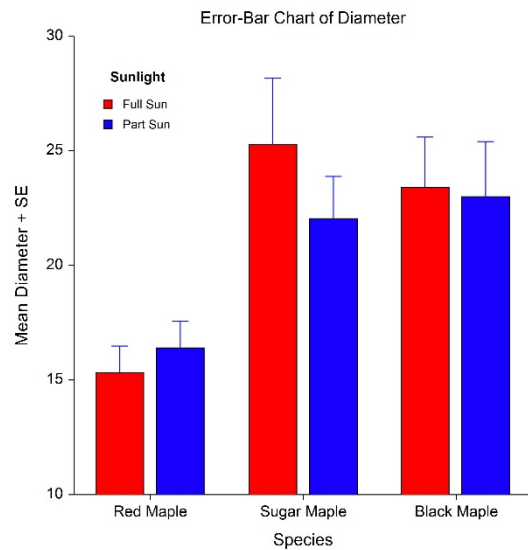
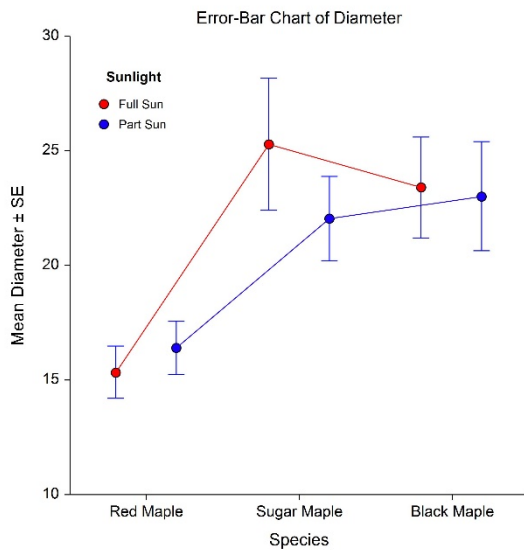
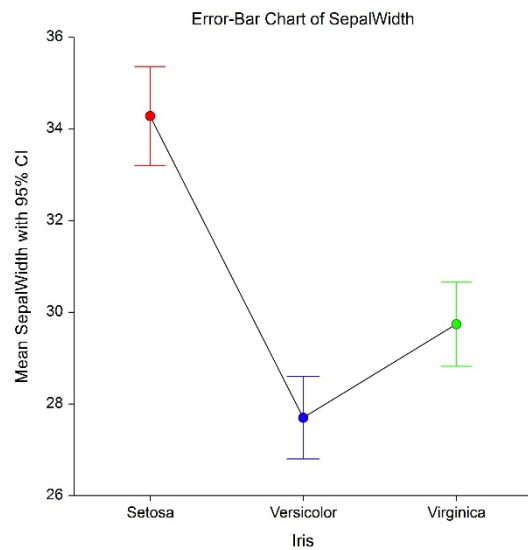
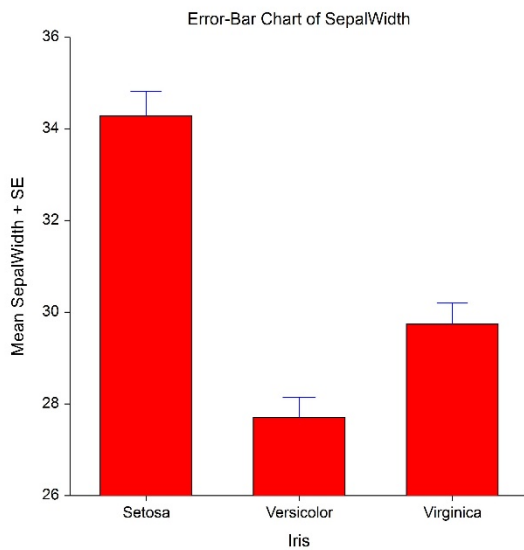


Chapter 155

Error-Bar Charts

Introduction

Error-Bar Charts graphically display tables of means (or medians) and variability. Following are examples of the types of charts produced by this procedure. The error bars may represent the standard deviation (SD) of the data, the standard error of the mean (SE), a confidence interval, the data range, or percentiles.



Data Structure

An error-bar chart 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.

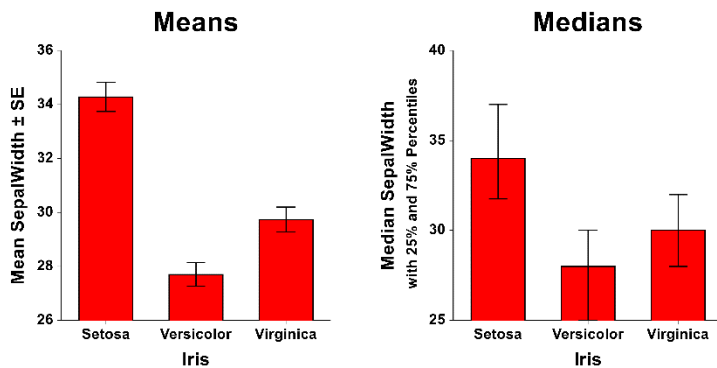
Error-Bar Chart Window Options

This section describes the specific options available on the Error-Bar Chart window, which is displayed when the Error-Bar Chart button is clicked. Common options, such as axes, labels, legends, and titles are documented in the Graphics Components chapter.

Error-Bar Chart Tab

Estimation of Center Section

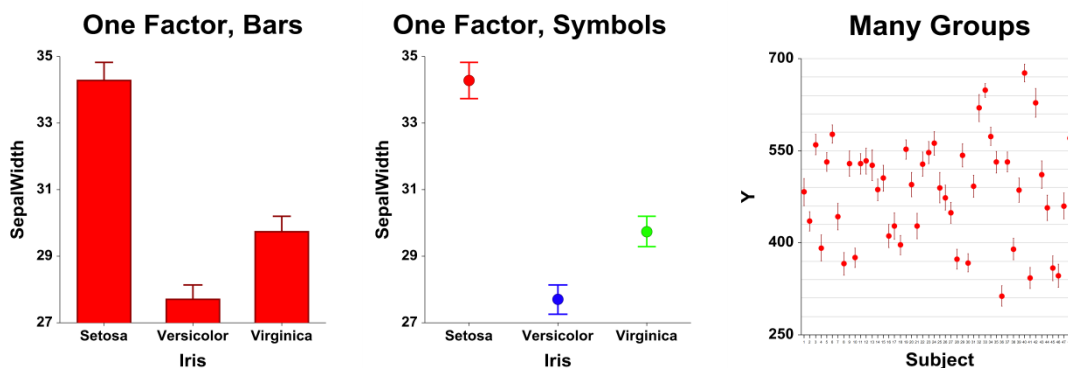
You can choose whether to plot means or medians.



Bars and Symbols Section

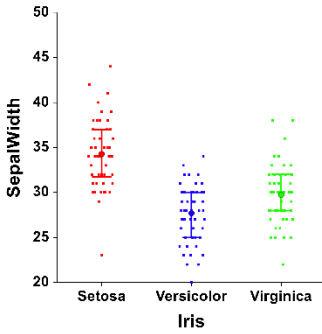
You can modify the color of bars, border, and/or symbols using the options in this section.

One Factor



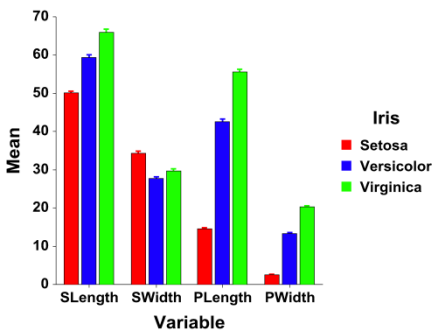
Error-Bar Charts

Symbols with Raw Data

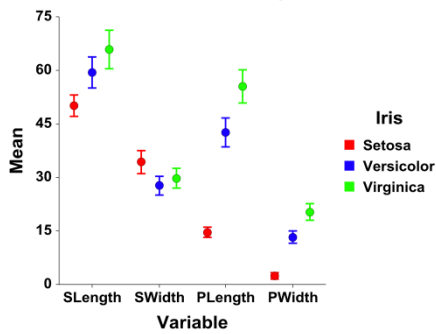


Two Factors

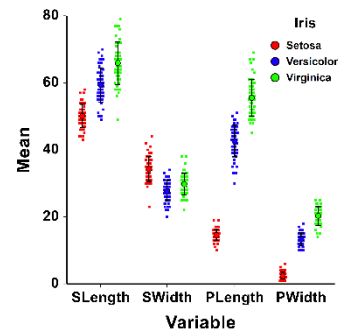
Two Factors, Bars



Two Factors, Symbols



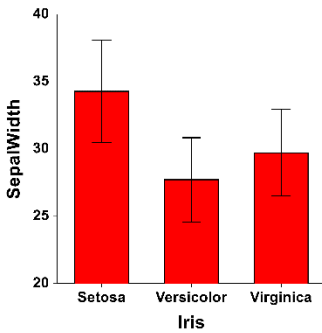
Symbols with Raw Data



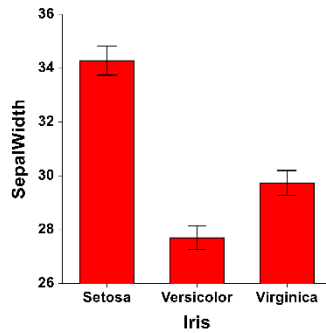
Variation (Error Bars) Section

You modify the variation line that extends from the mean using the options in this section.

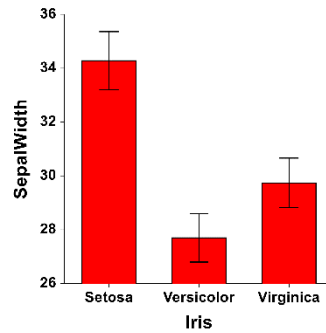
Standard Deviation



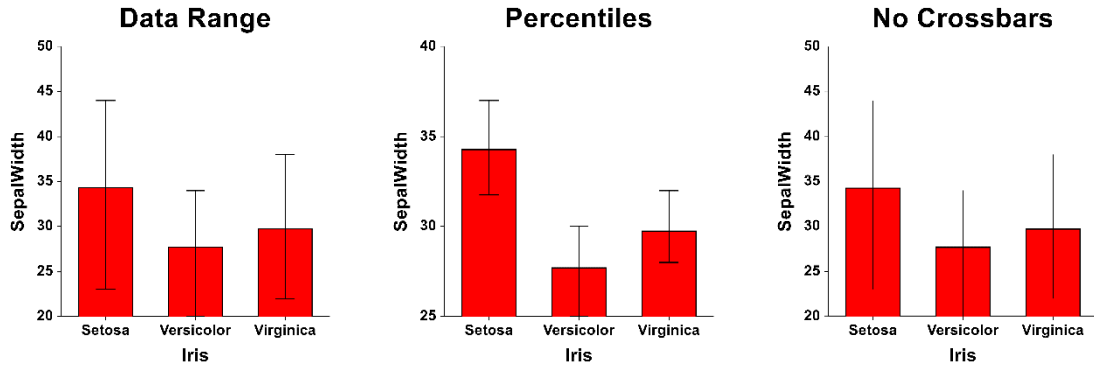
Standard Error



Confidence Interval



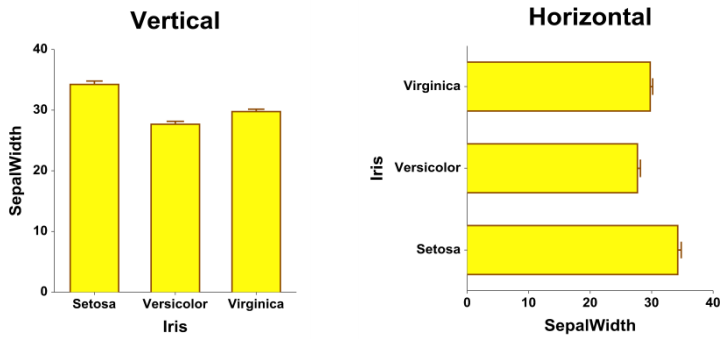
Error-Bar Charts



Layout Tab

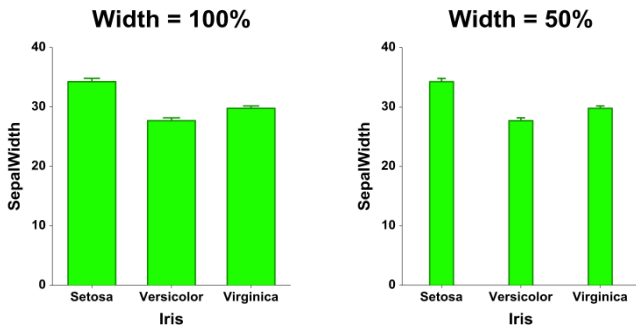
Orientation Section

You can orient the bars horizontally or vertically.



Object Spacing and Size Section

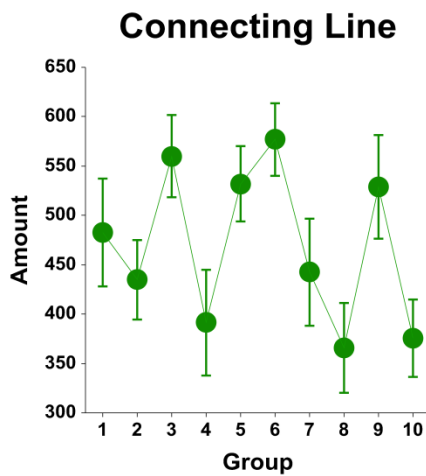
You can change the size of the gap between individual bars.



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 an Error-Bar Chart

This section presents an example of how to generate an error-bar chart. The data used are from the Fisher dataset. We will create error-bar charts of the *SepalLength* variable, grouping 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 Error-Bar Charts procedure options

- Find and open the **Error-Bar Charts** 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**

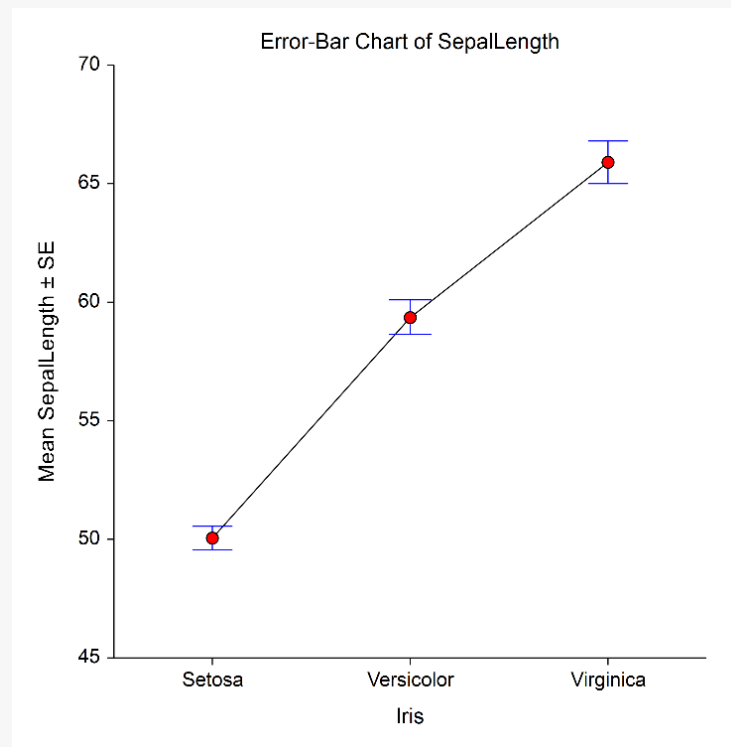
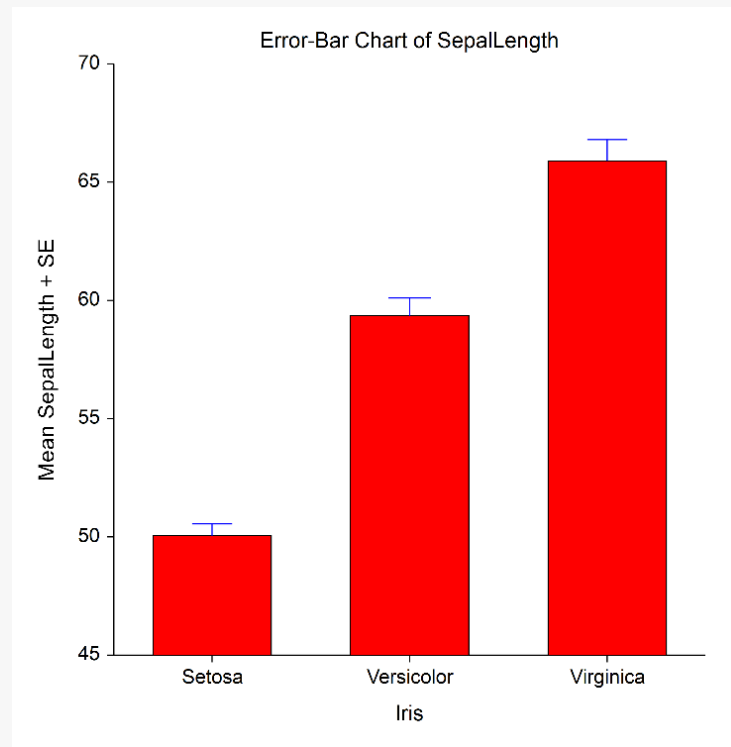
Data Labels.....**Value Labels**

3 Run the procedure

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

Error-Bar Chart Output

Error-Bar Charts



The second plot is the same data with the bar fill and bar border removed and symbols and connecting lines added (see **Example 1b** settings file).

Example 2 – Creating an Error-Bar Chart with Subgroups

This section presents an example of how to generate an error-bar chart with subgroups. The data used are from the fictitious Tree dataset. We will create error-bar charts 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 Error-Bar Charts (2 Factors) procedure options

- Find and open the **Error-Bar Charts (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*)

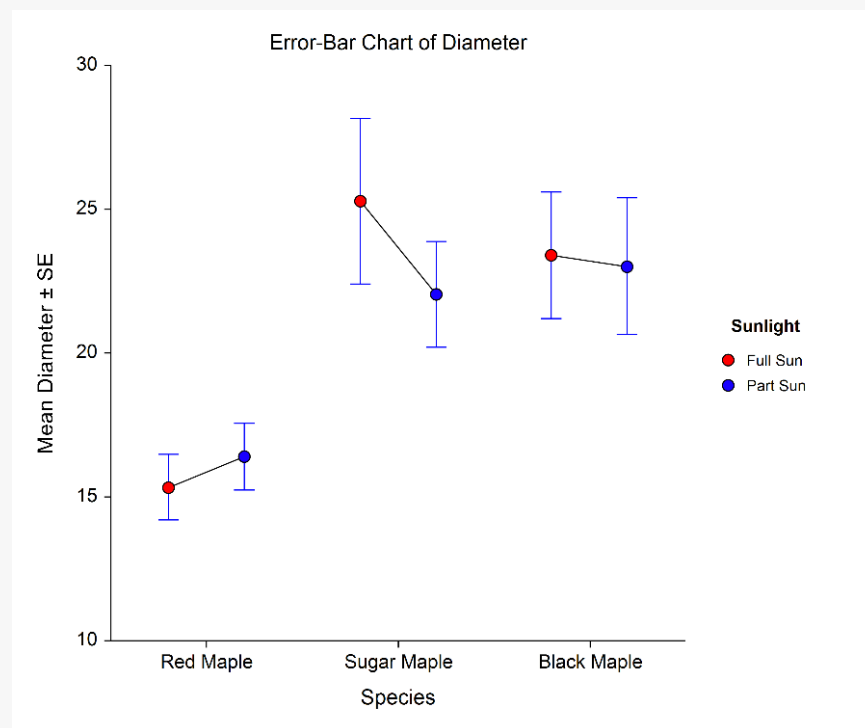
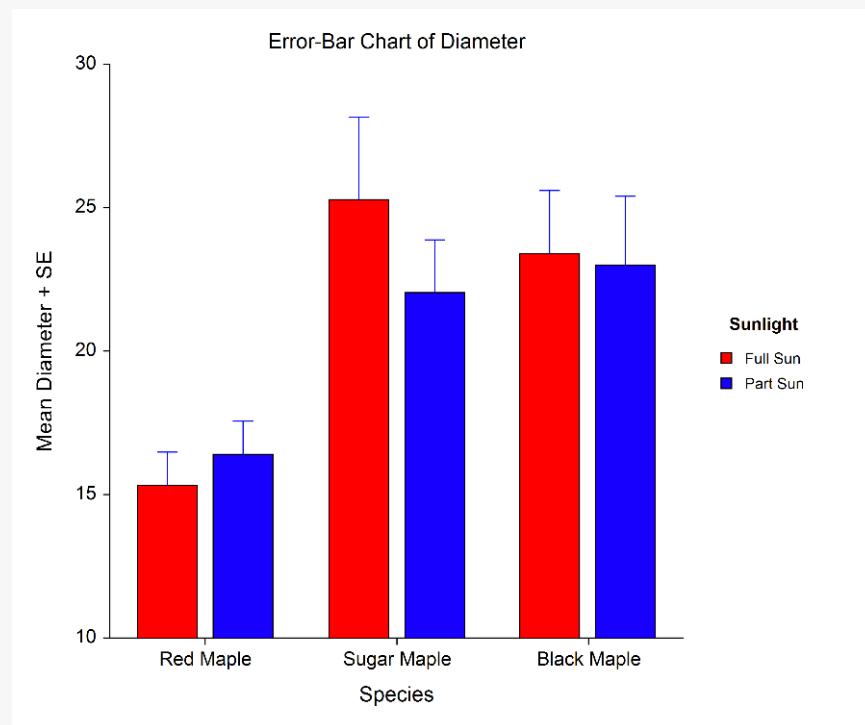
Data Labels.....**Value Labels**

3 Run the procedure

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

Error-Bar Chart Output

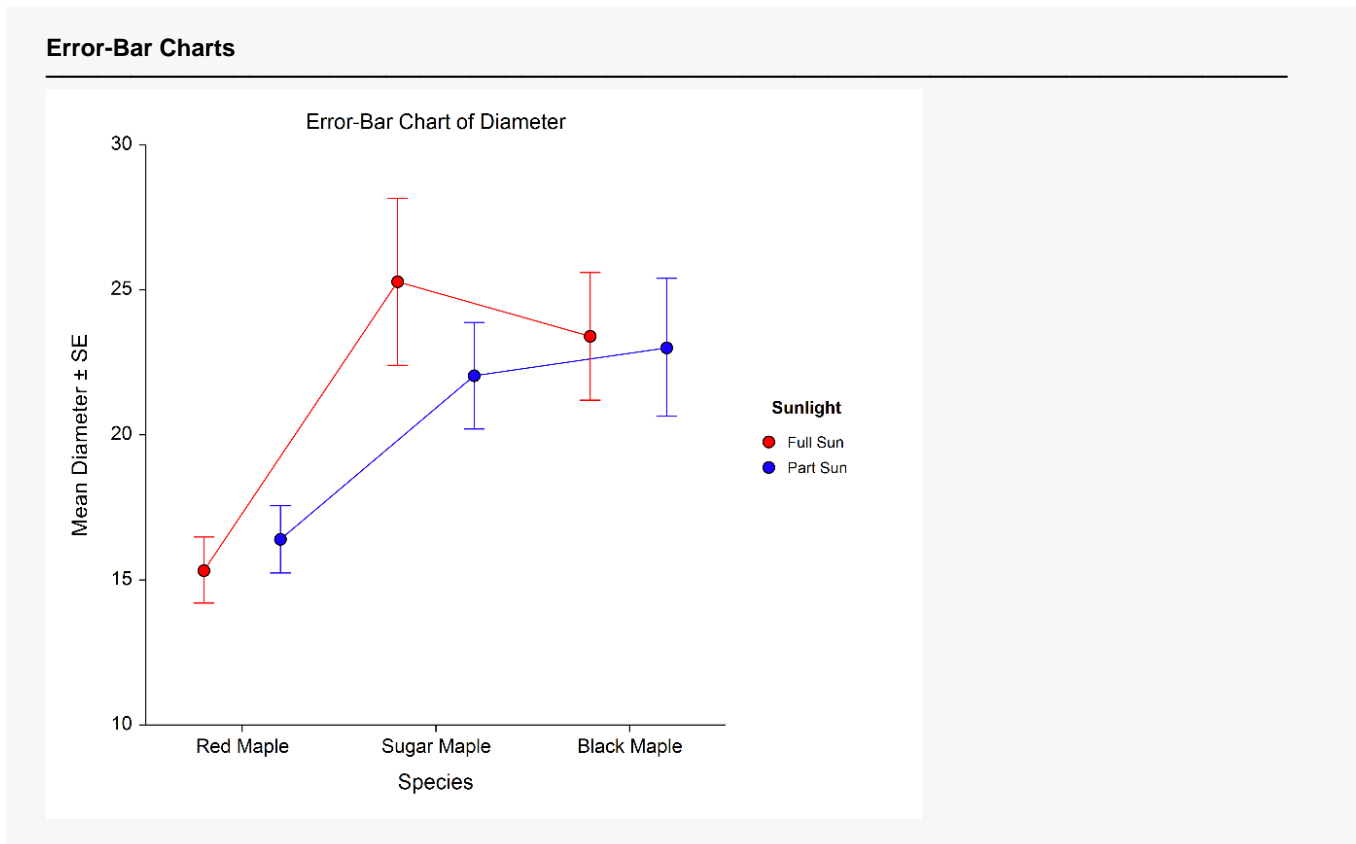
Error-Bar Charts



The second plot is the same data with the bar fill and bar border removed and symbols and connecting lines added (see **Example 2b** settings file).

Error-Bar Charts

You can also make the error-bar lines be the same color as the symbol color and include connecting lines between groups as in the following plot (see **Example 2c** settings file).



Example 3 – Creating an Error-Bar Chart with 95% Confidence Interval Limits and Raw Data

This section presents an example of how to generate an error-bar chart with 95% confidence interval limits. The data used are from the Fisher dataset. We will create error-bar charts of the *SepalLength* variable, grouping 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 Error-Bar Charts procedure options

- Find and open the **Error-Bar Charts** procedure using the menus or the Procedure Navigator.
- The settings for this example are listed below and are stored in the **Example 3** 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**

Error-Bar Chart Format (*Click the Button*)

Bar Fill**Unchecked**

Bar Border**Unchecked**

Symbol.....**Checked**

Raw Data.....**Checked**

Error-Bar Variation Line Type.....**Confidence Interval**

Report Options (*in the Toolbar*)

Variable Labels.....**Column Names**

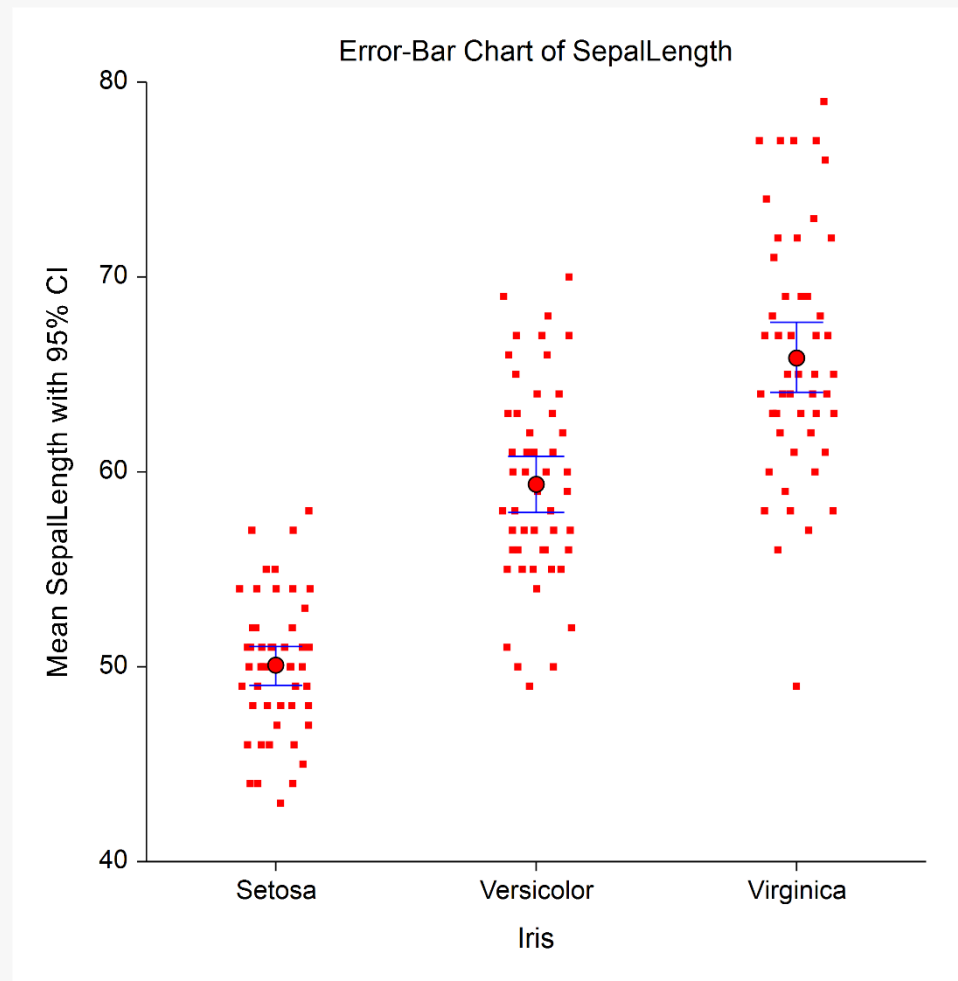
Data Labels.....**Value Labels**

3 Run the procedure

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

Error-Bar Chart Output

Error-Bar Charts



Example 4 – Creating an Error-Bar Chart with Medians

This section presents an example of how to generate an error-bar chart with medians instead of means. The data used are from the Fisher dataset. We will create error-bar charts of the *SepalLength* variable, grouping 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 Error-Bar Charts procedure options

- Find and open the **Error-Bar Charts** procedure using the menus or the Procedure Navigator.
- The settings for this example are listed below and are stored in the **Example 4** 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**

Error-Bar Chart Format (*Click the Button*)

Error-Bar Chart Tab

Bar Fill**Unchecked**

Bar Border**Unchecked**

Symbol.....**Checked**

Raw Data.....**Unchecked**

Connecting Lines Tab

Medians**Checked**

Painting Order Tab

Move **Connecting Lines** before **Error-Bar Chart**

Report Options (*in the Toolbar*)

Variable Labels.....**Column Names**

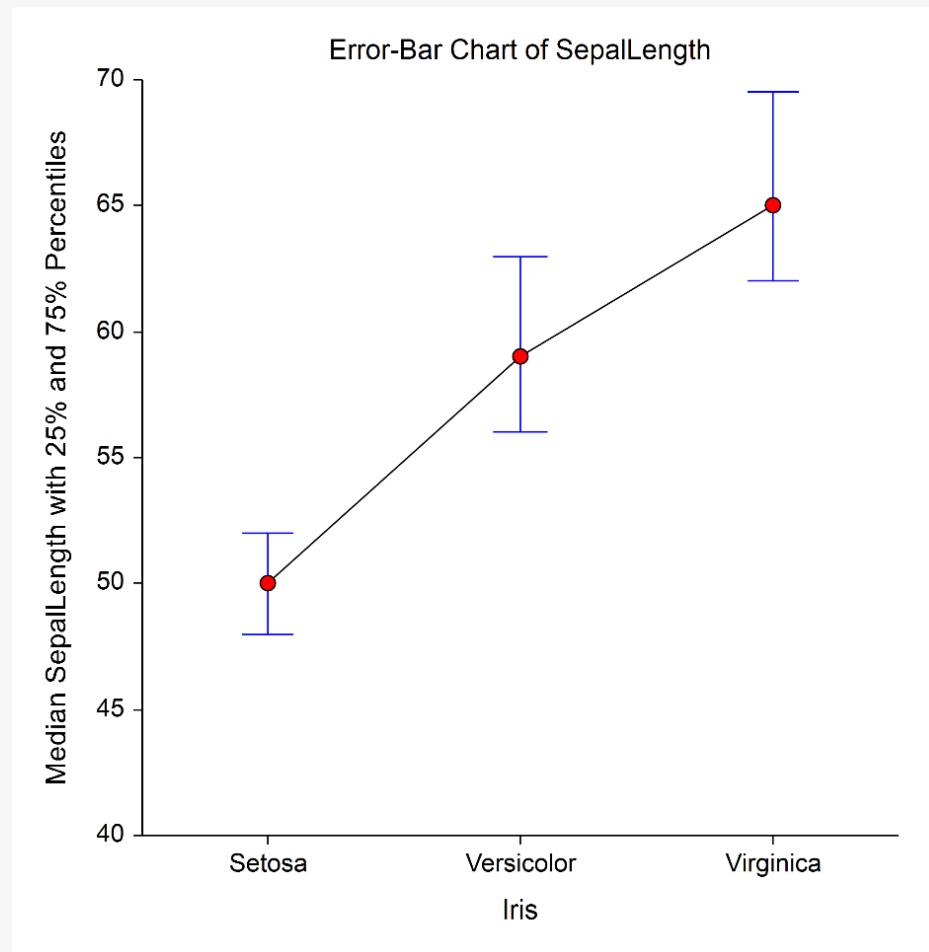
Data Labels.....**Value Labels**

3 Run the procedure

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

Error-Bar Chart Output

Error-Bar Charts



When medians are plotted, the error-bars are not necessarily symmetric about the median. In this example, the 25th and 75th percentiles are represented by the lower and upper error bars, respectively.

The other option when plotting medians is to draw error bars that cover the entire range of the data as displayed in the following plot (see **Example 4b** settings file).

Error-Bar Charts

Error-Bar Charts

