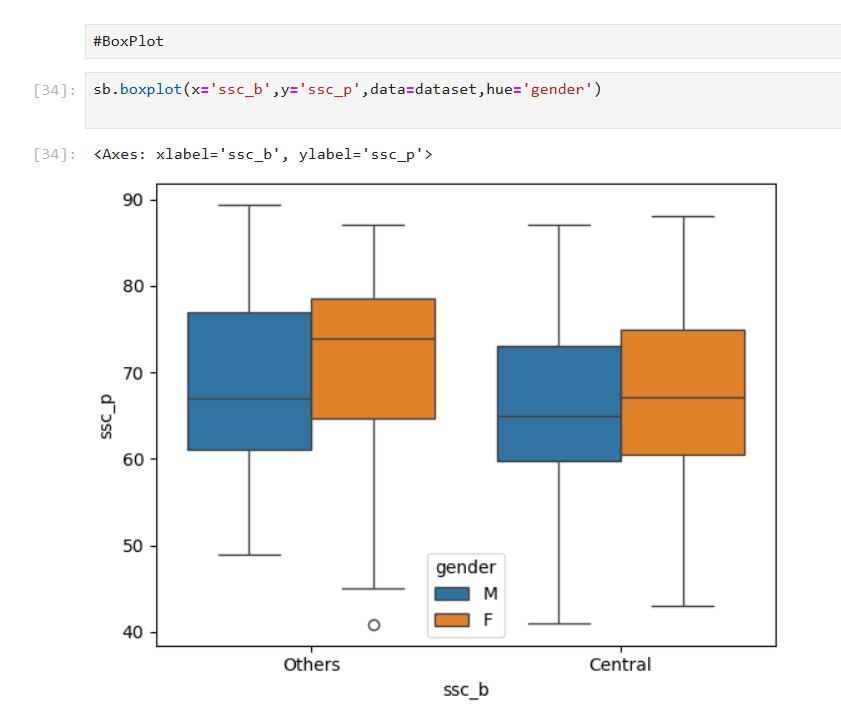
**Boxplot.**

A Seaborn boxplot is a visual representation of the distribution of a dataset that summarizes key statistics such as the median, quartiles, and potential outliers. It is used to understand data variability, detect outliers, and compare distributions across different categories.



**Box:**

The box represents the interquartile range (IQR), which is the range between the 25th percentile (Q1) and the 75th percentile (Q3).

The line inside the box indicates the median (50th percentile).

**Outliers:**

Individual points plotted outside the whiskers indicate outliers.

**Hue (optional):**

Adding a hue parameter allows the data to be divided into subcategories, creating grouped boxplots.

**Use Cases:**

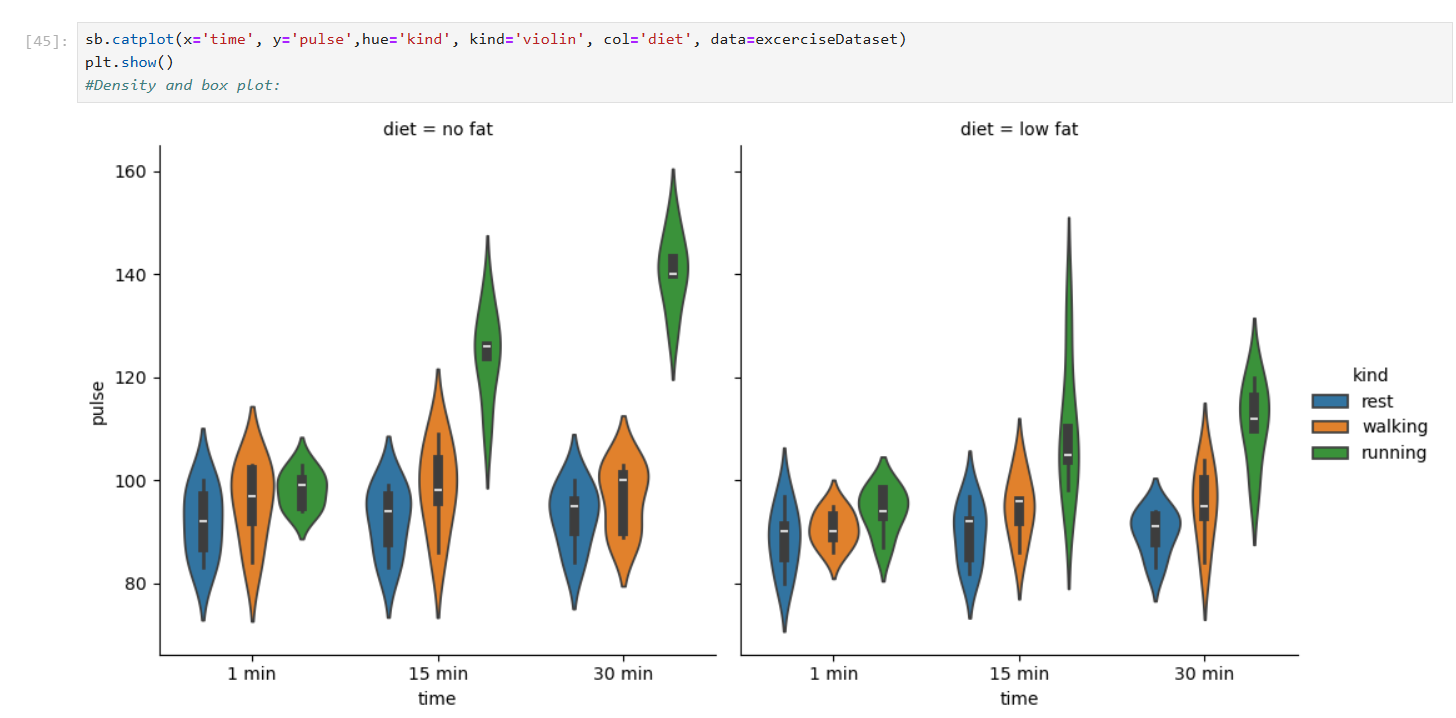
Compare groups: Compare distributions of a numeric variable across different categories.

Detect outliers: Identify values significantly different from the rest.

Summarize distributions: Quickly understand the central tendency and variability of the data.

**CatPlot(FactorPlot)**

The Seaborn catplot is a versatile function for creating categorical plots in Python. It provides a unified interface to multiple plot types for visualizing relationships between a categorical variable and one or more numerical variables.



**Key Features of catplot**

**Flexibility:** Allows you to create several types of categorical plots like strip plots, swarm plots, box plots, violin plots, and bar plots.

**Faceting:** Supports splitting the data into subplots based on additional categorical variables (using col or row arguments).

**Aesthetics:** Offers customization options for colors, sizes, and orientations.

**Ease of Use:** Combines powerful defaults with intuitive customization.

**Key Parameters**

**data**: DataFrame containing the data.

**x, y**: Categorical and numeric variables to plot.

**hue**: Categorical variable for color encoding.

**kind**: Type of plot to draw:

'strip': Scatter plot with jittering (default).

'swarm': Scatter plot with non-overlapping points.

'box': Box plot.

'violin': Violin plot.

'boxen': Enhanced box plot for large datasets.

'point': Point plot.

'bar': Bar plot with confidence intervals.

'count': Histogram for categorical data.

**row, col**: Variables for faceting the plot into subplots.

**aspect and height**: Control the size and aspect ratio of the figure.

**Other parameters**: Options for styling and plotting specifics, like palette, order, dodge, etc.

**Usecases**

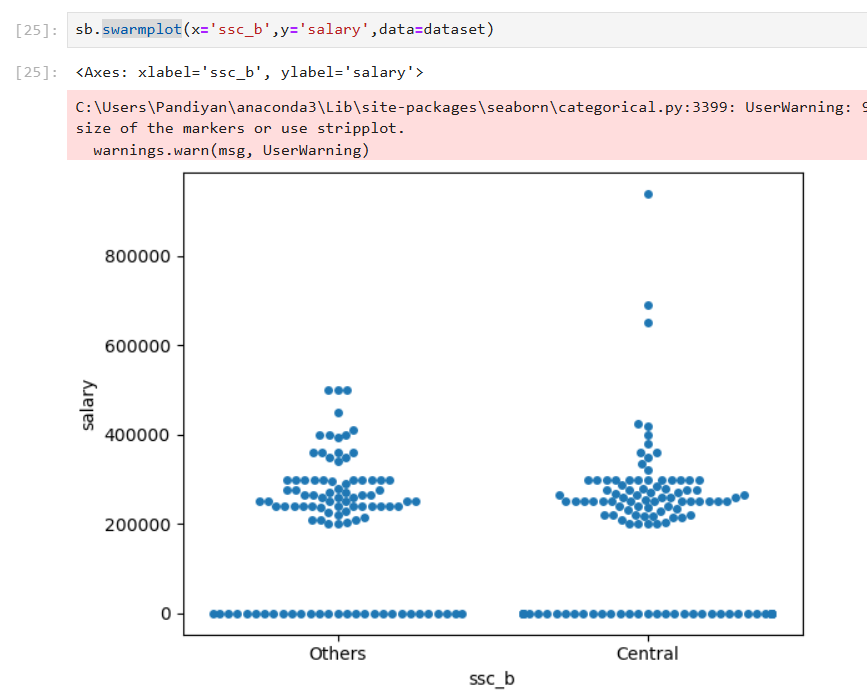
Comparing distributions across categories.

Visualizing differences in central tendency (mean, median) or spread.

Exploring categorical relationships in multi-dimensional datasets.

**Swarmplot**

A Seaborn Swarmplot is a type of categorical scatter plot that visualizes data by plotting each data point in a way that avoids overlap. It’s particularly useful for showing distributions of small datasets or highlighting individual data points within categories.



**Key Features**

**Avoids Overlap:** The swarmplot positions points along a categorical axis (e.g., "Category A", "Category B") and spreads them along the continuous axis (e.g., "Value") to prevent them from overlapping.

**Combination with Other Plots:** It works well in conjunction with other categorical plots like box plots or violin plots, providing a more detailed view of individual data points.

**Parameters**

**x, y**: Define the variables for the categorical and continuous axes.

**hue**: Splits the data further into subcategories by color.

**palette**: Specifies the color palette for the plot.

**size**: Sets the size of the points.

**dodge**: When using hue, separates the points for better clarity.

**orient**: Allows vertical ('v') or horizontal ('h') orientation of the plot.

**Usecases:**

Suppose you want to compare the sepal lengths of three species of flowers (setosa, versicolor, virginica). A swarmplot can show the individual sepal lengths within each species, highlighting any patterns or outliers.