**Plots**

**Seaborn (sns)**

* Histogram:

Purpose: Shows the distribution of numerical data.

Usage: sns.histplot(data, x='column\_name')

* Kernel Density Estimation (KDE) plot:

Purpose: Provides a smoothed representation of the distribution of data.

Usage: sns.kdeplot(data['column\_name'], shade=True)

* Box plot:

Purpose: Summarizes the distribution of data using quartiles. Helps identify outliers, variations

Usage: sns.boxplot(data=data, x='column\_name')

* Violin plot:

Purpose: Combines aspects of a box plot and KDE plot.

Usage: sns.violinplot(data=data, x='column\_name')

Example: Provides a richer visualization of the distribution, useful when comparing distributions across different categories, such as sepsis severity levels.

* Count plot:

Purpose: Shows the counts of observations in each categorical bin.

Usage: sns.countplot(data=data, x='column\_name')

Example: Useful for categorical variables like gender or type of infection, showing how many patients fall into each category.

* Bar plot:

Purpose: Represents categorical data with rectangular bars.

Usage: sns.barplot(data=data, x='column\_name', y='count\_column')

Example: Shows comparisons between different groups based on a summary statistic

* Strip plot:

Purpose: Shows individual data points along with a distribution.

Usage: sns.stripplot(data=data, x='column\_name', jitter=True)

Example: Helps visualize the spread of data points

**Matplotlib (plt)**

* Histogram:

Purpose: Shows the frequency distribution of numeric data.

Usage: plt.hist(data['column\_name'], bins=10)

Example: Similar to seaborn's histogram, useful for visualizing the distribution of continuous variables.

* Box plot:

Purpose: Provides a summary of data distribution using quartiles.

Usage: plt.boxplot(data['column\_name'])

Example: Simple representation to identify outliers and understand the range and spread of numerical data.

* Bar plot:

Purpose: Displays categorical data with rectangular bars.

Usage: plt.bar(categories, counts)

Example: Useful for comparing discrete categories, such as different types of infections or outcomes among patients.

* Pie chart:

Purpose: Shows proportions of a whole by dividing a circle into slices.

Usage: plt.pie(sizes, labels=labels, autopct='%1.1f%%')

Example: Typically used when you want to show the proportion of different categories within your data, such as the percentage of patients with different comorbidities.

* Line plot:

Purpose: Shows trends in data over time or ordered categories.

Usage: plt.plot(x\_values, y\_values)

Example: Useful for visualizing sequential data points, like trends in patient vital signs or biomarker levels over time.

* Scatter plot:

Purpose: Represents the relationship between two continuous variables.

Usage: plt.scatter(x\_values, y\_values)

Example: Helps visualize correlations or patterns between variables, such as the relationship between age and severity of sepsis.

* Violin plot:

Purpose: Shows the distribution of data similar to a box plot but includes KDE.

Usage: plt.violinplot(data['column\_name'], showmedians=True)

Example: Provides a detailed view of the distribution of numerical data, useful for understanding the shape and spread of features in your dataset.