

The main differences between **matplotlib** and **seaborn**:

1. Level of Abstraction:

- Matplotlib is a low-level library that gives you fine-grained control over every aspect of a plot.
- Seaborn is a higher-level library built on top of matplotlib, providing a more simplified and user-friendly interface for common statistical plots.

2. Default Aesthetics:

- Matplotlib's default plots are basic and may require additional customization to look polished.
- Seaborn comes with attractive default styles and color palettes, producing more visually appealing plots out of the box.

3. Statistical Functionality:

- Matplotlib is a general-purpose plotting library without built-in statistical functions.
- Seaborn has built-in statistical capabilities, making it easier to create plots that represent statistical relationships in data.

4. Ease of Use:

- Matplotlib can require more code to create complex visualizations.
- Seaborn simplifies the process of creating many types of plots, especially for statistical analysis.

5. Plot Types:

- Matplotlib offers a wide range of plot types and allows for highly customized visualizations.
- Seaborn focuses on statistical visualizations like scatter plots, line plots, and statistical distributions.

6. Dataset Compatibility:

- Matplotlib works with arrays or lists of data.

- Seaborn is designed to work seamlessly with pandas DataFrames and can easily plot relationships between multiple variables.

7. Customization:

- Matplotlib offers extensive customization options but may require more code.
- Seaborn provides easy customization for its plot types but may be more limited for highly specialized plots.

8. Use Cases:

- Matplotlib is ideal for creating publication-quality figures, complex custom visualizations, or when you need precise control over plot elements.
- Seaborn is excellent for quick statistical visualizations, exploring relationships in data, and creating attractive plots with minimal code.