USING PROC GREPLAY'S TEMPLATE FACILITY: ZOOM, ROTATE, CUT AND PASTE USING THE PANEL COORDINATES

Arthur L. Carpenter
California Occidental Consultants

KEY WORDS
SAS/GRAPH, Template, Replay

ABSTRACT
The TEMPLATE facility in PROC GREPLAY is designed to display one or more graphs on a single screen or page. It is possible to position the individual graphs so as to produce a collage which creates the overall desired effect. At first glance many users find using the TEMPLATE facility difficult; however, a simple basic understanding of the relationship of the plot to the template coordinates makes the creation of interesting and unusual displays quite easy.

Directed toward the new and intermediate user of PROC GREPLAY, this paper explains in simple terms the steps required, from perception to plotting, for the creation of a tailored template. The primary examples used to illustrate the process include rotating within a template, zooming in on a selected portion of a graph and pasting the enlarged graph within a second template.

INTRODUCTION
The user of SAS/GRAPH® interested in presenting a collage of graphs must be able to take full advantage of the TEMPLATE facility. There are many possible variations on the plain vanilla graphs and templates shown in the SAS/GRAPH manual which require information not presented in the manual. Plots and graphs can be rotated without using the ROTATE option and it is possible to zoom in on a portion of a graph expand, cut it and paste it back onto a different panel within the TEMPLATE.

Several interesting and very readable papers have been presented at previous SUGI meetings that cover various aspects of the TEMPLATE facility in SAS/GRAPH. The earliest and most detailed of these was presented in Atlanta (Kalt, 1986). This paper first introduced the concept of zooming and rotating within TEMPLATE. Others (SAS, 1987), (ROOTH, 1987) and (Gerend and Rafterey, 1988) have discussed various aspects of this topic. None of these authors discuss how a graph that has been expanded can be saved and replotted within a second template.
The coordinates for the screen that is to be presented range from zero to 100 and they describe the screen in terms of percentages. The midpoint of the screen in either direction is therefore 50 and the very center of the screen would have the coordinates of (50,50).

Rotating a plot, for example 90 degrees the relationship of the plot corners and the coordinates. Figure 3 shows the new positions of the plot corners relative to the coordinates and figure 4 shows the template design screen.

ZOOM AND EXPAND

Zooming in on a portion of a graph also is accomplished by changing the relationship of the plot corners to the screen coordinates. In this case the corners will not be the corners of the original plot but the corners of the portion of the plot to be expanded. Assume that we wish to zoom in on the southwest quadrant of the map of the United States, figure 5. A template is created which has coordinates which cannot be plotted because they are outside of the range 0 - 100. In this case the horizontal and vertical range is from 0 to 200. Since only those portions of the graph which lie between 0 and 100 can be plotted, the right and upper halves cannot be plotted. This leaves only the lower left corner and since it will fill the screen it is expanded as in figure 6 (the template design screen is shown in figure 7).
It is possible to save and redisplay this expanded graph. This is often required when working with maps of study areas. A map of the local area may require an inset of the larger reference area so that the reader will be oriented properly. Graphs created using a zoom template can be saved by specifying the GOUT option in PROC GREPLAY. The resulting catalog entry is named TEMPLATE and can be replayed using a different template, figure 8.

The expanded graph has not really been cut. Although it appears to have been cut because of the definition of the screen coordinates, all or part of the original graph can be replotted in the new scale.

In the presentation graph that motivated this paper we would like a map of the US in the upper left quadrant, an expanded map of the southwestern US, some text and a detailed map of the study area. A preview of the template used for this presentation is shown in figure 9.

The map of the southwestern US is expanded and saved using the template BIGHT shown in figure 10. Notice that proportions of the expanded map that were selected do not match the output screen (horizontal proportion is .25 and vertical is .50) as they did in figure 6 (both were .50). This would cause distortion if presented outside of a template, figure 11, however when presented within a template with the proper proportions the map will be displayed correctly.
The template design screen used for figure 9 is shown in figure 12 and the final plot is shown in figure 13. Notice that clipping of panels becomes important. Without clipping the expanded plot overlaps the panel bounds into the adjacent panels figure 14.

SUMMARY

It is possible to rearrange the positions of the template panel coordinates and corner definitions to create a wide variety of presentations. The corner definitions (lower left, upper left etc.) are linked to coordinates of the screen or plot. By manipulating how these links are setup in the template design screen the user can fairly easily rotate, zoom, cut and paste plots into an interesting collage.

ACKNOWLEDGEMENTS

California Occidental Consultants would like to thank Richard O. Smith of Science Explorations for the use of the digitized coastline of the Southern California Bight area.

ABOUT THE AUTHOR

Arthur L. Carpenter has over twelve years of experience as a statistician and data analyst and has served as a senior consultant with California Occidental Consultants since 1983. His publications list includes a number of papers and posters presented at SUGI and he has developed and presented several courses and seminars on statistics and SAS programming.

AUTHOR

Arthur L. Carpenter
California Occidental Consultants
4239 Serena Avenue
Oceanside, CA 92056-5018
(619) 724-8579

REFERENCES


TRADEMARK INFORMATION

SAS and SAS/GRAPH are registered trademarks of SAS Institute, Inc. Cary, NC.