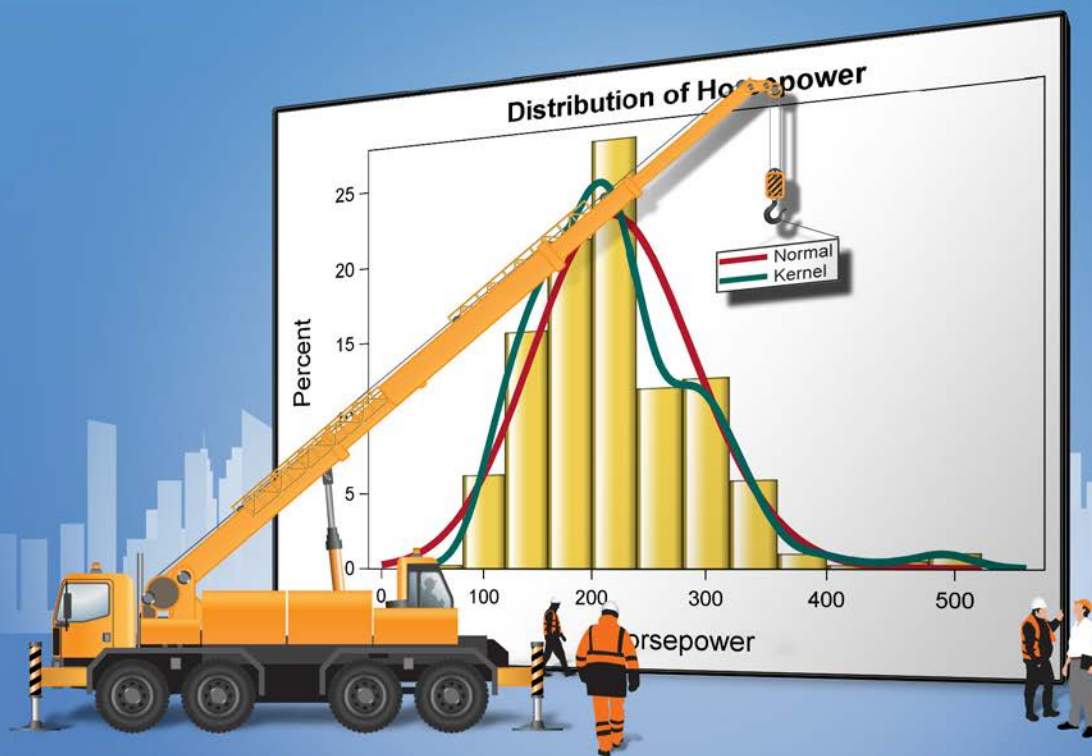
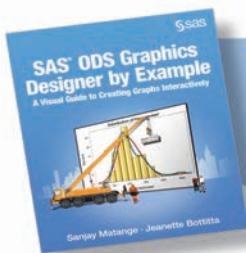


SAS[®] ODS Graphics Designer by Example

A Visual Guide to Creating Graphs Interactively



Sanjay Matange · Jeanette Bottitta



SAS® ODS Graphics Designer by Example. Full book available for purchase [here](#).

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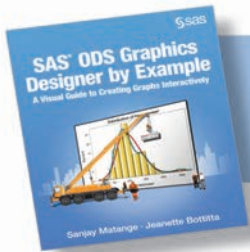
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Chapter 3: Create Your First Graph

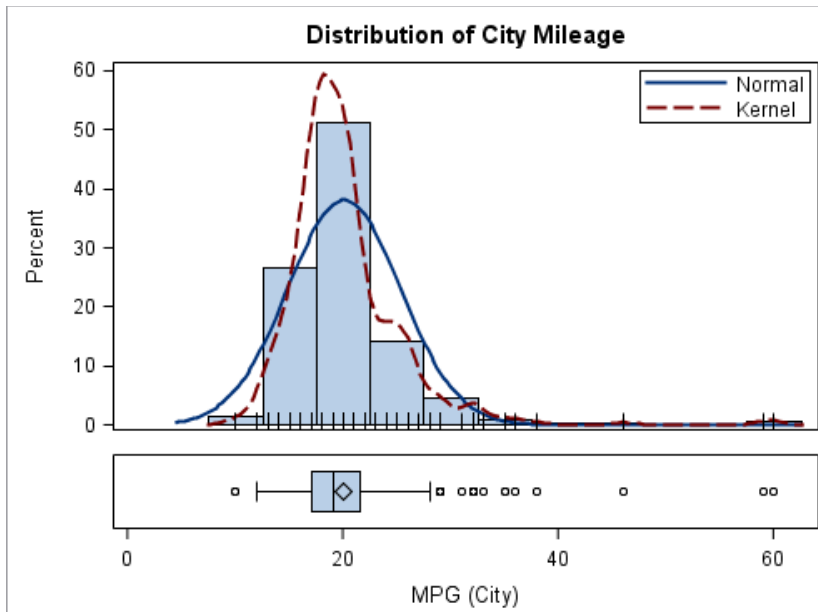
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About This Example

Let's jump right in and create a commonly used graph. This example uses many of the key features of the SAS ODS Graphics Designer (the designer). Some of these features are described in more detail later in the book. For this example, the right amount of description needed to create the graph and gain a basic understanding of the process is provided.

Let's make a distribution plot of city gas mileage for all cars in the Sashelp.Cars data set:

Figure 3.1 Distribution of City Gas Mileage



The graph includes the following features:

- a histogram of the MPG_CITY variable from the Sashelp.Cars data set
- overlaid normal density curve and kernel density curve
- an overlaid fringe plot showing individual observations
- an inset legend
- a separate horizontal box plot
- a common external X axis
- a graph title

Create Your Graph

The following sections walk you through the steps of creating your graph.

Create a Histogram from the Graph Gallery

The Graph Gallery is displayed in the work area as shown in Figure 3.2. For graphs that are created from the Graph Gallery, placeholder data is assigned to the graph.

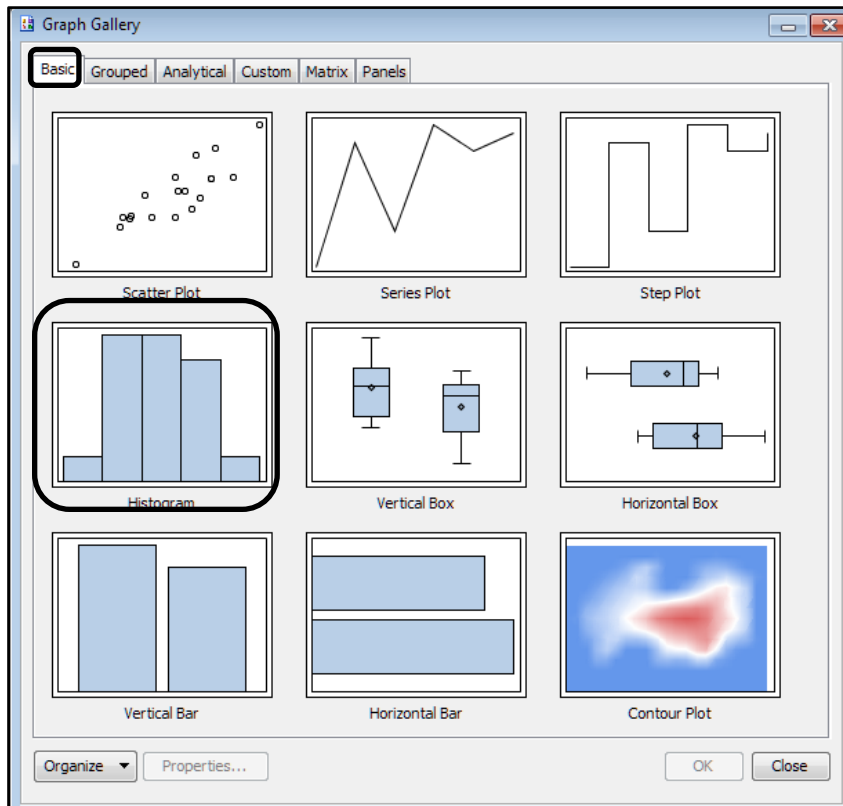
Note: If the Graph Gallery is not displayed, select **View ► Graph Gallery**.

To create the histogram:

1. On the Basic tab of the Graph Gallery, select the **Histogram** icon.
2. Click **OK**.

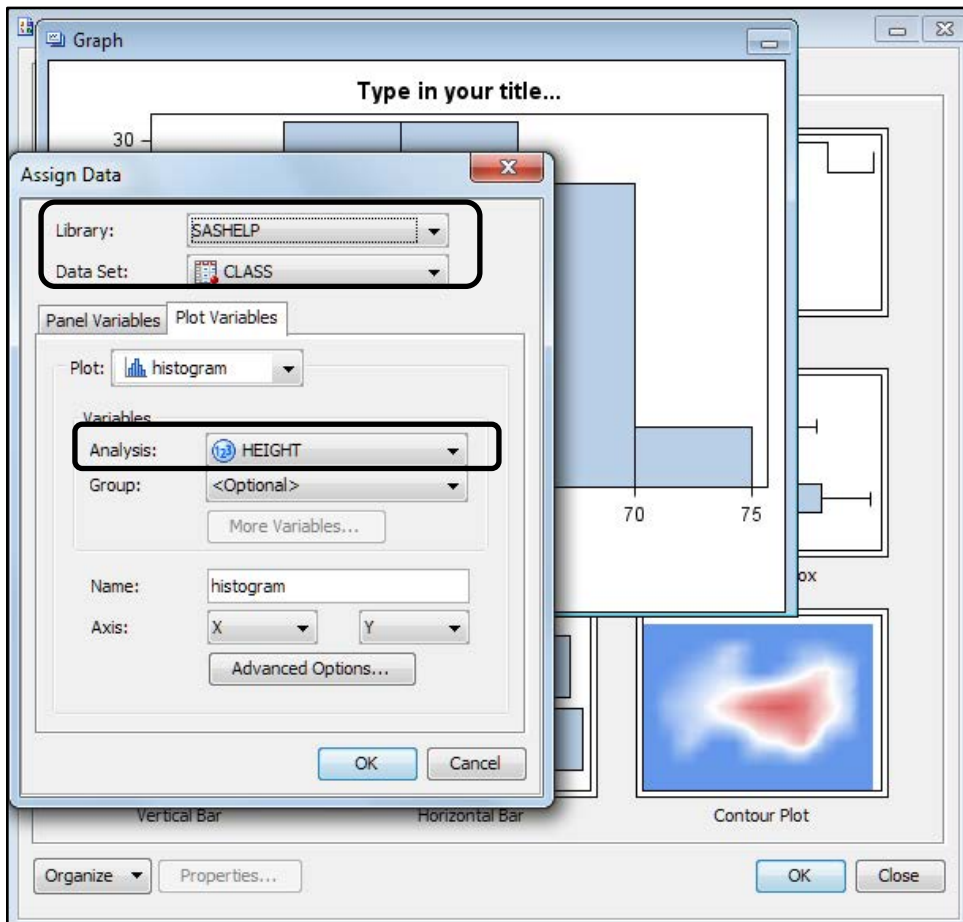
You can also double-click the **Histogram** icon. For future steps, this book uses the double-click action when it is available.

Figure 3.2 Graph Gallery with Highlighted Histogram and Basic Tab



A graph window is displayed that includes a histogram plot. The **Assign Data** dialog box for the histogram appears, showing the placeholder data assignments.

Figure 3.3 Placeholder Data in the Assign Data Dialog Box



Note: Do not click **OK** in the **Assign Data** dialog box. You will change the data assignments in the next step.

The placeholder data enables the designer to show a visual draft of the type of plot that has been included in the graph. In this case, the designer uses the HEIGHT variable from the Sashelp.Class data set. Using this placeholder data, the designer creates the histogram.

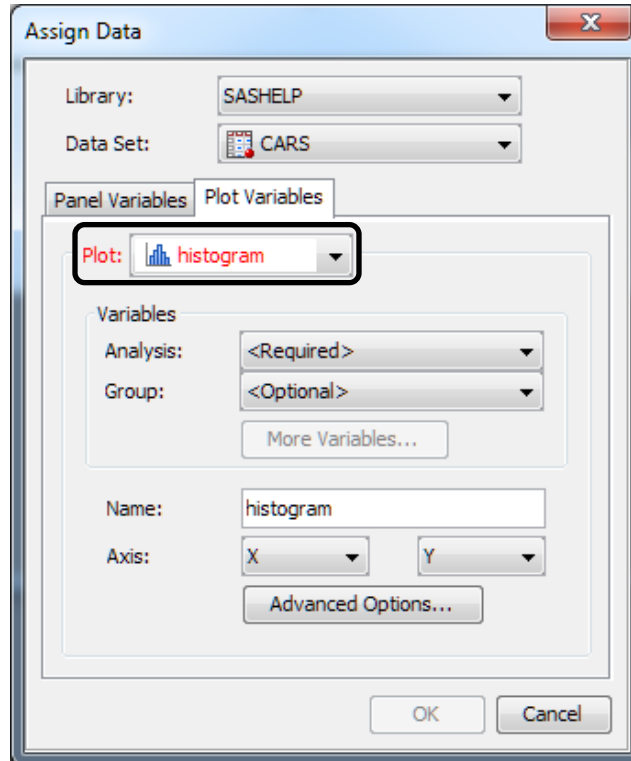
The **Assign Data** dialog box is discussed in more detail in Chapter 4. For now, it's sufficient to know that you use this dialog box to change the data assigned to the plot and to the analysis variable.

Assign Data to the Histogram

Assign the MPG_CITY variable from the Sashelp.Cars data set to the histogram.

1. In the **Assign Data** dialog box, select **CARS** for **Data Set**.

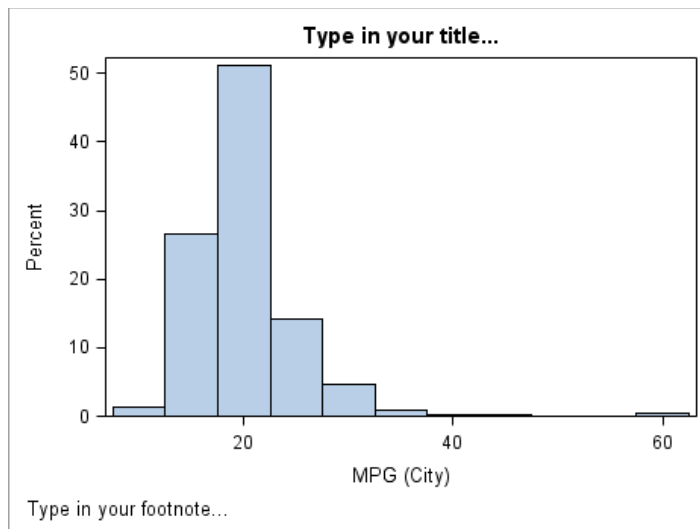
The previous variable, HEIGHT, is not available in the new Sashelp.Cars data set, so the **Analysis** variable setting has been cleared. Because an analysis variable is required, the settings for the histogram are not complete. As a result, the plot identifier is shown in red and the **OK** button is not available.



2. Select **MPG_CITY** for **Analysis**.
3. Click **OK**.

The designer creates the graph with a histogram and a placeholder title and footnote.

Figure 3.4 Histogram with Title and Footnote Placeholders



Note: Your graph might be a different size from the one shown here. For information about the graph sizes used in this book, see “Graph Size” in **About This Book**.

Change the Title and Remove the Footnote

Replace the placeholder title and remove the footnote.

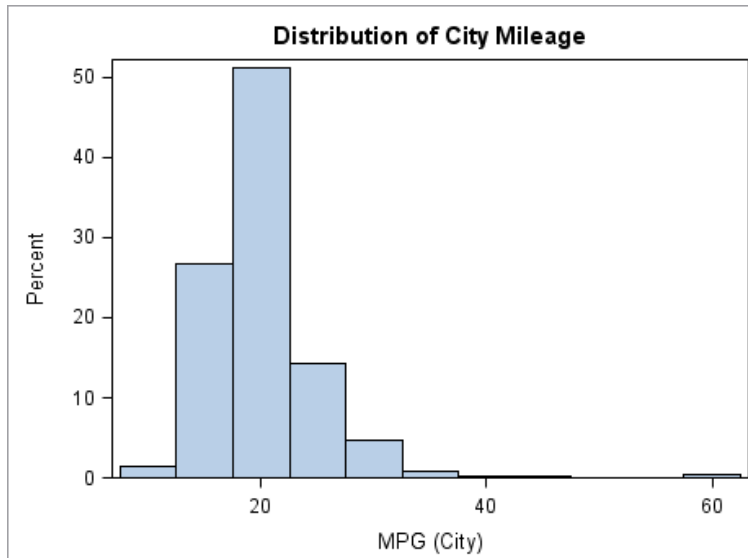
1. Double-click on the placeholder title (“Type in your title”). The placeholder text is highlighted:

Type in your title...

2. In the text box, enter **Distribution of City Mileage**.
3. To remove the footnote, right-click on the placeholder footnote (“Type in your footnote”), and select **Remove Footnote**.

Your changes are reflected in the graph.

Figure 3.5 Graph with New Title



Other actions related to titles and footnotes include the following:

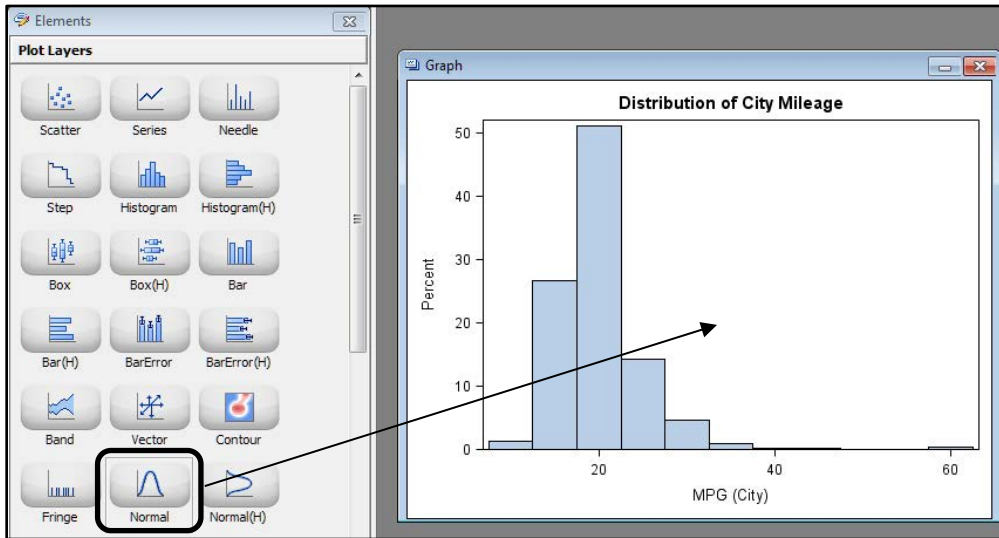
- To set title properties, right-click on the title, and select **Title Properties**. The **Text Properties** dialog box is displayed from which you can customize the visual properties of the title, such as font, color, and so on. You can do the same for the footnote.
- You can insert more titles and footnotes using the **Insert** menu.

Add Plots to the Graph

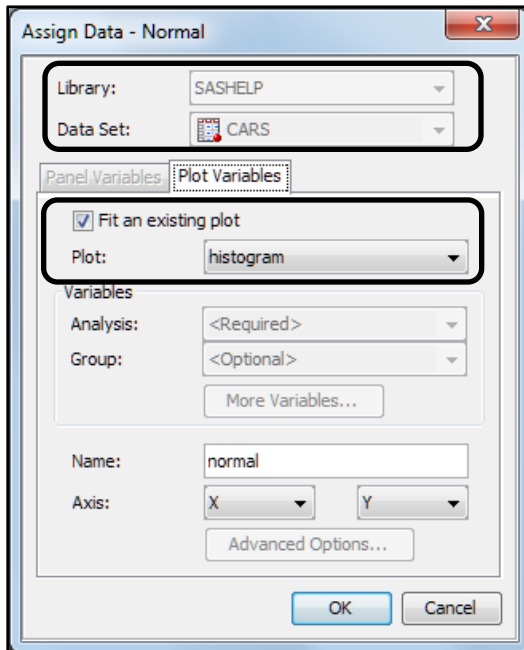
When a graph is displayed in the work area, the Elements pane is active. You can easily add a plot from the Elements pane to the graph cell, assuming the plot being added is compatible with the existing plot and its axes settings in the graph cell. Plot compatibility is discussed in more detail in Chapter 4.

For this example, let's add a normal density curve, a kernel density curve, and a fringe plot to the graph. These plot types are compatible with the histogram and can be added to this graph.

Figure 3.6 Normal Plot in the Elements Pane



1. In the Elements pane, click the **Normal** icon as shown in Figure 3.6. Drag and drop the **Normal** icon onto the graph. The **Assign Data** dialog box for a normal density curve is displayed.



Note the following in the dialog box:

- o **Library** and **Data Set** are not available. All the plots in a single cell of a graph must use data from the same data set.

- **Fit an existing plot** is selected by default. With this option, the normal density curve uses the same data settings as the histogram. There is only one plot currently in the graph—the histogram. If there were more plots, you would have a choice of which plot to use for the fit.
- Because **Fit an existing plot** is selected, **Analysis** is not available. The newly added plot must use the same data as the histogram. In this example, the normal density curve is fitted with the same analysis variable as the histogram.

2. Click **OK**. The normal density curve is added to the graph.
3. In the Elements pane, click the **Kernel** (kernel density curve) icon. Drag and drop the **Kernel** icon onto the graph.



The **Assign Data** dialog box for a kernel density curve is displayed.

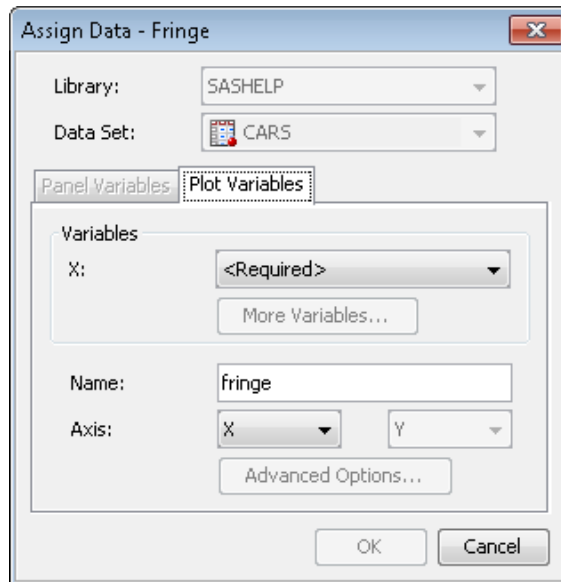
This dialog box is similar to the dialog box for the normal density curve. **Fit an existing plot** is selected by default.

4. Keep the default selections and click **OK**. The kernel density curve is added to the graph.
5. In the Elements pane, click the **Fringe** icon. Drag and drop the **Fringe** icon onto the graph.



The **Assign Data** dialog box for a fringe plot is displayed.

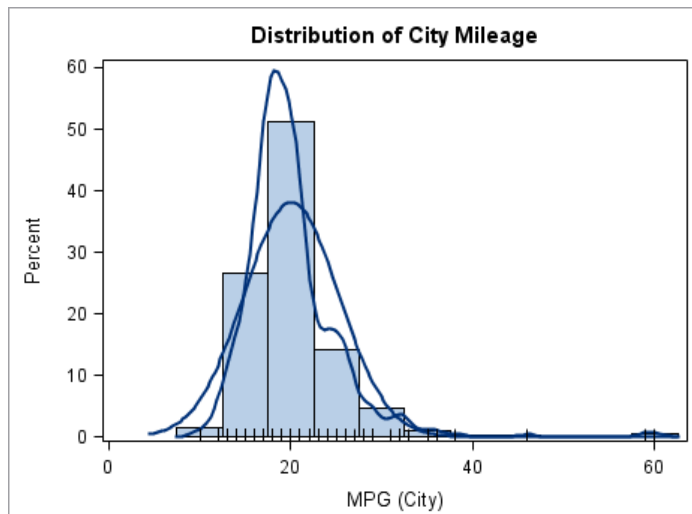
6. Select **MPG_CITY** for **X**.



4. Click **OK**.

The graph is updated with the new plots.

Figure 3.7 Graph with Normal Density Curve, Kernel Density Curve, and Fringe Plot



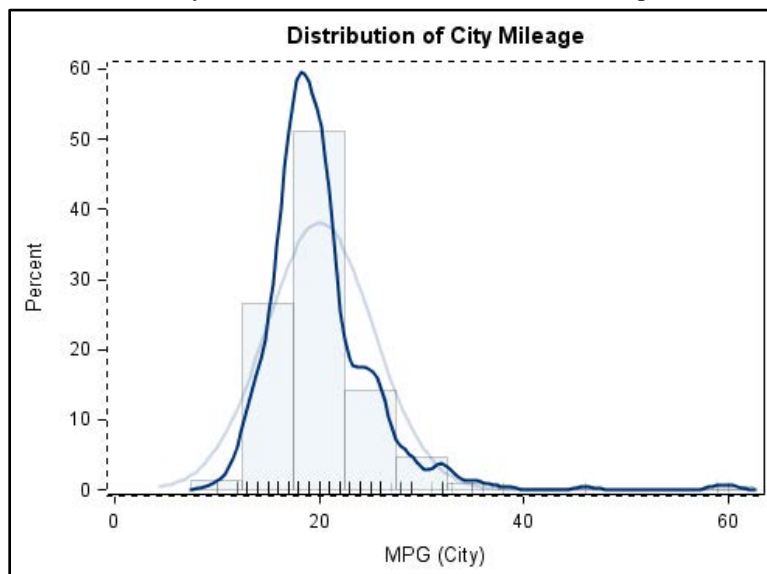
Set Plot Properties

Figure 3.7 shows the distribution of city mileage for all cars in the Sashelp.Cars data set using a histogram, two density curves, and a fringe plot. Because the density curves have the same visual properties, it can be difficult to tell which one is normal and which one is kernel.

To make them clearer, you can modify the visual properties of the kernel density curve. Select the kernel density curve, and then change the properties.

1. In the graph, select the kernel density curve. (The kernel density curve is the taller of the two curves.)

The kernel density curve is selected and in bold. The other plots in the cell are dimmed.



About This Book

What Does This Book Cover?

This step-by-step guide is intended to facilitate the creation of graphs using the SAS ODS Graphics Designer (the designer). The book describes the graphical interface and features of the designer in detail, showing you how to use an interactive application to create the graph that you need. Topics are organized by feature, making this an excellent training manual or self-tutorial. With this book, you will quickly learn how to create simple or complex graphical views of data for analysis.

This book covers main graphics features, such as single-cell graphs, multi-cell graphs, classification panels, data roles, plot types, legends, titles and footnotes, styles, and the visual properties of a graph. The book provides details about some advanced features, including automatically generated charts, shared-variable graphs, and axis customization.

This book does not cover all the features of the designer. You are encouraged to refer to the *SAS ODS Graphics Designer: User's Guide* for complete concepts.

Is This Book for You?

This book is useful if you want to create graphs using a simple, interactive application. You do not have to be familiar with procedure syntax for creating graphs.

The first two chapters provide introductory information about ODS graphing software in general and the SAS ODS Graphics Designer in particular. If you are familiar with these concepts, you can skim the first two chapters and move on to the example in Chapter 3.

You might also find the book useful if you are an experienced graph programmer who wants to perform rapid prototyping of your data using the designer. If you want to learn the basics of the Graph Template Language (GTL), the designer can introduce you to GTL code.

What Are the Prerequisites for This Book?

The book requires no programming experience, although you should have a basic understanding of SAS libraries, data sets, and data roles.

What Should You Know about the Examples?

Software Used to Develop the Book's Content

This book assumes that the user has the SAS ODS Graphics Designer, Release 9.2 or later. The designer is included with SAS 9.2 Phase 2 and later.

The examples were created and tested using the designer included with the third maintenance release for SAS 9.4.

Platform Used to Create the Examples

The examples were created in the Windows operating environment. If you are using UNIX, some of the designer's windows might differ from what you see in this book.

Example Code and Data

Most of the examples in this book use data sets provided by SAS and available in the Sashelp library. These data sets include CARS, HEART, and a few others. Sometimes, the number of classifiers was reduced to fit the graph in a restricted space. As a result, modified data sets were used that include a subset of data from the original Sashelp data sets. In addition, custom data sets were needed for an example graph.

When an example requires you to run SAS code, that code is available from:

- the appendix of this book
 - <http://support.sas.com/publishing/authors/matange.html>
 - <http://support.sas.com/publishing/authors/bottitta.html>
-

Graph Size

The default setting for graph size in the designer is 640px by 480px (pixels). This setting is specified in the Preferences dialog box along with other settings. You can modify these settings by selecting **Tools ► Preferences**.

For this book, the default height is 350px to fit in the available space. When graphs are reduced in size, smaller graphs might have scaled-down font sizes. Also, their numeric axes might display tick values differently. As a result, the graphs that you generate from the examples will not always look identical to the graphs that are shown in the figures. However, both graphs will accurately represent the data.

Styles

The graphs created by the designer use the LISTING style by default. This style and other available styles are optimized for full-color output. Most of the graph examples in this book use the default LISTING style.

Additional Help

Although this book illustrates many analyses regularly performed in businesses across industries, questions specific to your aims and issues might arise. To fully support you, SAS Institute and SAS Press offer you the following help resources:

- For questions about topics covered in this book, contact the author through SAS Press:
 - Send questions by email to saspress@sas.com; include the book title in your correspondence.
 - Submit feedback on the author's page at http://support.sas.com/author_feedback.
- For questions about topics in or beyond the scope of this book, post queries to the relevant SAS Support Communities at <https://communities.sas.com/welcome>.
- SAS Institute maintains a comprehensive website with up-to-date information. You can get technical support, find resources for a product, and search for information at <http://support.sas.com/>.

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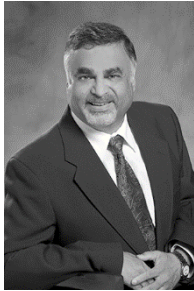
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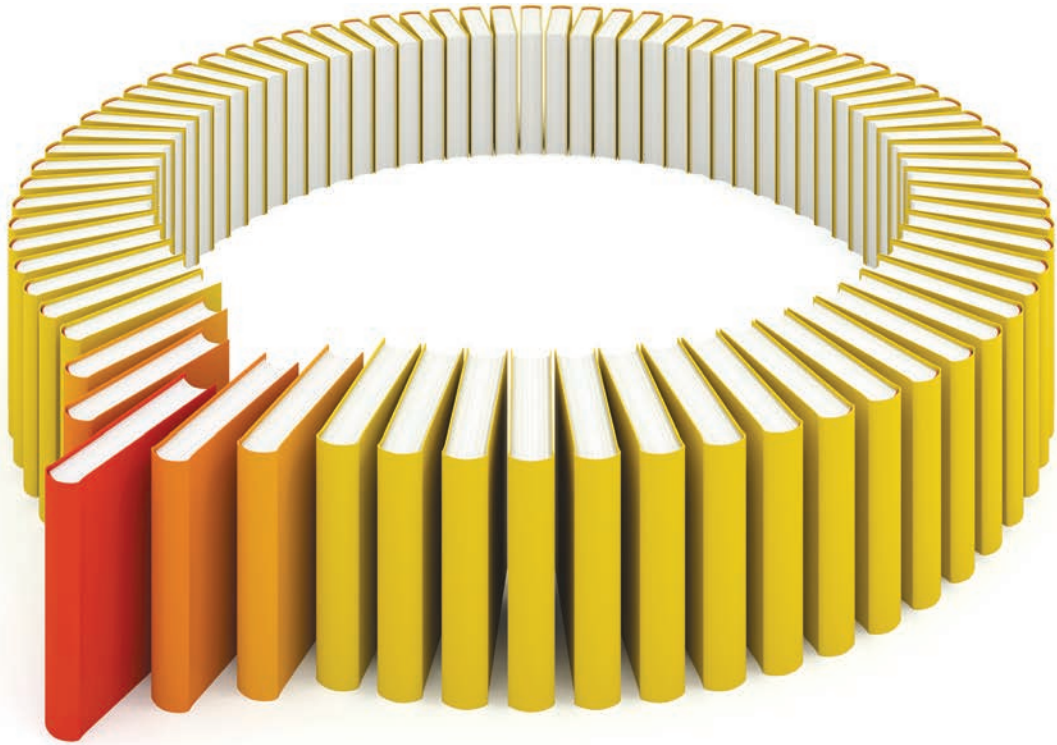
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Learn more about these authors by visiting their author pages, where you can download free book excerpts, access example code and data, read the latest reviews, get updates, and more:

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