Chapter 150

Dot 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 dot plot.

Dot Plot Definition

Dot plots are plots of points with the measured value on one axis and the category level on the other axis.

Data Structure

A dot 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.
Dot Plot Window Options

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

Dot Plot Tab

Dots Section
You can modify the color of the dots and the jittering in this section. The amount of jittering is specified under the Layout tab.

Number of Factors

Jittering

No Jittering

With Jittering
Layout Tab

**Orientation Section**
You can orient the dot plot vertically or horizontally.

![Vertical and Horizontal Dot Plots](image)

**Object Spacing and Size Section**
You can change the amount of jittering by changing the Dot Plot Width.

![Dot Plot Width Variations](image)

**Connecting Lines Tab**

**Connect Between Groups Section**
You can add reference lines at group means and percentiles.

![Connect Medians](image)
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 Dot Plot

This section presents an example of how to generate a dot plot. The data used are from the Fisher dataset. We will create dot plots 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 Dot Plots procedure options**
   - Find and open the Dot 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 template. To load this template, click Open Example Template in the Help Center or File menu.

<table>
<thead>
<tr>
<th>Option</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Variables Tab</strong></td>
<td></td>
</tr>
<tr>
<td>Data Variable(s)</td>
<td>SepalLength</td>
</tr>
<tr>
<td>Horizontal (Group) Variable</td>
<td>Iris</td>
</tr>
<tr>
<td>Dot Plot Format (Click the Button)</td>
<td></td>
</tr>
<tr>
<td>Jittering</td>
<td>Checked</td>
</tr>
<tr>
<td><strong>Report Options (in the Toolbar)</strong></td>
<td></td>
</tr>
<tr>
<td>Variable Labels</td>
<td>Column Names</td>
</tr>
<tr>
<td>Data Labels</td>
<td>Value Labels</td>
</tr>
</tbody>
</table>

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

Dot Plot of SepalLength

Iris

Setosa  Versicolor  Virginica

SepalLength

40  50  60  70  80
Example 2 – Creating a Dot Plot with Subgroups

This section presents an example of how to generate a dot plot with subgroups. The data used are from the fictitious Tree dataset. We will create dot 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 Dot Plots (2 Factors) procedure options**
   - Find and open the Dot 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 template. To load this template, click Open Example Template in the Help Center or File menu.

<table>
<thead>
<tr>
<th>Option</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variables Tab</td>
<td></td>
</tr>
<tr>
<td>Data Variable(s)</td>
<td>Diameter</td>
</tr>
<tr>
<td>Horizontal (Group) Variable</td>
<td>Species</td>
</tr>
<tr>
<td>Legend (Subgroup) Variable</td>
<td>Sunlight</td>
</tr>
<tr>
<td>Dot Plot Format (Click the Button)</td>
<td></td>
</tr>
<tr>
<td>Jittering</td>
<td>Checked</td>
</tr>
<tr>
<td>Report Options (in the Toolbar)</td>
<td></td>
</tr>
<tr>
<td>Data Labels</td>
<td>Value Labels</td>
</tr>
</tbody>
</table>

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

Dot Plot of Diameter

Sunlight
- Red Maple: Full Sun
- Sugar Maple: Full Sun
- Black Maple: Full Sun