

Graphs In a Minute

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ABSTRACT

SAS® Software offers multiple ways of producing attractive graphics quickly with simple user interfaces. This paper focuses on two of them: the Graph-N-Go® application in Version 8 and the Graph tasks in Enterprise Guide® Version 1.0. With these applications, you can visualize your data quickly as different chart and plot types and include your results into your documents and reports.

INTRODUCTION

In the past, it was necessary to write code to access the power of SAS/GRAPH® procedures like GCHART, GMAP, or GPLOT, but now much of the functionality in those procedures can be obtained through intuitive point-and-click interfaces. Because getting results is faster and easier, you can explore your data more readily and try alternative graphing techniques. Graphs are also more easily transferred to web pages or other documents than ever before—they can be exported in many image formats. Results can be interactive or “live” when they are created as web pages using the SAS/GRAPH® ActiveX® Control or Graph Applet.

THE GRAPH-N-GO APPLICATION

Graph-N-Go was introduced as part of SAS/GRAPH® software in Version 8.0. You can start the application by selecting **Solutions → Reporting → Graph-N-Go** from the pull-down menus of any SAS window or issuing the global command GNG. The Graph-N-Go window, as shown in Figure 1, is partitioned into two work areas, both of which are initially empty. The upper area holds icons representing the data sources for your graphs, and the lower area holds the graphs that you create.

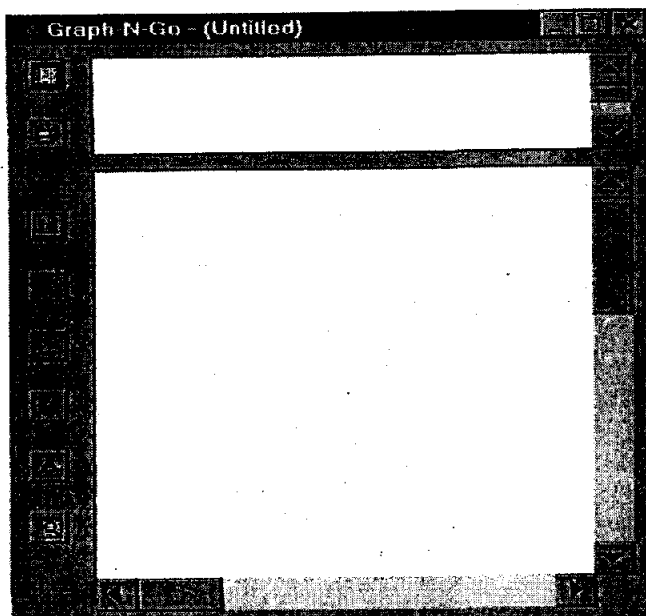


Figure 1: Graph-N-Go Window

The basic process of creating a graph in Graph-N-Go is:

1. Define your data.
2. Choose a graph type to display the data.
3. Associate the data with a graph.

4. Customize the appearance of the graph.
5. Save / export the results.

DEFINING YOUR DATA

There are two icons on the left side of the upper workarea: one for SAS Data Sets and one for Multidimensional Data Base (MDDB) files. Click on the icon for the type of data you are working with. A selector window appears. From this window, you can choose your data file in an existing SAS data library or define a new SAS library for data that exists on your computer. After selecting your data source, an icon representing it will be shown in the upper work area. You can define multiple data sources.

CHOOSING A GRAPH TYPE

There are several icons on the left side of the lower workarea. Each is used to create a different “view” of your data. Graphical views include: Bar Chart, Pie Chart, Plot and Overlay. Click on an icon and drag the rectangular outline that appears to the location in the work area where you would like to show the graph. You can add additional additional graphs to the work area if you need multiple charts for comparison.

ASSOCIATING THE DATA WITH A GRAPH

Next, you associate your data source with the graphical view by dragging the data icon and dropping it on the empty graphical view. A graph will appear with some variables from the data displayed, but they may not be the variables you intend. Using the popup menu (click with Right Mouse Button), you can specify the columns (variables) you want displayed for the various graphical roles and the statistics you want.

CUSTOMIZING THE APPEARANCE OF THE GRAPH

You can change some graphical appearance features directly from the viewer's popup menu. If you select **Properties** from this popup menu, a dialog is displayed where you can set all features of the graph, including the data source and the column roles. Figure 2 shows how the Data tab of the Properties dialog looks when charting sales for each department from the SASUSER.TOTALS data set.

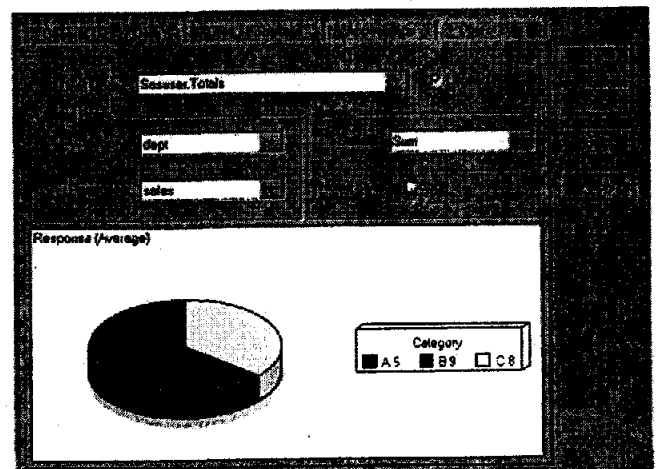


Figure 2: Properties dialog for Pie Chart in Graph-N-Go

After the data columns are assigned to the chart, you can modify its appearance to suite your tastes by adding titles and footnotes, change colors, legend, and other visual properties.

The result of some customization is shown in Figure 3.

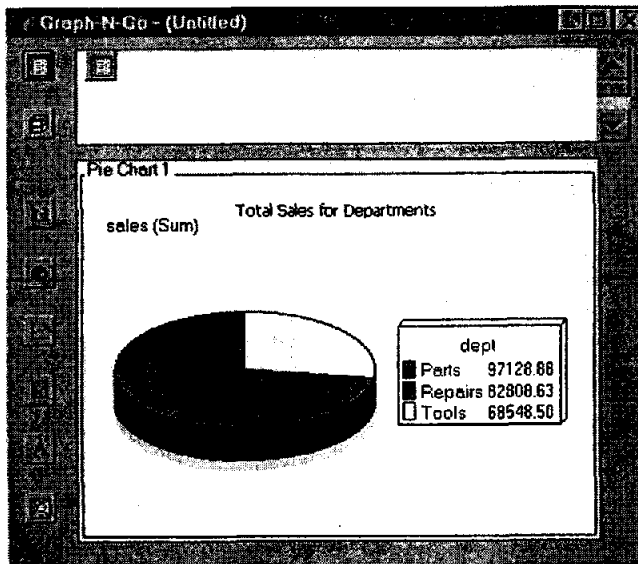


Figure 3: Completed Pie chart in Graph-N-Go

PRINTING AND EXPORTING YOUR WORK

If the appearance of the chart is suitable, you can print it from the Graph-N-Go window. You can also export it to a file in a wide variety of image formats. These images can be used in web pages or other documents. For example, we have inserted the image file (in this case a GIF format) into this paper, which was originally formatted as a Microsoft Word 97 document. The result is shown in Figure 4.

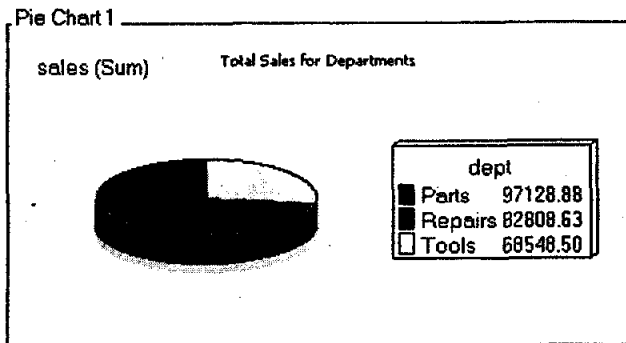


Figure 4: Image file inserted into document

CREATING A SAS PROGRAM

Perhaps you would like to have a SAS/GRAPH program that can be used to recreate the graph. This is possible in Graph-N-Go by exporting the graph to a source file. From the viewer's popup menu, select **Export** → **Source File**, and then specify the name of the file or SAS source catalog entry where you want to save the program's code.

CREATING A WEB PAGE

You can generate a web page containing the graph by exporting it to an HTML file, which you can view using a web browser. To do this, use viewer's popup menu and select **Export** → **HTML File**. You then specify one of three possible formats for the graph within the web page, either GIF, ActiveX Control, or Java Applet. The GIF image is a static picture on the page, and the ActiveX Control and Java Applet are interactive. In Figure 5 the pie chart is about to be exported as an html file that will use the Java applet.

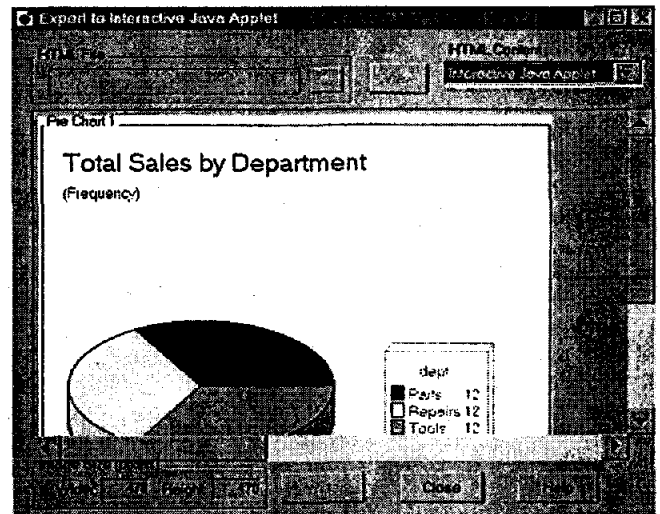


Figure 5: Exporting HTML content from Graph-N-Go

From the dialog in Figure 5 it's possible to preview the resulting web page by selecting the **View** button. If the ActiveX Control or Java Applet is selected as the output format, the chart will be interactive in the web page, as shown in Figure 6, in which the Java Applet's popup menus are being used. Use the Java Applet if you need your results to be portable and interactive. Use the ActiveX Control when the web page will be viewed only on Windows® using Internet Explorer.

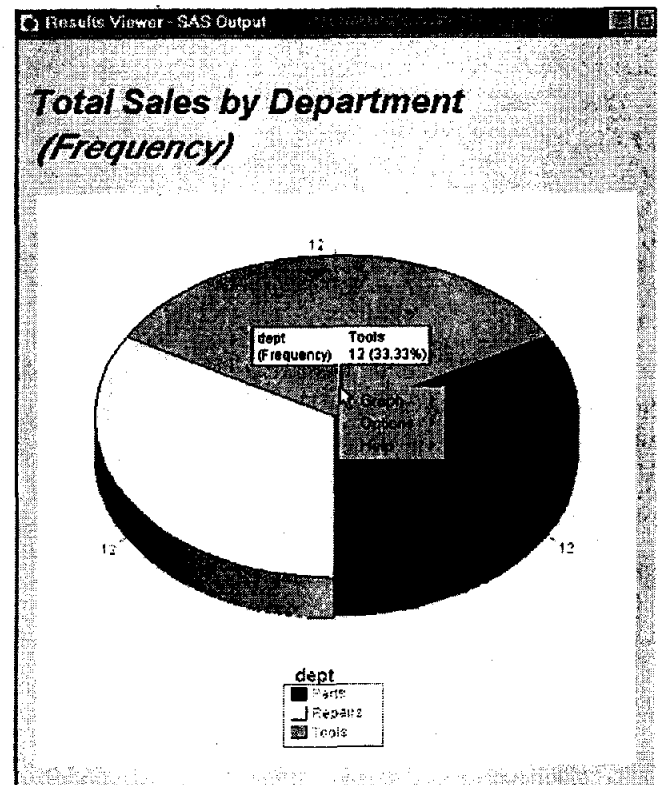


Figure 6: Interactive Java Applet results created by exporting to HTML file from Graph-N-Go

GRAPHS IN ENTERPRISE GUIDE

If you are using a computer running Windows® 95, 98, or NT 4.0, a powerful alternative for graphing is Enterprise Guide Version 1.0. It provides an intuitive Windows interface to the SAS System, including many of the capabilities of SAS/GRAPH software. Enterprise Guide is able to communicate with a SAS System server running on the local PC or on some other server on your network.

The first thing you do when starting up Enterprise Guide is create a project. In order to create a graph, you need data, so the next step is to insert a data set into the project. This is done by selecting **Insert->Data** from the main menu bar and then selecting a data set, as shown in Figure 7.

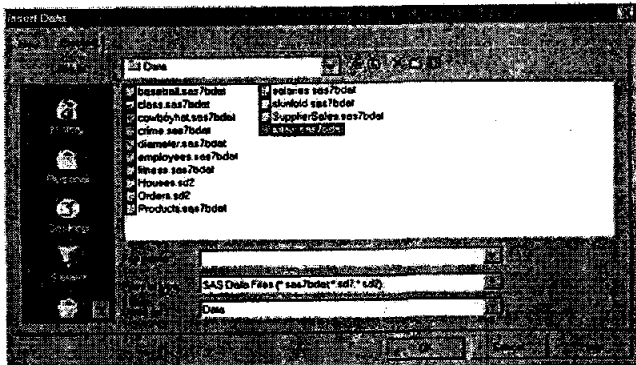


Figure 7: Inserting a data set into a project in Enterprise Guide

To start creating a graph of your data, you select the **Graph**→ option from the main menu. A dialog leads you through a series of steps for defining the graph. Figure 8 shows the first tab of the dialog, which lets you choose a chart style from a gallery of styles. Here, the 3D Colored Bars style was selected.

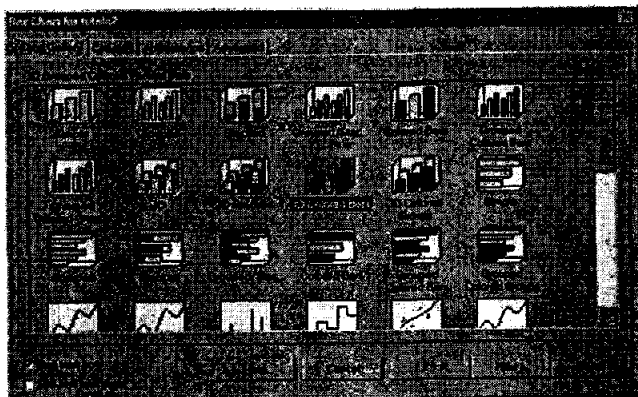


Figure 8: Chart Gallery in Enterprise Guide

You define how the columns of data are assigned to the chart roles of the graph in the Columns tab (Figure 9). To create a bar chart showing sales summarized by the variables **dept** and **site**. To assign the roles, you simply drag the icons representing the columns and drop them on the roles.

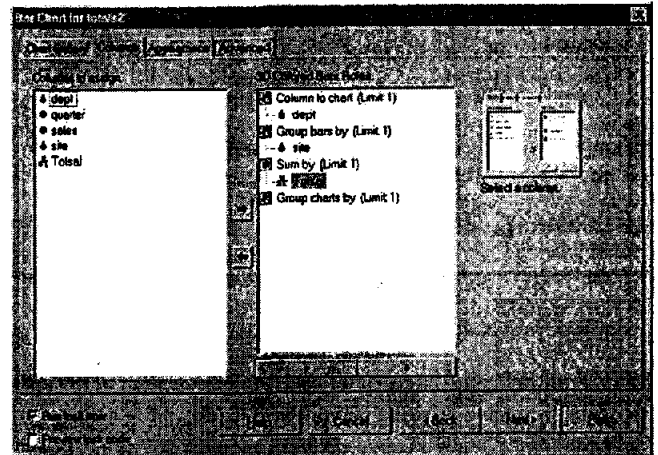


Figure 9: Assigning columns to charting roles in Enterprise Guide

From the Appearance tab, you can modify a variety of chart options, including titles, footnotes, legend, and axes.



Figure 10: Setting appearance options in Enterprise Guide

When you select the **Finish** button, Enterprise Guide generates code for SAS/GRAPH statements and procedures, submits the code to the SAS server, and displays the resulting output in HTML format in the Results window (Figure 11). The graph is displayed by the ActiveX control installed on the local machine.

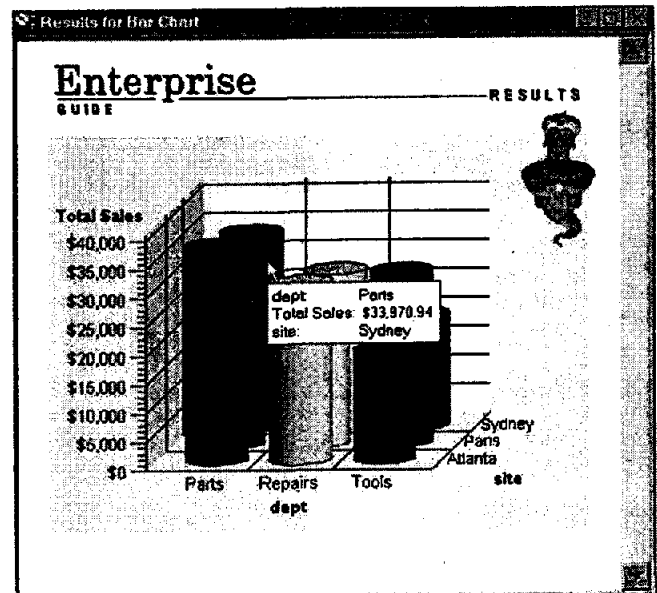


Figure 11: Results window in Enterprise Guide

There are multiple output formats for graphs in Enterprise Guide, just as there are when exporting results to HTML in Graph-N-Go. The graph can be embedded in the output as GIF image, ActiveX Control, or Java Applet.

Enterprise Guide provides a wide variety of charts and plots, covering much of the functionality of the GCHART, GPLOT, G3D, and GMAP procedures in SAS/GRAPH.

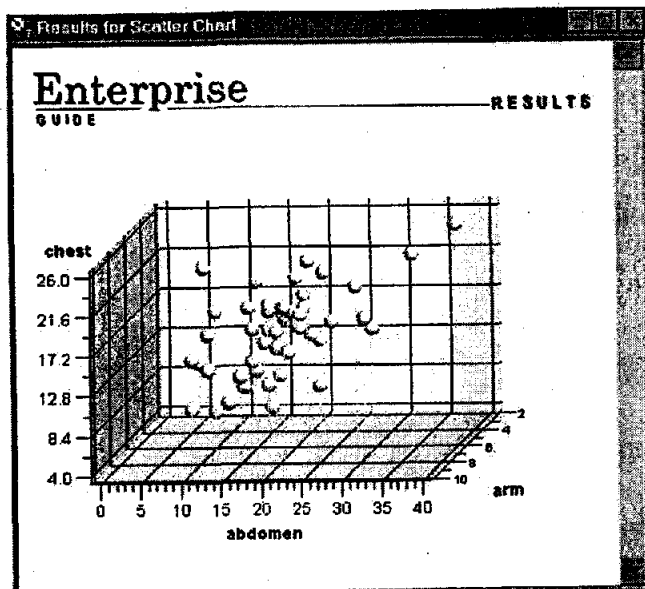


Figure 12: 3-D scatter plot in Enterprise Guide

The Results window can be displayed within the main window of Enterprise Guide.

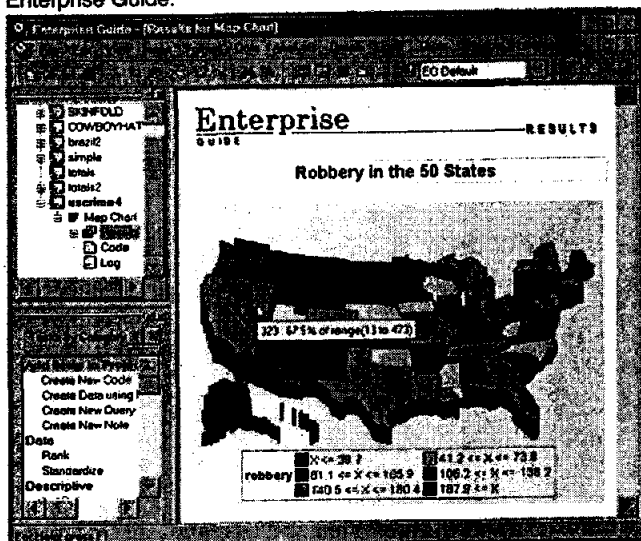


Figure 13: Prism map in Enterprise Guide

COPYING ENTERPRISE GUIDE RESULTS TO DOCUMENTS

When you use the ActiveX Control in Enterprise Guide, you can copy the control from the Results Window to the clipboard and then paste into any document that can contain an ActiveX Control, such as Microsoft Word 97 documents, Excel® spreadsheets or Powerpoint® presentations.

You copy the graph to the clipboard by bringing up the popup menu using the right mouse button and selecting **File→Copy To Clipboard** as shown in Figure 14. The resulting document has a live, interactive graph in it, as shown in Figure 15.

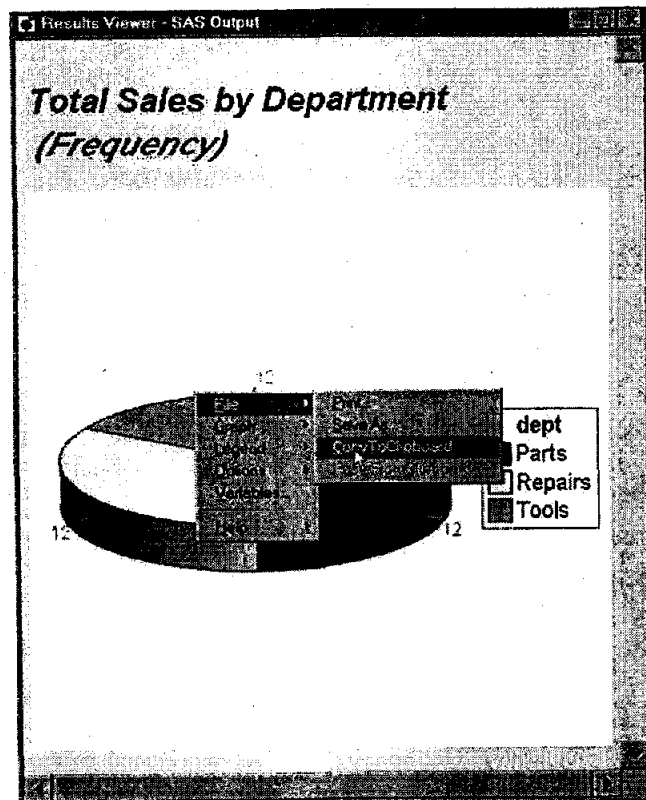


Figure 14: Copying the ActiveX Control to the clipboard.

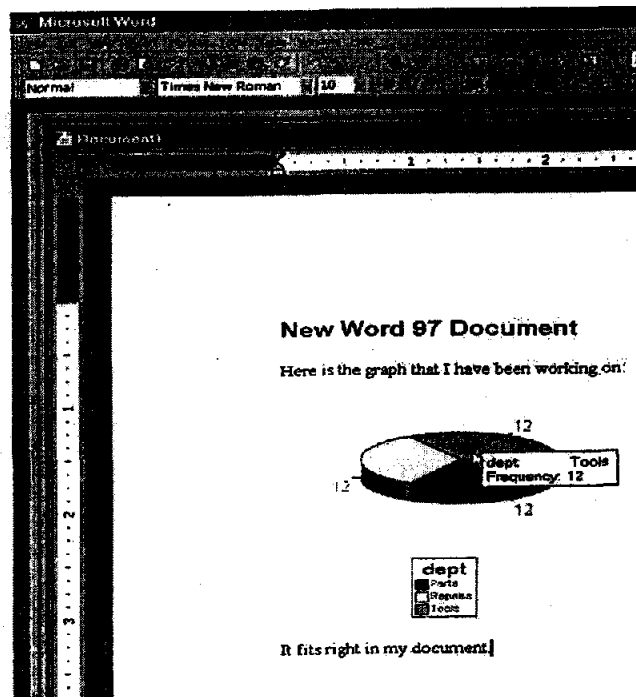


Figure 15: ActiveX Control embedded and active in Microsoft Word 97 document.

CHOOSING THE RIGHT TOOL

This paper has presented two approaches for creating graphs quickly. How do you choose the right alternative for your needs?

If you need:	Use this approach:
Interactive graphs on several platforms (PC, Unix, VMS). Graph types include bar and pie charts, plots, and overlay charts. Part of SAS/GRAPH software.	Graph-N-Go
Interactive graphs on Windows platforms only. Graph types include bar and pie charts, 2-D and 3-D plots and maps. Separate product.	Enterprise Guide

CONCLUSION

Creating graphs with SAS/GRAPH software is much quicker and easier than in the past. It is no longer necessary to write code in order to produce great-looking graphs. Using the portable Graph-N-Go application or Enterprise Guide software, you can quickly view your data graphically and use the results for web display or document output.

REFERENCES

For a more complete description of the capabilities of Graph-N-Go software, see the SUGI 25 paper number S70-25, "Painless Graphics: The Click, Drag and Drop approach of Graph-N-Go," by Jeff Cartier.

For more information about Enterprise Guide, see the SUGI 25 paper "Enterprise Guide, An Intelligent Client interface that provides access to all of the power of the SAS System," by Gail Kramer.

Further information about the SAS/GRAPH client graphs (the ActiveX® Control and Java Applet) can be found at <http://www.sas.com/rnd/webgraphs/>

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