

## Day 13

### Topic Covered: Advanced Data Visualization and Plot Combination in R

#### Summary:

Today's session focused on combining multiple plots to create dashboards, comparative visuals, and multi-panel figures in R. Combining plots is important for presenting insights in a clear and visually structured manner, especially when analyzing multiple variables at once. This approach helps simplify complex information and makes analytical results easier to interpret.

#### New Concepts Learned:

- Combining plots using patchwork

This library allows arranging multiple ggplot2 plots using simple operators. It supports flexible layout designs and is useful for creating comparative visualizations.

- Combining plots using cowplot

This library offers tools for alignment, labeling, and organizing plots into clean multi-panel figures. It is often used for creating publication-ready visual reports.

- Benefits of combining plots

Helps compare multiple datasets or variables, improves readability, and supports the creation of mini dashboards directly in R.

#### Activity:

- Installed and loaded the patchwork and cowplot libraries
- Created multiple ggplot2 plots such as scatter, line, and box plots
- Arranged plots side by side and in grid formats using patchwork
- Used cowplot to experiment with plot alignment, annotation, and layout adjustments

#### Challenges Faced:

Understanding the difference in syntax between patchwork and cowplot required practice.

Aligning plots of different sizes to achieve a clean and balanced layout was also challenging.

Adding annotations without overcrowding the visuals needed careful adjustment.

**Key Takeaway:**

Combining plots is a powerful technique for comparative analysis and creating professional visual reports in R. Libraries like patchwork and cowplot make it easier to organize multiple plots in a structured and readable format.