Chapter 154

# Density Plots

## Introduction

When analyzing data, you often need to study the characteristics of a single group of numbers, observations, or measurements. You might want to know the center and the spread about this central value. You might want to investigate extreme values (referred to as outliers) or study the distribution or pattern of the data values. Several plots are available to allow you to study the distribution. One such plot is the density plot.



Density Plot of SepalLength
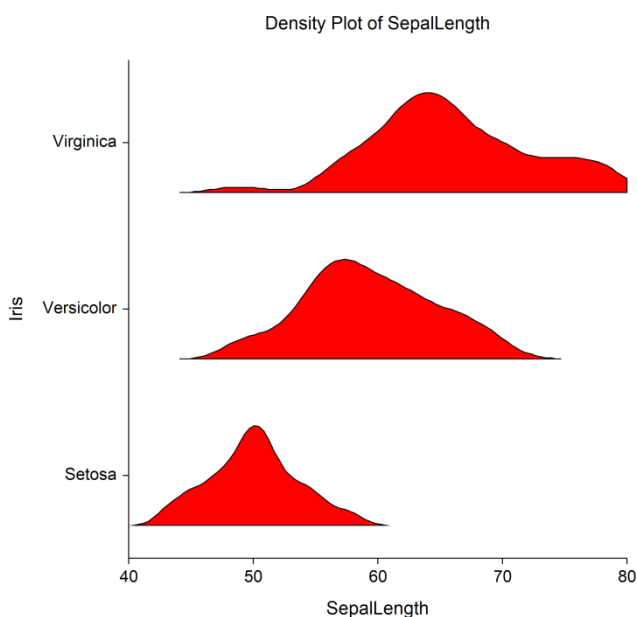
## Density Plot

The *Density Plot* shows the smoothed distribution of the points along the numeric axis. The peaks of the density plot are at the locations where there is the highest concentration of points.

## Data Structure

A density plot is constructed from a numeric variable. A second variable may be used to divide the first variable into groups (e.g., age group or gender). In the two-factor procedure, a third variable may be used to divide the groups into subgroups.

# Density Plot Window Options

This section describes the specific options available on the Density Plot window, which is displayed when the Density Plot button is clicked. Common options, such as axes, labels, legends, and titles are documented in the Graphics Components chapter.
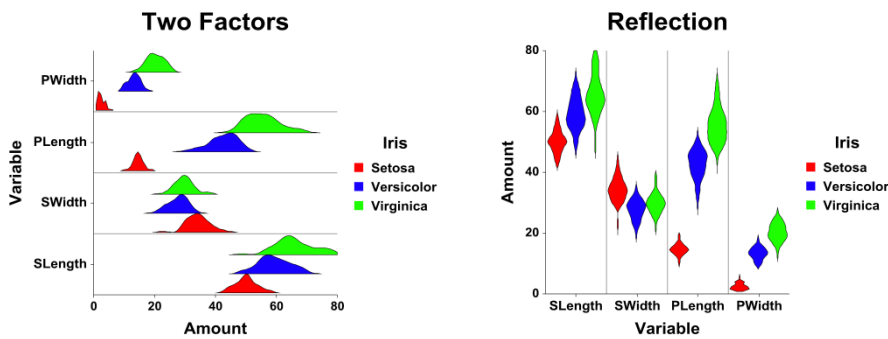
## Density Plot Tab

### Density Section

You can modify various density calculation parameters, the color, and the direction of the density faces.
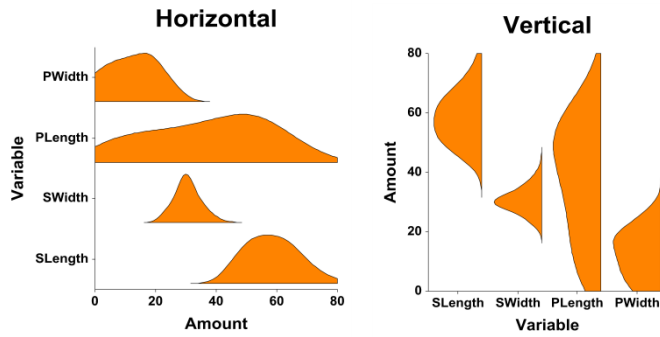
**One Factor**
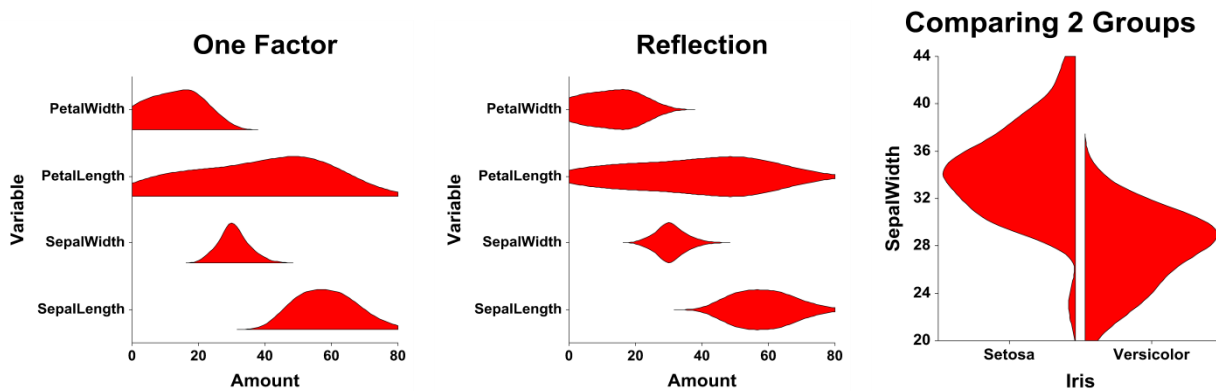


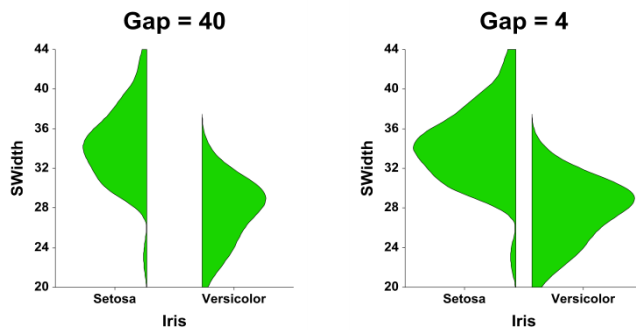**Two Factors**

# Layout Tab

## Orientation Section

You can orient the density plot horizontally or vertically.
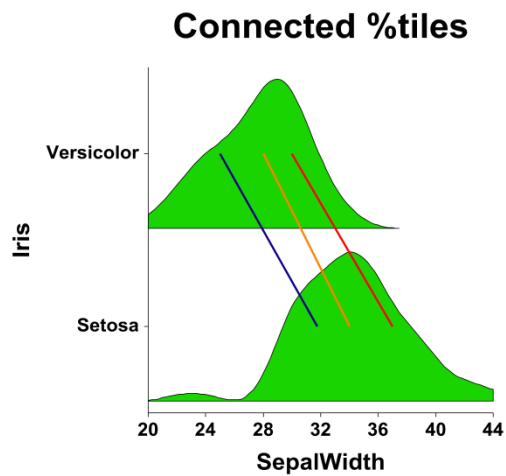


## Object Spacing and Size Section

You can change the size of the gap between individual densities.

# Connecting Lines Tab

## Connect Between Groups Section

You can add reference lines at group means and percentiles.



# Titles, Legend, Numeric Axis, Group Axis, Grid Lines, and Background Tabs

Details on setting the options in these tabs are given in the Graphics Components chapter.

# Example 1 – Creating a Density Plot

This section presents an example of how to generate a density plot. The data used are from the Fisher dataset. We will create density plots of the *SepalLength* variable, breaking on the type of iris.

## Setup

To run this example, complete the following steps:

**1   Open the Fisher example dataset**
- From the File menu of the NCSS Data window, select **Open Example Data**.
- Select **Fisher** and click **OK**.

**2   Specify the Density Plots procedure options**
- Find and open the **Density Plots** procedure using the menus or the Procedure Navigator.
- The settings for this example are listed below and are stored in the **Example 1** settings file. To load these settings to the procedure window, click **Open Example Settings File** in the Help Center or File menu.

  Variables Tab

  Data Variable(s)...............................................**SepalLength**
  Horizontal (Group) Variable ............................**Iris**

  Report Options (*in the Toolbar*)

  Variable Labels...............................................**Column Names**
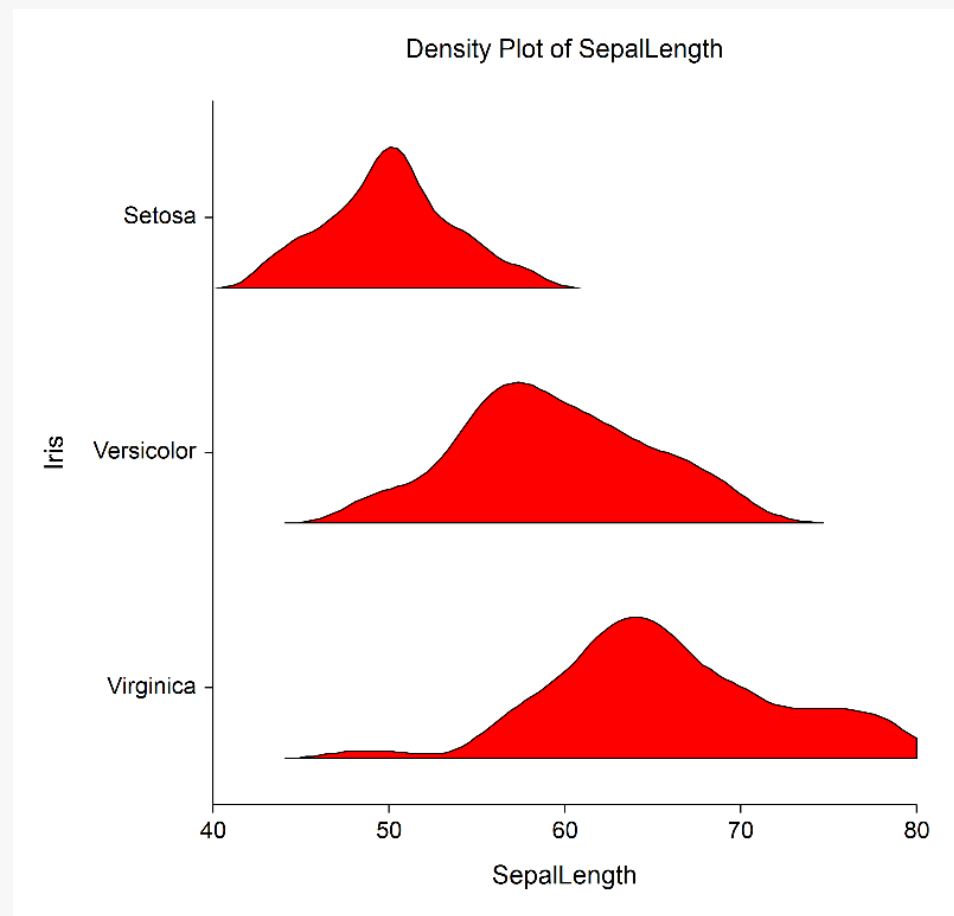  Data Labels......................................................**Value Labels**

**3   Run the procedure**
- Click the **Run** button to perform the calculations and generate the output.

# Density Plot Output

**Density Plots**

# Example 2 – Creating a Density Plot with Subgroups

This section presents an example of how to generate a density plot with subgroups. The data used are from the fictitious Tree dataset. We will create density plots of the *Diameter* variable, grouping on *Species*, with subgroups according to *Sunlight*.

## Setup

To run this example, complete the following steps:

**1  Open the Tree example dataset**
- From the File menu of the NCSS Data window, select **Open Example Data**.
- Select **Tree** and click **OK**.

**2  Specify the Density Plots (2 Factors) procedure options**
- Find and open the **Density Plots (2 Factors)** procedure using the menus or the Procedure Navigator.
- The settings for this example are listed below and are stored in the **Example 2** settings file. To load these settings to the procedure window, click **Open Example Settings File** in the Help Center or File menu.

Variables Tab

Data Variable(s)................................................**Diameter**
Horizontal (Group) Variable .............................**Species**
Legend (Subgroup) Variable............................**Sunlight**

Report Options (*in the Toolbar*)

Data Labels.....................................................**Value Labels**

**3  Run the procedure**
- Click the **Run** button to perform the calculations and generate the output.

# Density Plot Output

**Density Plots**