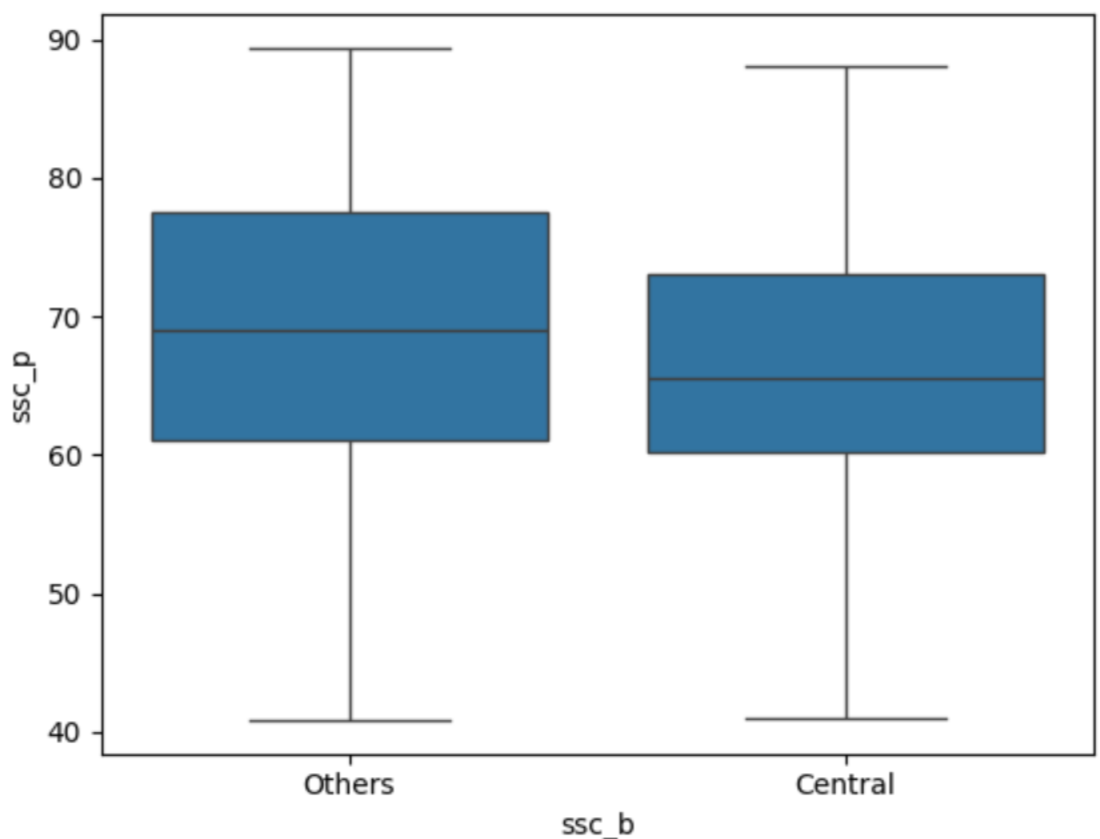
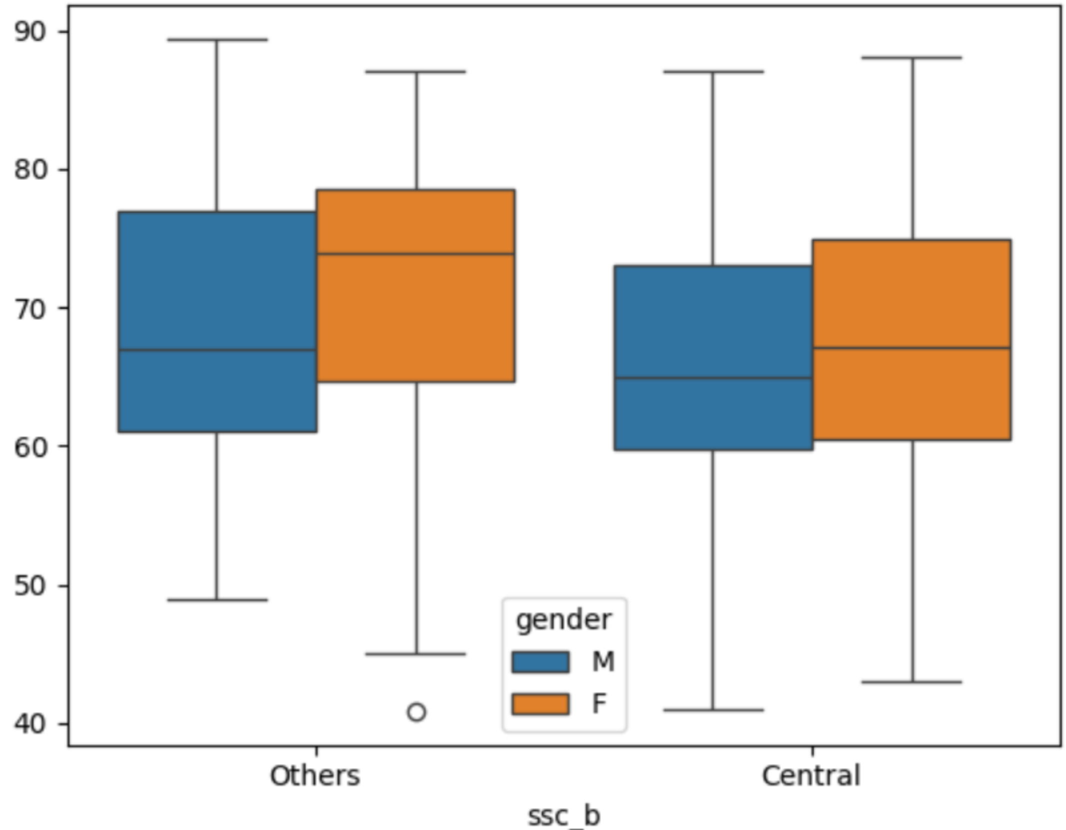
Boxplot are used in statistics to graphically display various parameters at a glance
In a boxplot the median, the interquartile range and the outlier can be read
A boxplot is often created to compare and contrast two or more groups
The box indicates the range in which the middle 50%of all data lies
Thus, the lower end of the box is the 1st quartile and the upper end is the 3rd quartile
25% of data below q1 and 25% of data above q3
The solid line indicates the median .Tshape whisker which is within 1.5x the interquartile range Max further that are called greater outlier.Tshape whisker which is within 1.5x the interquartile range Min further that are called lesser outlier

```
sb.boxplot(x='ssc_b', y='ssc_p', data= dataset,)
plt.show()
```



The Other State	Central State
Min Marks=42	Min Marks=42
Q1=62	Q1=60
Q2(median)=69	Q2(median)=67
Q3=77	Q3=73
Max 89	Max=8

In summary, The "**Other** state" generally has higher quartiles and median compared to the Central state, indicating a potentially higher distribution and comparatively better than Central state performance marks . The minimum and maximum marks are the same for both states.



The Other State M
Min Marks=49
Q1=62
Q2(median)=68
Q3=77
Max 89

Other State F
Min Marks=46
Q1=64
Q2(median)=78
Q3=78
Max=88

The Central State M
Min Marks=42
Q1=60
Q2(median)=65
Q3=75
Max 88

Central State F
Min Marks=45
Q1=61
Q2(median)=68
Q3=78
Max=89

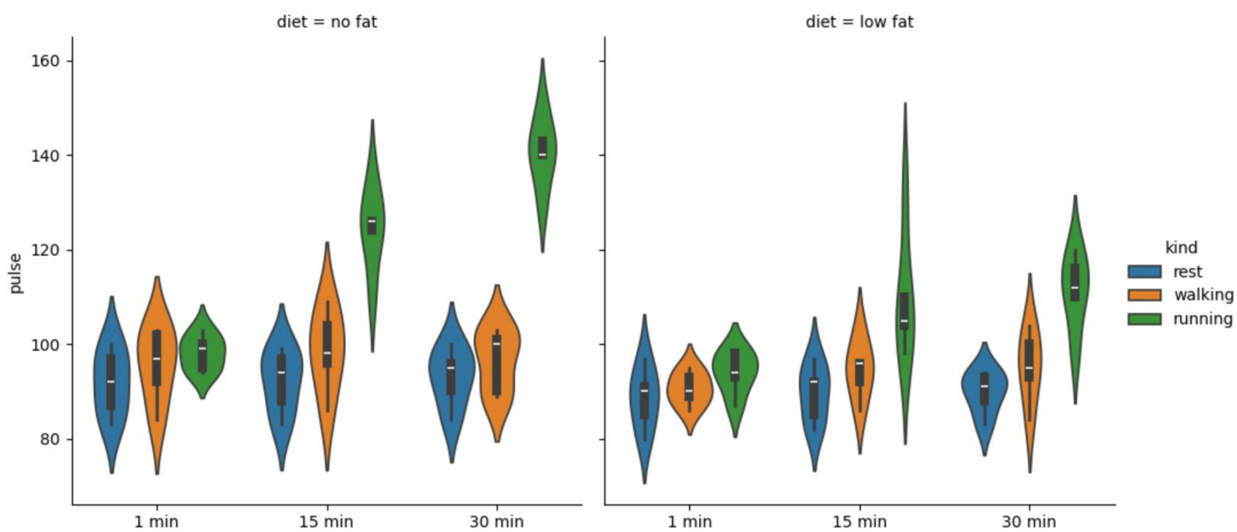
Male

The minimum and maximum marks for males are generally higher in "The Other" State compared to the Central State. In terms of quartiles, "The Other" State has higher Q1, Q2, and Q3 values for males

Female

For females, both states have similar minimum marks, but "The Other" State has a higher maximum. "The Other" State generally exhibits higher quartiles for females, indicating better performance.There is lesser range outlier identify.
For both males and females, The “Other state” tends to have higher quartiles, medians, and maximum marks compared to the Central state.

```
df = sb.load_dataset('exercise')
sb.catplot(x="time", y="pulse", hue="kind", kind='violin', col="diet", data=df)
plt.show()
```



A violin plot displays the distribution of the data as a kernel density estimate along with the quartiles, providing a comprehensive view of the data distribution.

Observed the impact of different activities on pulse rates measured at three time interval,
1 minute, 15 minutes, and 30 minutes for two diet groups: "No Fat" and "Low Fat .
Distinct patterns in median pulse rate changes over time during resting,walking and running as below:-

No Fat Group -1min		15min		30min	
rest	90	rest	92	rest	95
walking	95	walking	98	walking	100
running	100	running	125	running	140
Low Fat Group -1min		Rest	90	rest	90
rest	88	walking	94	walking	95
walking	89	running	104	running	110
running	90				

This violin plot (blue –resting)show the median pulse rate is lower than other walking and running activity. The shape of distribution (skinny on the green-running)indicates the pulse rate are highly density around the median.

Both diet groups display expected increase in pulse rate with longer duration of activity

Running generally induces a highest median pulse rate, emphasizing its cardiovascular impact.

No Fat group tends to have higher median pulse rates compare to the low fat group, indicating potential diet related influences on cardiovascular responses.

These findings provide valuable insight these variations is crucial for assessing the physiological impact of different activities and dietary habits on pulse rates.