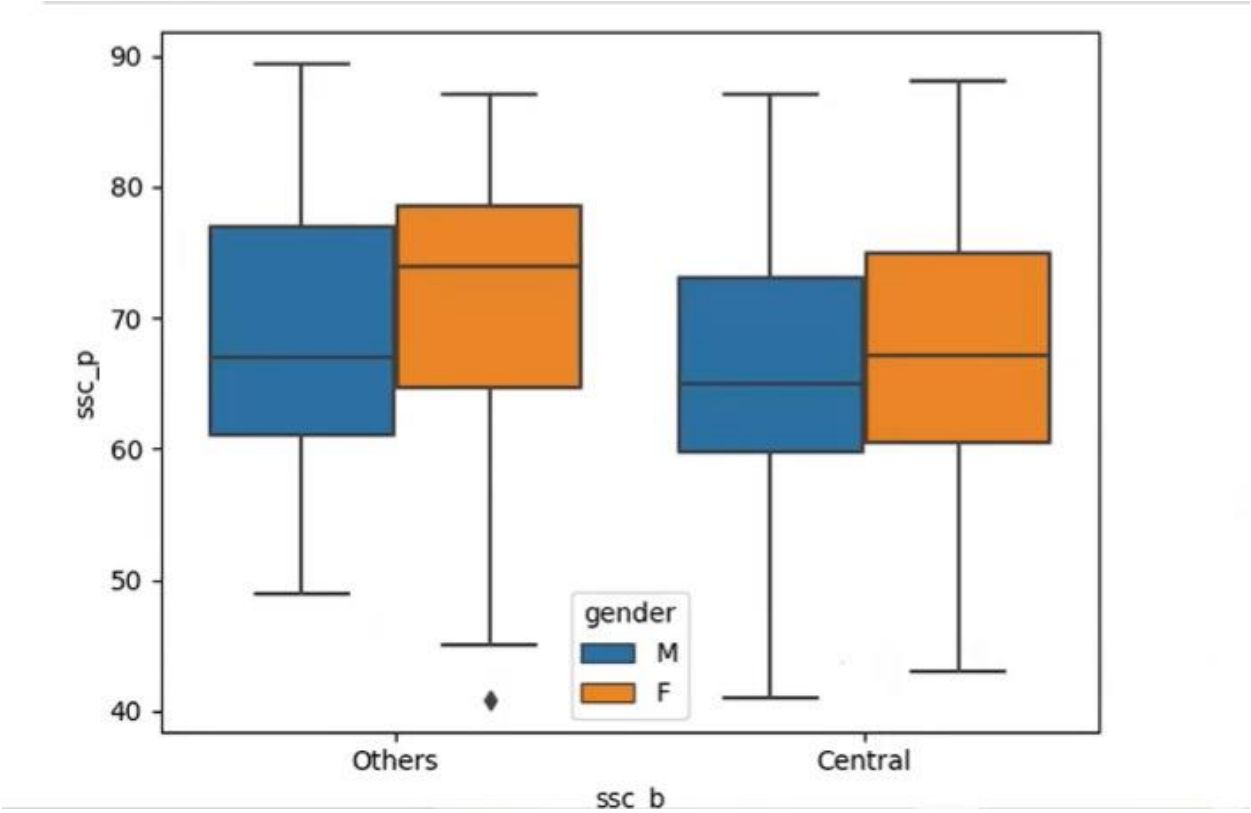
Box plot:



Understanding the Components of a Box Plot

*** Box: The rectangular box represents the interquartile range (IQR), which contains the middle 50% of the data.**

*** The line inside the box represents the median (the middle value) of the data.**

*** The bottom of the box is the first quartile (Q1), which is the median of the lower half of the data.**

*** The top of the box is the third quartile (Q3), which is the median of the upper half of the data.**

*** Whiskers: The lines extending from the box are called whiskers. They typically represent the range of the data, excluding outliers.**

*** Outliers: Individual data points that fall outside the whiskers are considered outliers. They are often plotted as individual points (like the diamond in this graph).**

Analyzing the Box Plot

Now, let's analyze the specific box plot you provided:

*** Variables:**

*** ssc_p: This is the dependent variable (y-axis).**

*** ssc_b: This is the independent variable (x-axis), representing the type of board (likely "Others" and "Central").**

*** gender: This is a categorical variable that is used to further divide the data into Male (M) and Female (F) groups.**

*** Observations:**

*** Median Comparison:**

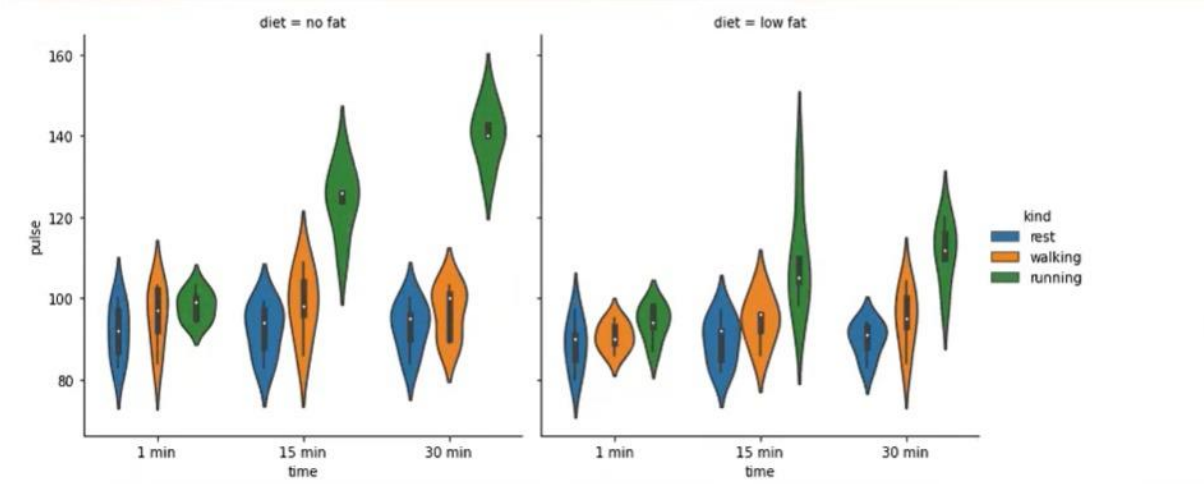
*** For "Others" boards, females (orange box) have a slightly higher median 'ssc_p' score compared to males (blue box).**

*** For "Central" boards, females also have a slightly higher median 'ssc_p' score compared to males.**

*** Outliers:**

*** There is one outlier (diamond point) for females in the "Others" board category. This indicates a significantly lower 'ssc_p' score compared to the rest of the female students in that group.**

Violin plot:



This diagram presents a violin plot comparing the pulse rates of individuals under two different diet conditions (no fat and low fat) across various time intervals (1 minute, 15 minutes, 30 minutes) and activity levels (rest, walking, running).

Understanding Violin Plots

*** Shape: The violin shape represents the distribution of the data. The wider the shape, the higher the frequency of data points in that range.**

*** Inner Box Plot (Optional): Some violin plots include a box plot inside, indicating the median and interquartile range (IQR) as in a standard box plot. In this case, there's a mini box plot inside each violin.**

*** Median: The white dot or line within the box plot represents the median.**

*** Interquartile Range (IQR): The box within the violin represents the IQR, indicating the middle 50% of the data.**

Analyzing the Diagram

*** Diet Comparison:**

*** No Fat Diet (Left): This side of the plot shows the pulse rates of individuals on a no-fat diet.**

*** Low Fat Diet (Right): This side shows the pulse rates of individuals on a low-fat diet.**

*** Activity Levels (Kind):**

*** Rest (Blue): Shows the pulse rates when individuals are at rest.**

*** Walking (Orange): Shows the pulse rates during walking.**

*** Running (Green): Shows the pulse rates during running.**

*** Time Intervals:**

*** 1 min: Pulse rate measured after 1 minute of the activity.**

*** 15 min: Pulse rate measured after 15 minutes of the activity.**

*** 30 min: Pulse rate measured after 30 minutes of the activity.**

Key Observations

*** Resting Pulse:**

*** Both diets show similar resting pulse rates (blue violins) across all time intervals. The median pulse rates are around 80-90 bpm.**

*** Walking Pulse:**

*** The median pulse rates during walking (orange violins) are slightly higher than resting pulse rates for both diets. There's a slight increase from 1 minute to 15 minutes, then a plateau or slight decrease at 30 minutes.**

*** Running Pulse:**

*** The median pulse rates during running (green violins) are significantly higher than both resting and walking pulse rates for both diets.**

*** No Fat Diet: The running pulse rate increases sharply from 1 minute to 15 minutes and remains high at 30 minutes.**

*** Low Fat Diet: The running pulse rate shows a much more dramatic increase from 1 minute to 15 minutes, with a wide distribution at 15 minutes. At 30 minutes, the median pulse rate is still high, but the distribution is narrower.**

*** Diet Impact:**

*** The most noticeable difference between the diets is in the running pulse rate. The low-fat diet seems to result in a more variable and potentially higher peak pulse rate during running at 15 minutes. However, the median pulse rates are quite similar between the diets at 30 minutes.**