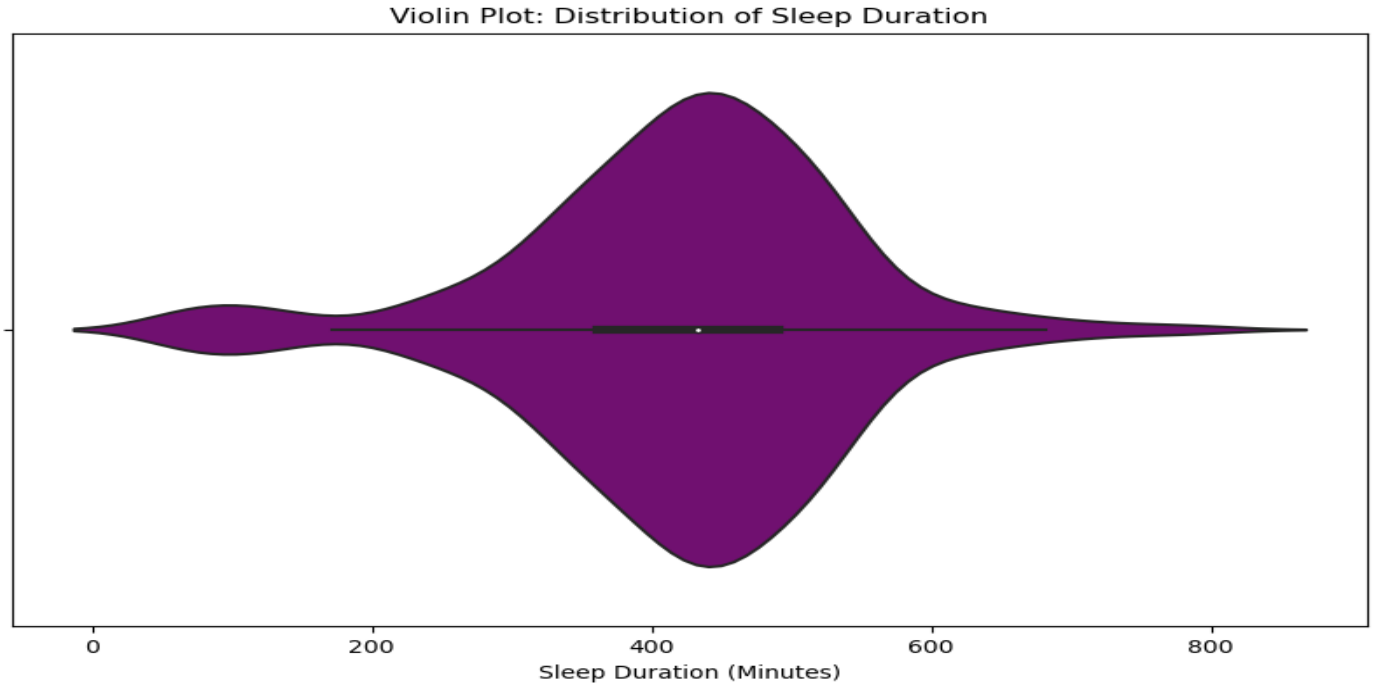
15. Histogram for Distribution of Sleep Duration



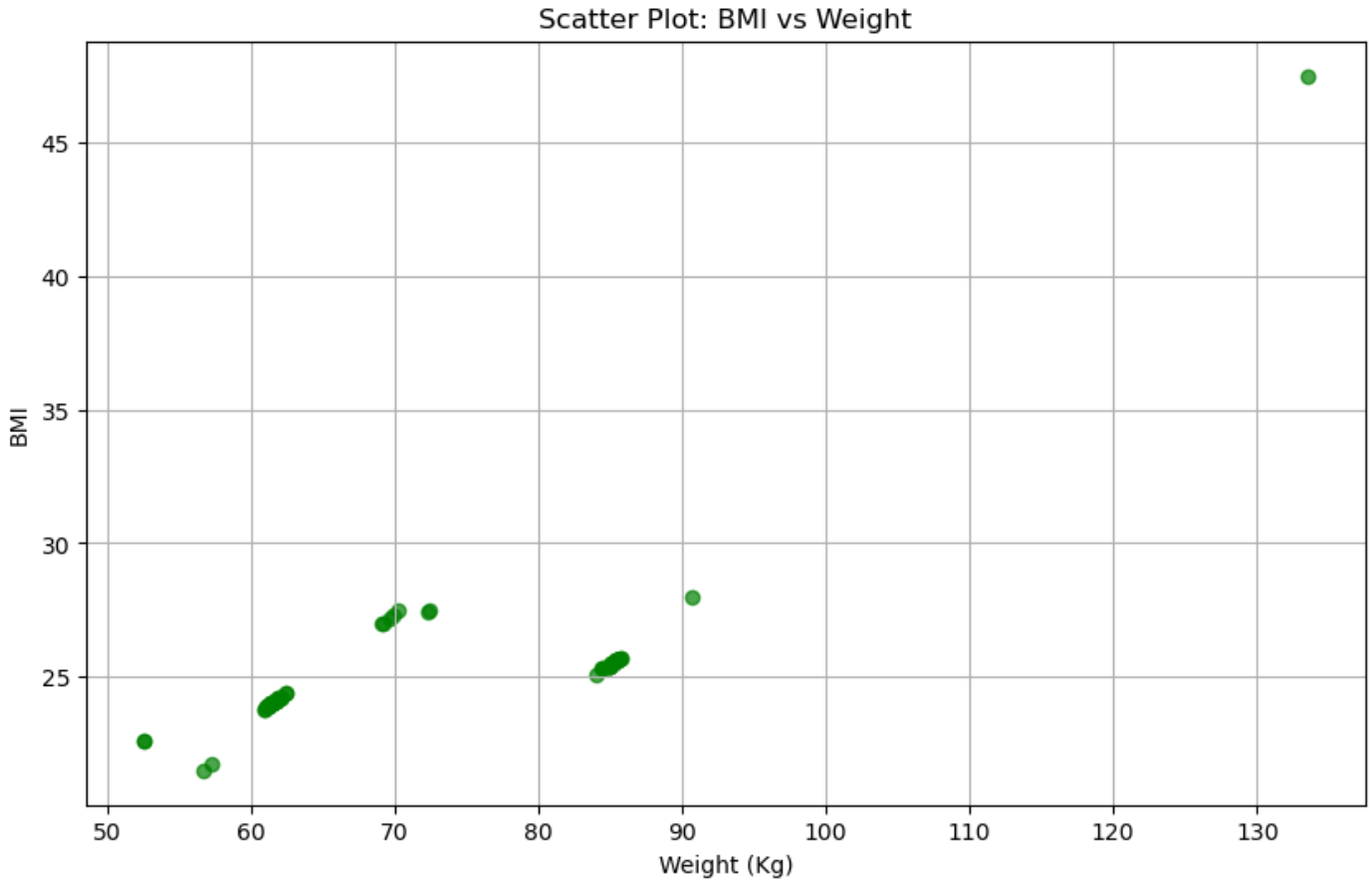
16. Box Plot for Sleep Duration



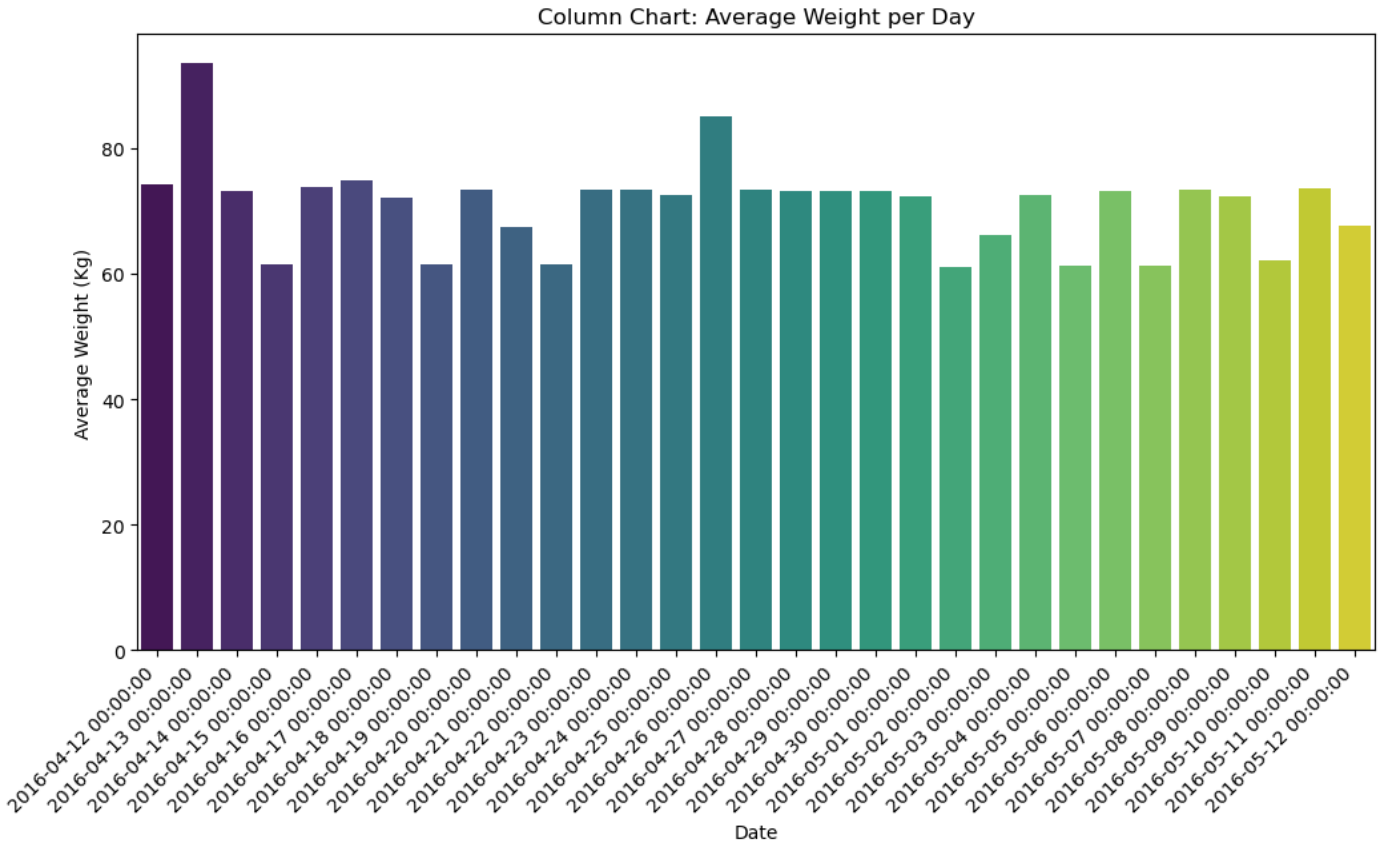
17. Violin Plot for Sleep Duration



18. Scatter Plot for BMI vs Weight



19. Column Chart for Average Weight per Day



20. Violin Plot for Weight and BMI

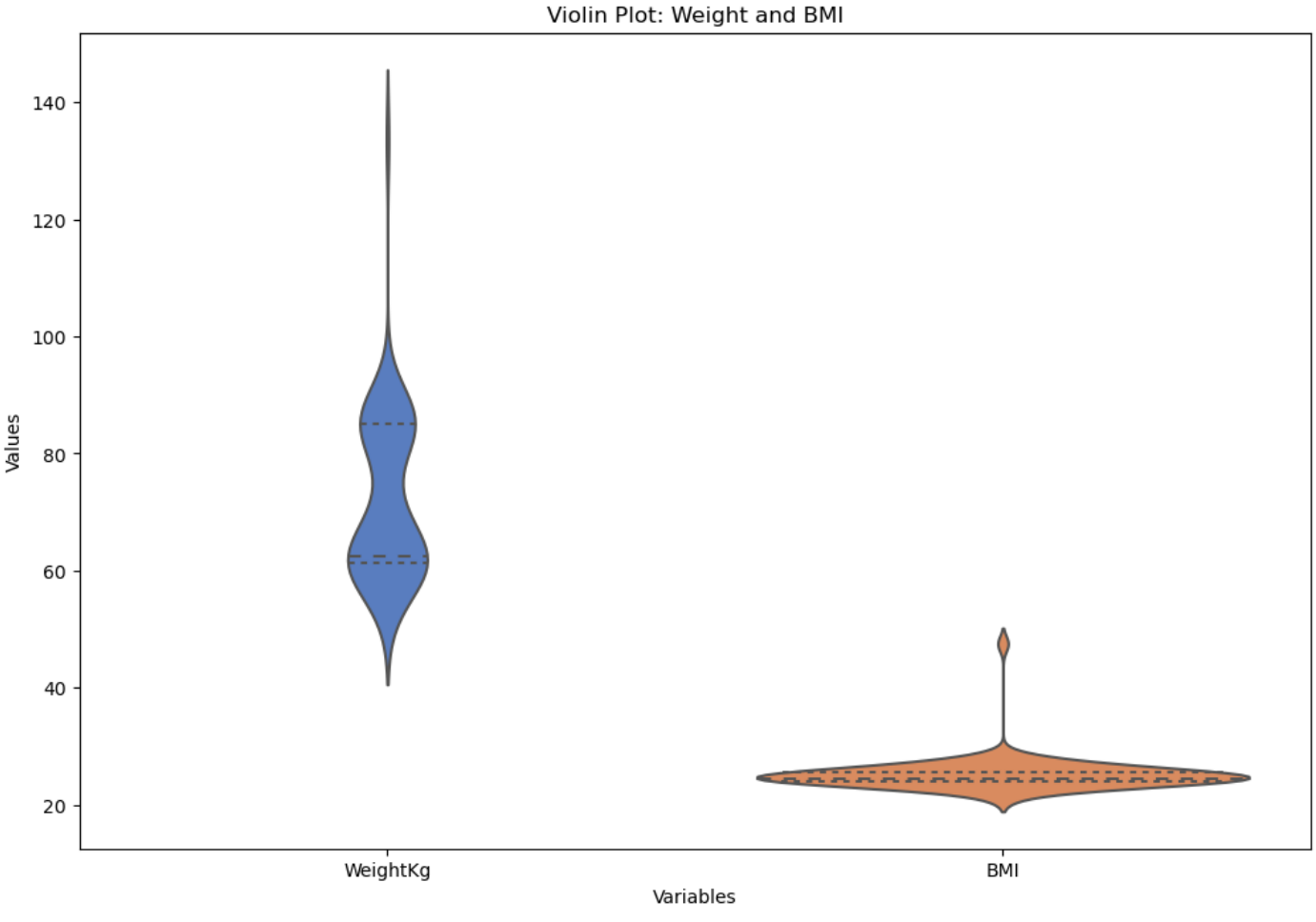
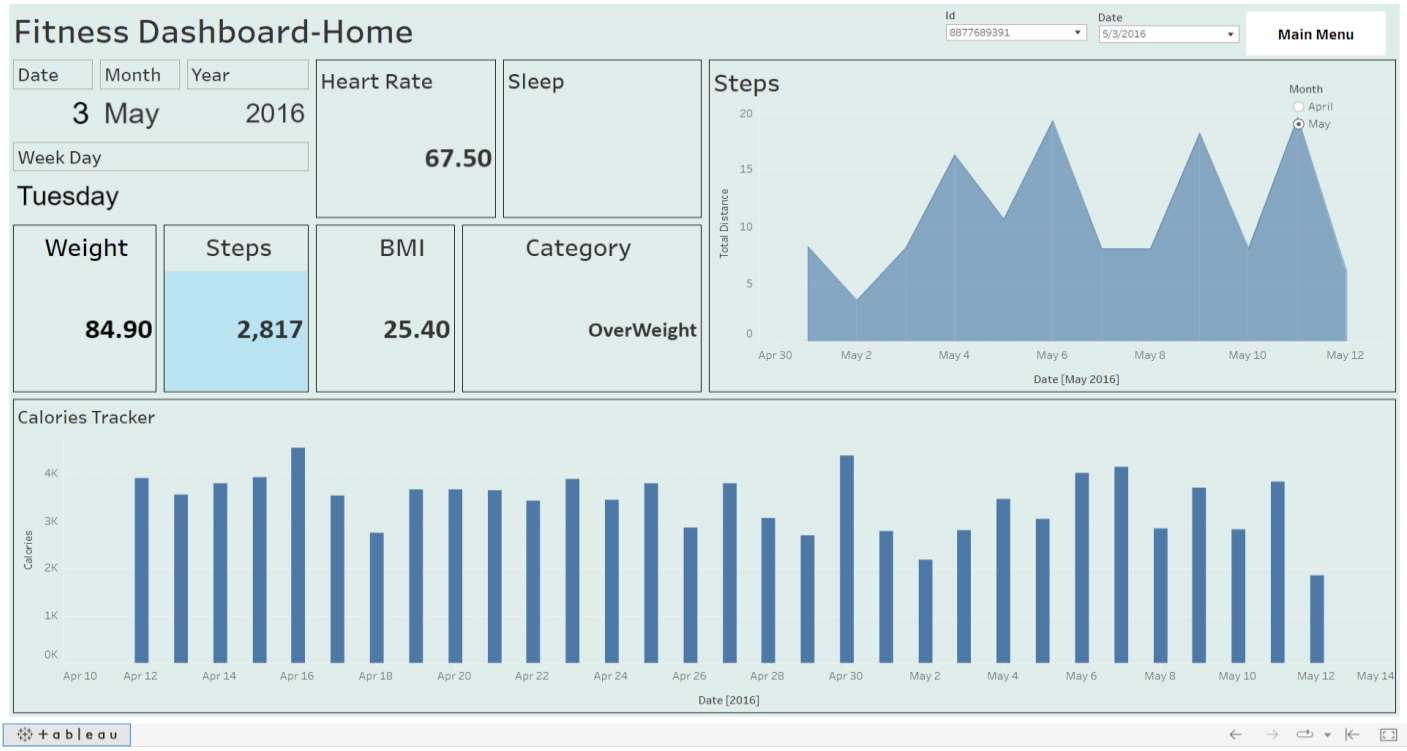
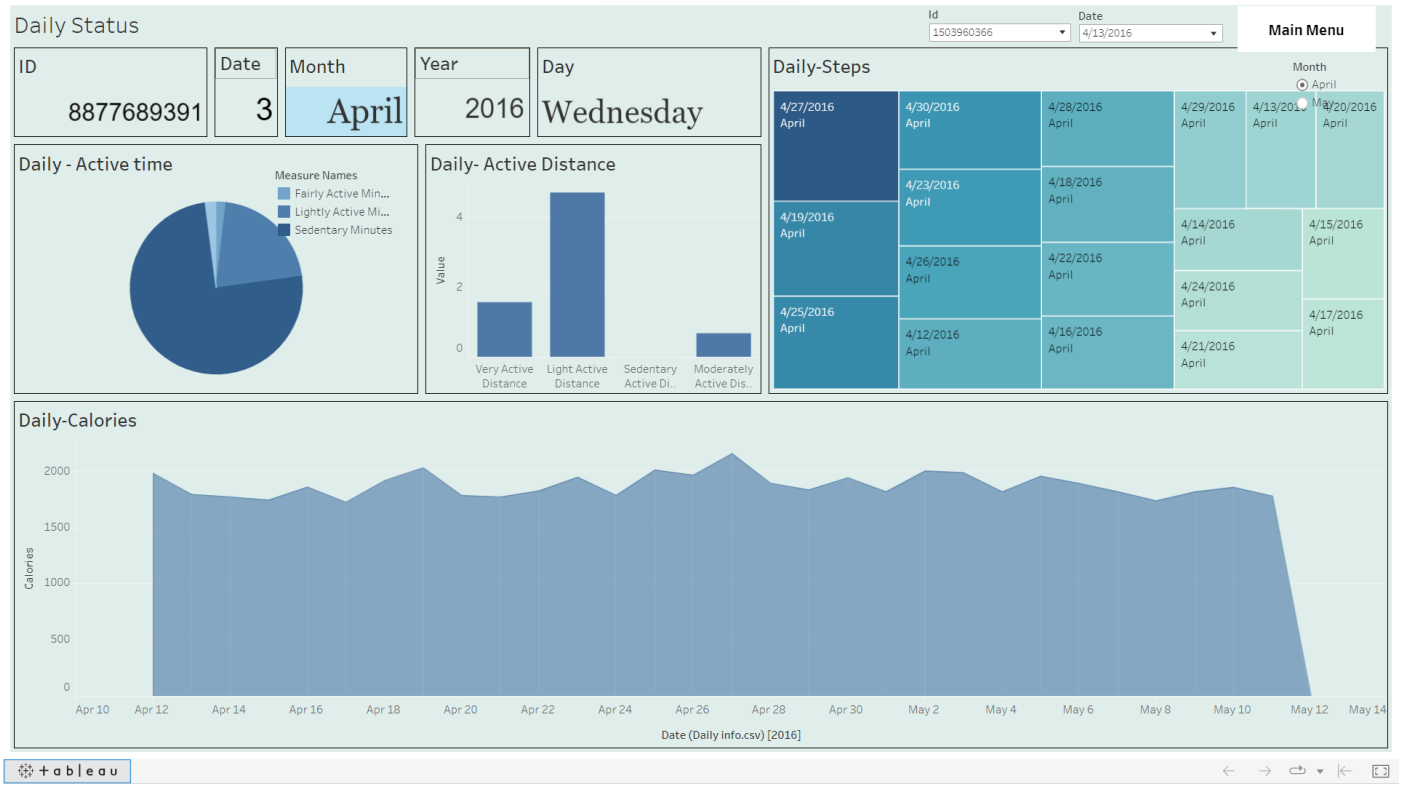
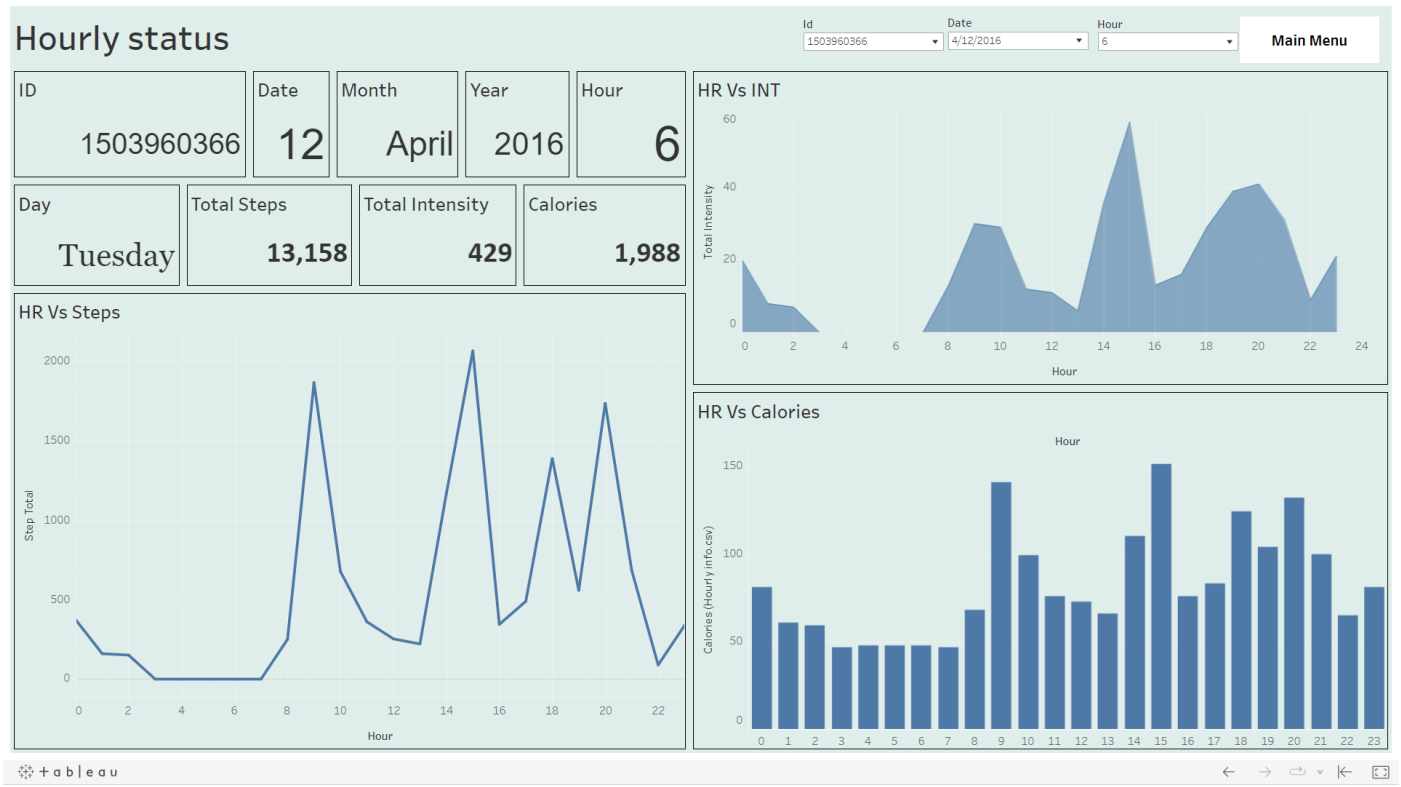
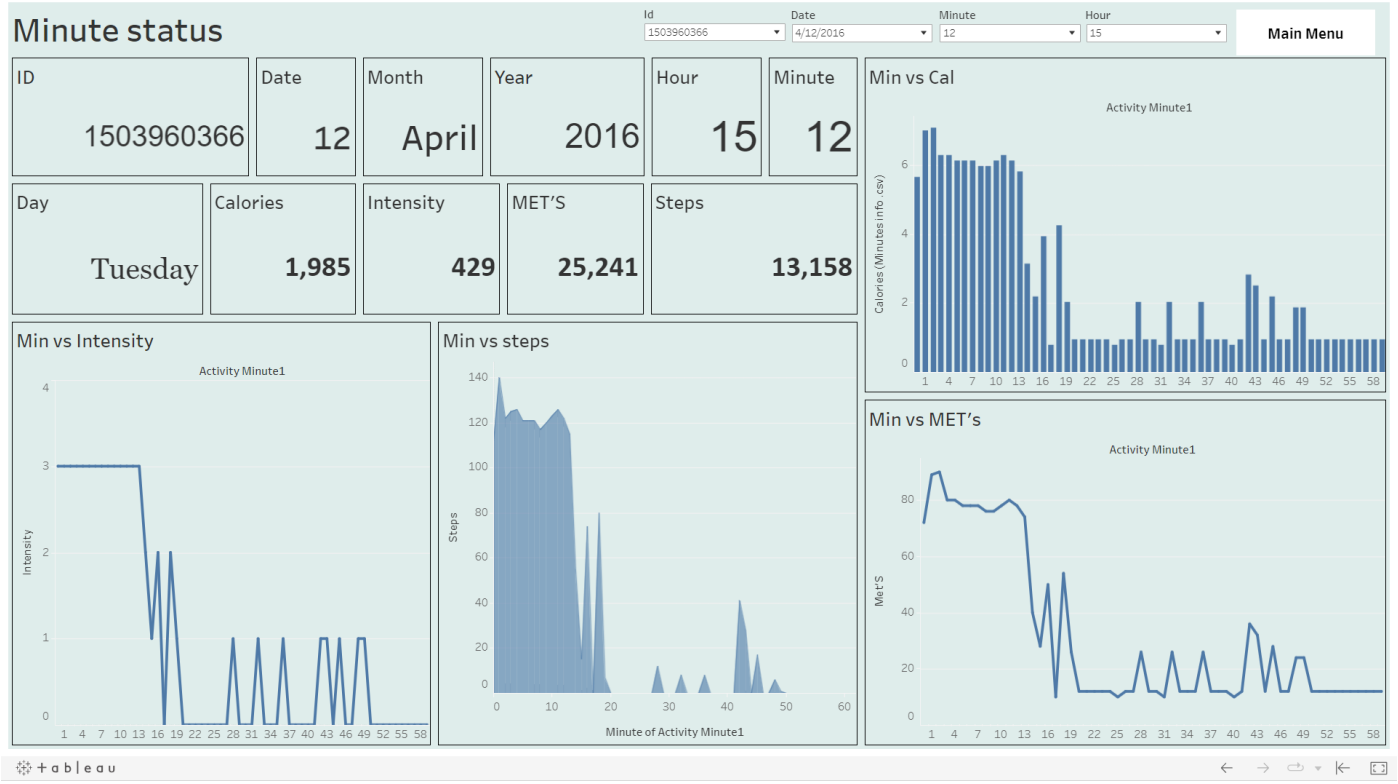


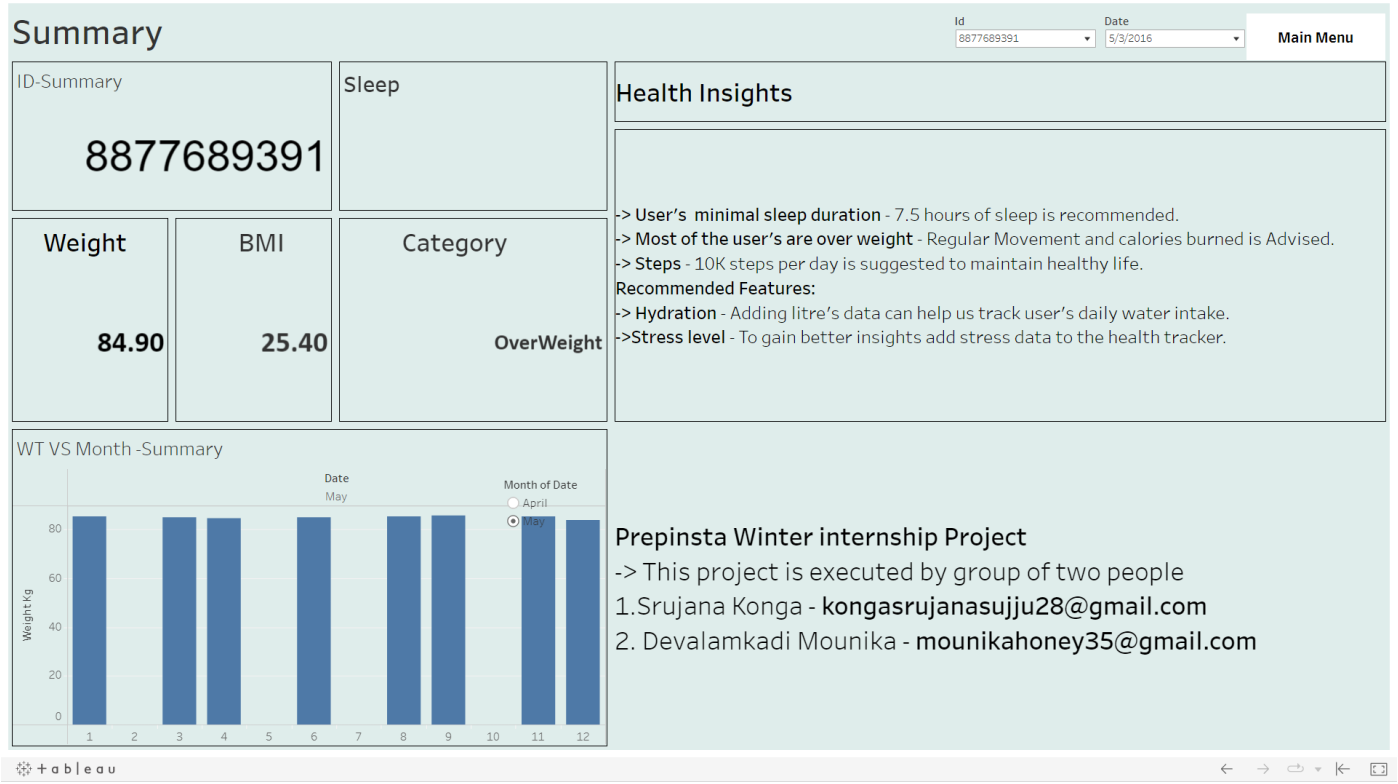
Tableau Dash Board:




Daily Status
Id
1503960366
Date
4/13/2016
Main Menu
ID
8877689391
Date
3
Month
April
Year
2016
Day
Wednesday
Daily - Active time
Measure Names
Fairly Active Min...
Lightly Active Mi...
Sedentary Minutes
Daily- Active Distance
Value
Very Active Distance
Light Active Distance
Sedentary Active Di...
Moderately Active Dis...
Daily-Steps
Month
April
May
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
4/12/2016 April
4/16/2016 April
4/17/2016 April
4/21/2016 April
Daily-Calories
Calories
Apr 10
Apr 12
Apr 14
Apr 16
Apr 18
Apr 20
Apr 22
Apr 24
Apr 26
Apr 28
Apr 30
May 2
May 4
May 6
May 8
May 10
May 12
May 14
Date (Daily info.csv) [2016]
+ableau


Hourly status
Id
1503960366
Date
4/12/2016
Hour
6
Main Menu
ID
1503960366
Date
12
Month
April
Year
2016
Hour
6
Day
Tuesday
Total Steps
13,158
Total Intensity
429
Calories
1,988
HR Vs INT
Total Intensity
Hour
HR Vs Steps
Step Total
Hour
HR Vs Calories
Hour
Calories (Hourly info.csv)
+ableau





Thank you

Srujana Konga