

EFFECTIVE POSTER PRESENTATIONS FOR SAS® USER GROUP CONFERENCES: RECOMMENDATIONS AND TECHNIQUES

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ABSTRACT

Poster sessions at SAS® User Group Conferences provide an excellent opportunity to present information such as detailed code and output in a display format, yet they can challenge those who may be uncertain about poster preparation. The purpose of this paper is to provide guidance on how to carry out poster ideas clearly and effectively with a minimum amount of time and effort. Practical suggestions are given on poster design, materials, color, lettering, graphics, and construction methods. Although the recommendations and techniques presented focus on preparation of posters for SAS User Group conferences, they are applicable to many other endeavors such as business presentations, showcase displays, scientific exhibits, and (for those with children) science fair backboards.

INTRODUCTION

Poster sessions serve an increasingly important role at scientific conferences, a trend which began about 1970 with the advent of computer-based graphics. Resources available today for preparation of posters far surpass those of the 1970's, making it relatively easy to create effective posters.

A poster is a visual presentation, usually printed on paper which then is attached to some sort of backboard or stand to be viewed from a distance of about 5 feet. Materials such as graphs and charts, computer program code, or any illustrations requiring more detailed study are especially well suited for presentation in poster format. Equipment normally is not displayed. Several posters are displayed simultaneously over the course of the conference and attendees are free to browse the displays and study them at their convenience. Most conferences schedule 1-1/2 to 2 hour sessions during which poster presenters are available at their posters to engage attendees in individual or group discussion.

Posters have several advantages compared to traditional oral presentations. For conference organizers there is greater flexibility. A large number of posters can be presented in a relatively small space, whereas the same number of oral presentations may require concurrent sessions with multiple meeting rooms. Posters are available to attendees for a longer period of time than individual oral presentations, and they allow for prolonged, substantive interactions with colleagues. Because of their visual and concise nature, posters can be more effective in conveying information between poster presenters and attendees where English is a second language.

Posters also have several disadvantages. Not all types of research results lend themselves to poster format. Posters may require more time and expense to prepare compared to slides used frequently for oral presentations. Posters also may be more difficult to transport.

The purpose of this paper is to provide guidance on how to prepare effective posters for SAS® User Group conferences with a minimum amount of time and effort. The following discussion provides suggestions on content, poster design, lettering, graphics, materials, color, and construction methods. Recommendations and techniques are applicable to many other endeavors such as business presentations, showcase displays, scientific exhibits and (for those with children) science fair backboards.

CONTENT

The best posters usually make one to three major points which are so clearly presented that these concepts are retained by the attendee after viewing the poster. A carefully worked-out plan, based on knowledge of the subject and the audience together with logical organization of pertinent information, saves time and money and does more to ensure the success of the poster than any other factor.

The overall composition of the poster is controlled by the purpose, goal, and audience. Many times the purpose is to inform with the goal of introducing an idea. Another purpose may be to persuade with the goal of defending a position. In both cases, necessary facts must be presented to fulfill the purpose. Audience characteristics such as educational and professional levels influence the level of technical language used. The level of interest and information the audience brings to the presentation influences the amount of background information required.

In addition to the poster, SAS conferences either encourage or require a traditional written paper for publication in the conference proceedings. Write the paper first -- it makes poster preparation easier. If possible, use a word processor on a personal computer to write the paper because you will save time later by using some of the same text in the poster. Consider the poster to be an illustrated outline of the written conference paper. If needed, provide additional details through handouts, the published paper in the conference proceedings, and individual or group discussion. Remember also the obligations to present statements that are sound and valid and to give credit to others where it is due.

TITLE

An effective method for focusing on the topic is to develop a detailed working title that is appropriate for the purpose, goal, and audience. A good title gets attention, arouses interest, briefly identifies the subject, gives important high-impact words early, and indicates the purpose of the poster. Avoid titles that are too long -- they probably will be truncated in the conference schedule and their meanings will be lost. Rule of thumb is between 5 and 12 words for a title.

ORGANIZATION

Choose a consistent organizational theme for the poster. Common approaches include: organization by topic (such as various SAS procedures), problem-solution, opposing-points-of-view, and step-by-step.

Poster information generally is organized into three basic sections: introduction, body, and conclusion. The introduction, usually 10-20 percent of the material, introduces the topic and goals, and

provides any necessary background information. The body, usually 70% of the material, presents the information (methods, results, facts, graphs, charts, explanation) or persuasive points. Posters often illustrate how SAS software was implemented to solve a particular problem. In this section of the poster, present the SAS code, provide sufficient explanation of the code, and show the results (such as tables and graphics output) obtained from implementing the code. The conclusion, usually 10-20 percent of the material, reviews the facts presented and demonstrates how they lead to the goal announced in the introduction.

POSTER DESIGN

Overall poster design is constrained by the space available on the backboard (specified by the conference). SAS conferences provide and set up three backboard panels for each poster. There is a top panel measuring 4x1 feet with a sign typeset in large letters (sign usually provided by conference) listing the title, author, and affiliation. Below this top panel are two adjacent panels for displaying poster materials, the main panel measuring 4x4 feet (usable space 45-1/4 x 45-1/4 inches), and the adjacent side panel measuring 2x4 feet (usable space 21-3/4 x 45-1/4 inches) (Fig. 1). The panels are supported by poles so that the bottom of the main panel is about 2 to 3 feet above the floor. Normally the two display panels are set up at an angle to each other, so it is better not to have rigid display items cross from one panel to the next. Note that compact posters can be presented on the main panel, leaving the side panel empty.

Poster design consists of the orderly arrangement of all component parts -- lettering, text, graphs, charts, illustrations, and color areas into an artistic whole so that the poster attracts attention, inviting attendees to investigate the poster more thoroughly. Arrange materials in a logical sequence showing clearly the introduction, body, and conclusion of the poster. Simple headings such as "Problem", "Methods", "Results", and "Conclusion" are helpful. Group text and graphics so that comprehension is quick and clear. Add large numbers or arrows for further direction within sections so that it is clear whether the order of poster sheets is top to bottom or left to right.

Keep the audience in mind. Attendees viewing posters most often are standing rather than sitting, and may be fatigued from traveling and other

conference activities. They dislike cluttered and confused posters with large amounts of text to read. They also dislike lettering too small to be read without causing eye strain (such as normal typewriter print), or material placed too high or too low to be read without causing neck strain. Avoid anything which causes the attendee undue effort and adds to fatigue and discomfort. Keep the poster simple and clear, even if the topic is complex.

Figure 1 presents a scale drawing of the backboards used for SAS conferences, along with scale drawings for several 8-1/2 x 11 inch sheets of paper (these will be called "poster sheets"). The 8-1/2 x 11 inch size is used commonly for computer-generated output and it is a convenient size to transport. Assuming that the poster sheets are mounted on colored mat board with a 1/2 inch border, this means that between 12 and 15 poster sheets (depending on landscape or portrait orientation) can be displayed easily on the backboard. The scale-sized poster sheets can be photocopied, cut out, and arranged to develop a placement plan in terms of symmetry so that the poster does not have a hodgepodge appearance. The scale-sized poster sheets also can be colored with marking pens to test color selection (discussed later).

The next step is to make a plan on paper for the text and graphics. A very effective method is to use a word processor to create a storyboard (similar to that used in the advertising and film industries). Word processors work well at this stage of poster preparation because they have spell-check and thesaurus capabilities, many produce high-quality output in the desired typeface, and the resulting file can be imported into graphics software. If you prepared a written conference paper for the poster, you can start with the text of this paper and simplify it to focus on the main points.

During this stage decide which style of presentation best suits the various pieces of information. Choices include word slides, bullet slides, tables, bar graphs, line and area graphs, pie charts, box charts, prints of screen images, and drawings. Use word slides to present information in text form such as description of the purpose, problem, procedures, or abstract ideas that cannot be shown in graph or chart form. Bullet slides are a form of word slide where each idea stands on a separate line and is

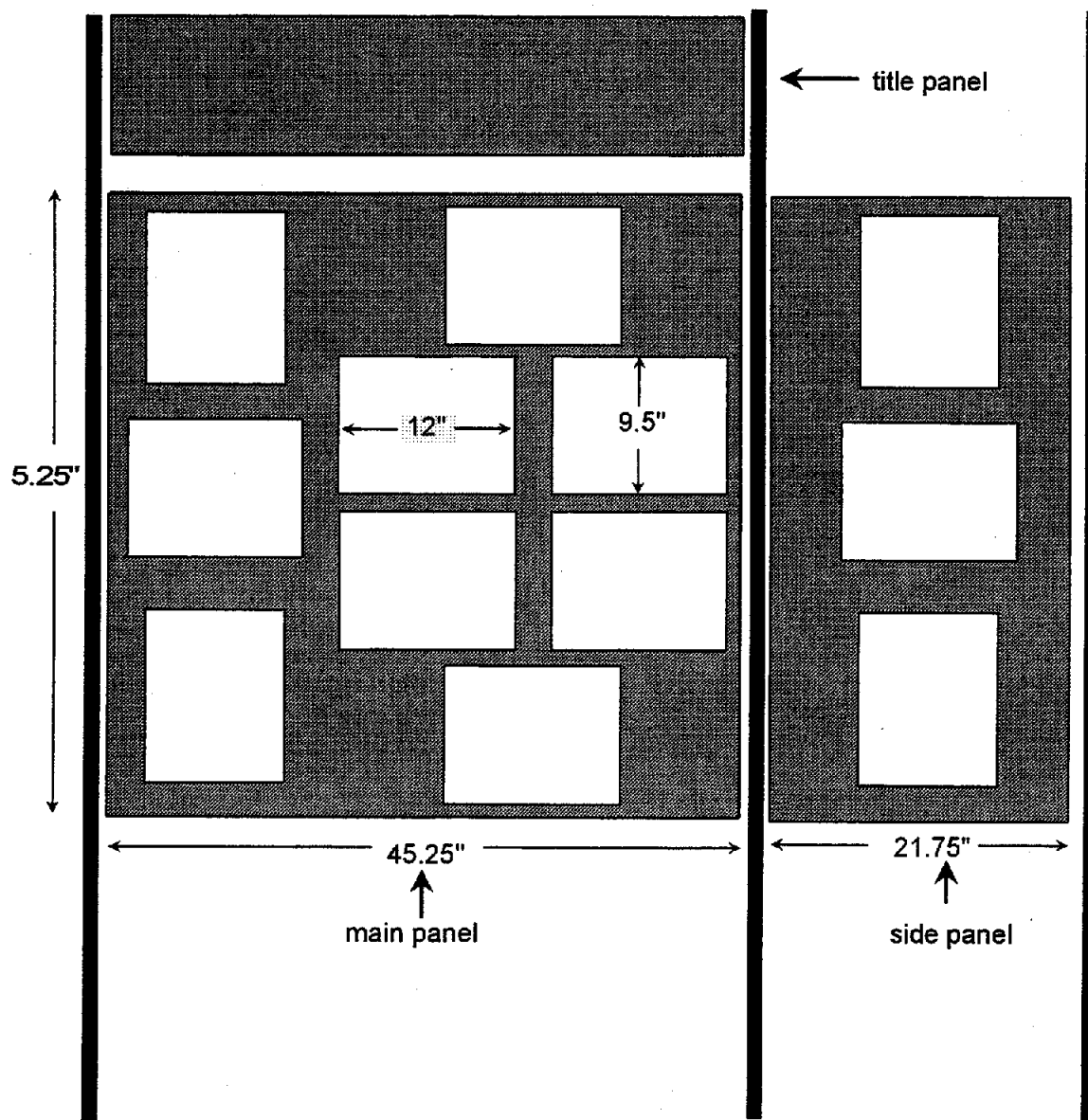
set off by a small symbol such as an arrow, dot, or star. Use tables to compare or display lists of items side by side. Choose graphic types depending on the nature of the data and the desired analysis. Use bar graphs to illustrate comparisons of discrete data. Use line and area graphs with continuous data to show trends. Use pie charts for presenting percentages. Note that comparisons among slices of pie in a pie chart are less obvious than comparisons of bars within a bar graph where there is a common baseline. Use box charts to diagram organizational structure and procedural steps. Consider using a print of the computer's screen image to illustrate the operation of an application such as a data entry system.

The storyboard document contains one page for each poster sheet. Word slides, bullet slides, and tables each will fill a page of the storybook, and they should be prepared at this time. Follow the text and lettering guidelines presented below. (If the word processor does not produce satisfactory results, plan on importing the text into the graphics software. This process may require that you first create an ASCII text file with the word processor, and then read the ASCII text file with the graphics software.) For graphics that will be produced later with graphics software, write information such as the title and key points about the graphic on the left side of the page, and leave the right side of the page blank for a hand-sketch of the graphic. Move the pages around and revise them repeatedly until you are satisfied with the content and organization. Check that the arrangement of poster sheets (symmetric or asymmetric) appears balanced and pleasing to the eye.

TEXT AND LETTERING

Descriptive text in word slides and bullet slides should be concise and meaningful. Rules of thumb are to use no more than 6 to 8 words per line and to use no more than 80 words per page. Upper case letters should be used for titles and short sub-headings, and the conventional combination of upper and lower case letters should be used for general text. Add bold and underline features as needed for emphasis. Use consistent language and be brief -- concise phrases are preferred over complete sentences. You should be able to read the page comfortably in 30 seconds or less. Be sure that the abbreviations used are familiar to the audience and that they are used consistently.

Figure 1. Scale drawing of poster backboards provided for each poster, showing an arrangement of 8.5 x 11 inch poster sheets mounted on backing with a 0.5 inch border. Measurements for main and side display panels are for usable space.



Grouping of words, line lengths, spacing of lines, and style of lettering are major factors affecting legibility. Split long lines of text into two or more lines because very long lines of text are difficult for the eye to follow comfortably. Make sure that there is more space between lines than between words. Provide sufficient space between lines to allow room for the ascenders and descenders of letters (such as "y" and "f"). Line up text evenly on the left margin, leaving the right margin ragged, rather than using newspaper-style justification which leaves unsightly gaps between words. Check that there is a good contrast between lettering and background.

Select suitable letter typefaces which are clear and readable. Avoid typefaces with overly-slender letters or serifs (short lines crossing the ends of main strokes of characters). Choose one or two sans serif typefaces (such as Universe or Helvetica) and use them throughout. Text, labels, and legends should be a minimum of 1/4-inch high (easily visible from a distance of 5 feet). Sub-titles and headings should be a minimum of 1-inch high.

Keep items within tables brief and label rows and columns completely. Use a minimum number of digits for numeric data. All tables should have titles and should be self-explanatory without having to refer to the text. Consider highlighting important areas within tables with a different color for emphasis.

By far the quickest and easiest method of producing lettering is with word processing or graphics software and a laser printer (good results also are achieved with dot matrix, ink jet, and thermal transfer printers). Corrections and modifications are relatively painless and multiple copies are available at the push of a button.

Effective lettering also can be produced by classic manual methods. These methods are described briefly, with the idea that although they are extremely tedious and time-consuming, they provide a way of producing lettering when computer resources are not available. In some cases it may be desirable to use these methods in conjunction with computer-generated graphics.

(1) Dry-transfer letters are affixed with a waxy substance to the bottom of a transport sheet of thin plastic. They are protected by a sheet of wax paper. With the protective sheet removed, line-up the transport sheet letter-side down over the artwork (usually on a light table), then rub the sheet

with a stylus immediately over the letter, transferring the letter to the artwork. Because the dry-transfer letters are damaged easily in transit and are not durable enough for poster display, you should produce originals on vellum paper and then photocopy. Uneven spacing and incomplete character removal are common frustrations. Correct mistakes by removing letters with a razor blade.

(2) Stencils are suitable for lettering headings and titles. For this method use a thin pen to draw the outline of the letters and then use a broad felt-tip pen to fill in the letters. Check that the stencil has edges or levels which raise the openings of the stencil above the surface of the paper so that the ink will not flow under the stencil. Correct spacing of letters can be difficult.

(3) The Leroy system uses a template set and various pen sizes to create letters. Correct mistakes using "white-out" typing correction fluid.

(4) The Kroy lettering system, an important graphics preparation tool beginning in the early 1980's, was a noticeable improvement compared to dry-transfer letters and Leroy lettering. This machine is somewhat similar to a typewriter into which a large template plate with the desired print style and size is inserted. Letters are printed one at a time on white or clear adhesive tape. Apply this tape to the artwork as desired and photocopy the final results.

(5) Die-cut letters made from paper or vinyl mounted on a coated backing sheet may be suitable for titles and headings. Peel these letters off the backing sheet and apply them to the desired position.

(6) Photographic enlargement can produce either black and white or color enlargements. Cost per individual sheet is somewhat high. Produce originals using an electronic typewriter with a carbon-film ribbon. Then photograph using a camera with a close-up lens and high-contrast film. Print onto high-contrast, heavy weight paper.

(7) Photocopy enlargement is an alternative to photographic equipment and has the advantage of quicker turn-around time. Fairly large enlargements are possible. Original must be of high quality, because flaws are more noticeable in the enlargement.

GRAPHICS

Graphics enhance poster presentations greatly. Included in this group are bar graphs, line and area graphs, pie charts, box charts, drawings, and other

artwork. Detailed discussion of good graphic design is beyond the scope of this paper, so please consult the series of articles entitled "Designing and Producing Effective Graphs with SAS/GRAPH® Software" written by Betsy Coming and the book The Visual Display of Quantitative Information by Edward R. Tufte.

Keep graphics clear and simple. Provide sufficient information (titles, labels, legends) for graphics to be understood without having to refer to the text. Make lettering at least 1/4-inch high and use a typeface consistent with the text. Make lines at least 3/32-inch thick. Use wording that is concise and uncluttered. Label axes. Keep scales simple (keep minor tick marks to a minimum) to make interpretation easy. Make symbols bold and distinct. Reduce the number of reference lines (for comparison) to a minimum and kept them distinct from other data lines. Use distinct and compatible patterns and colors to fill areas for ease of viewing and for fair perception of visual weight. Choose backgrounds to set-off graphics rather than compete with them. Strive for consistency. Use the same style of text, background colors, typefaces, and color scheme for similar data across all graphics.

For bar graphs, use different colored bars only where a change in color aids in separating different groups of data. Limit the pie chart to a maximum of seven slices. Colors may be used more than once in a pie chart, but not for adjacent slices. Avoid placing multiple pie charts on a single page, because with more than one pie, the viewers' eyes move from pie to pie trying to devise correlations and contrasts. Stacked bar graphs would be more effective in this case. Keep box charts simple, and use different colors to highlight important areas or similar colors to group common elements.

Evaluate the balance between filled and empty space. In general, center graphics in relation to the edges of the poster sheet. This balances the image and keeps the viewers eye on the center. Also, place titles and information consistently on graphics so that the audience knows where to look on each image.

Consider introducing humor into the poster presentation through the use of appropriate cartoons. Discussions about SAS software do not have to be strict and serious. Many cartoons are available as clipart images that are compatible with

many word processing and graphics software packages. Make sure to acknowledge the source of the clipart image in any publication intended for widespread distribution.

A simple method to produce prints of computer screen images (SAS 6.08 under a windows-type environment) is to copy the image into the clipboard so that it can be brought into a word processor or graphics software package for printing. Press the "print screen" keyboard button to copy the image into the clipboard, switch to the word processor software, and select "paste" to import the image. Color prints are especially attractive, but not everyone has the necessary resources. It is easy to apply color to a monochrome print of white letters on a black background with colored highlighter marking pens so that the print resembles the original screen.

COLOR

Color makes posters more attractive, inviting, and easier to understand. Use color within text and graphics to emphasize points as needed, to clarify graphs and diagrams, and to prevent monotony.

Indiscriminate use of color can detract from an otherwise well-designed poster. Use colors as visual cues, but use them consistently. Select colors that have the strongest contrast to each other -- light colors against dark backgrounds, dark colors against light backgrounds. Also be aware of any potential subliminal impact such as using red in financial charts, unless it is related to a deficit. Avoid red/green, blue/green, blue/purple, white/light-pink, and black/maroon combinations to distinguish groups of data in graphics because color blind attendees will have difficulty seeing the difference in color.

Most posters sheets are printed on white paper. Add color by mounting poster sheets onto larger-sized colored backing. Color in backing for poster sheets can be a real asset in defining the overall organization of the poster. Use similar colors for related materials and place them in close proximity in the final layout.

The backboard provided at the conference is covered with royal blue fabric. Choose combinations and arrangement of colors which enhance the poster organization. More than four colors (including white) tends to be excessive.

Consider the following color combinations which are attractive with royal blue:

- Deep pink, white, turquoise
- Red, white
- Dark gray, pink, white
- Green, yellow
- Lavender, black
- Purple, green, magenta
- Light blue, green, white
- Yellow, deep pink, green

Fluorescent colors are very striking with the royal blue, but avoid fluorescent orange because it is too bright.

If you choose a dark background (such as black) instead of white for the poster sheets, use light-colored lettering and light-colored backing. White, yellow, cyan, pink, and magenta work well for lettering on dark backgrounds, whereas blue, red, and green are poor choices.

Another option for introducing color is to print or photocopy the text or graphic onto colored paper or card stock. Make sure that there is sufficient contrast to see the lettering clearly.

MATERIALS, PREPARATION, AND ASSEMBLY

Poster sheets commonly are printed on regular white paper (20# weight) suitable for laser printers and photocopy machines. Card stock is an attractive option because it is more rigid than most paper and is easier to handle for mounting onto backing. A third option is to print the poster sheets on self-adhesive label material (discussed below).

Colored backing to which the poster sheets are attached is made of construction paper, mat board, or foamcore. All of these materials are available at most art supply and craft supply stores in a wide range of colors. Mat board and foamcore are more rigid than construction paper and have the advantage of preventing the poster sheets from warping and curling.

It may be necessary to cut down or combine 8-1/2 x 11 inch poster sheets to obtain the desired size for various sections. Use a paper cutter to ensure that edges are cut straight and that corners are square. Mat board and construction paper are easy to cut with a paper cutter, but foamcore must be cut with a razor or sharp craft knife. A mat cutter and straight edge (available from art supply stores) make it much easier to make long straight cuts in

foamcore. Cut the backing to the proper size either before or after mounting the poster sheets. A 1/2-inch border of backing around the poster sheet is attractive.

Because foamcore is very lightweight and about 1/4-inch thick, interesting 3-dimensional effects are possible by layering pieces of foamcore. Special shapes such as arrows can be cut out from foamcore with a razor. Use white craft glue or rubber cement to fasten the layers of foamcore together.

Three reliable methods of mounting poster sheets to the colored backing are rubber cement, spray adhesive, and permanent dry mount. Rubber cement adhesive is applied using a brush to the back surface of the poster sheet which then is positioned and affixed to the backing. It should not be used when the poster will come in direct contact for a prolonged period of time with excessive heat, sunlight, or electric light. The process is time-consuming and messy, and care must be taken to apply the cement evenly and to affix poster sheet to the backing before the cement dries. Spray adhesive (such as 3M Photomount) is applied to the back side of the poster sheet which then is positioned and affixed to the backing. This method is inexpensive, but temporary, lasting reliably for a few months. Permanent dry mount (service available at art framing stores) uses a sheet of adhesive paper between the artwork and the backing (foamcore is preferred). After positioning, heat is applied (usually with a heat press) and the artwork becomes permanently fused to the backing. Fairly large-sized originals can be dry mounted. The process is fairly expensive, but results last for years.

An efficient alternative to using adhesives and cements is to print the poster sheets directly onto shelf-adhesive label material. This method is a real time saver. Full size 8-1/2 x 11 inch sheets for use in laser printers are available from office supply companies. Allow a couple of practices to become skilled at handling full sheets of shelf-adhesive label material. You can achieve good results by peeling down a small portion of the protective backing across the top of the label. Carefully align and apply the exposed adhesive surface to rigid colored backing material (mat board or foamcore, not construction paper). Then with one hand continue to peel down the remainder of the label's protective backing, while the other hand

is smoothing the label surface to avoid trapping pockets of air. To avoid difficulty in centering the self-adhesive label on the colored backing, use colored backing which is larger than the desired final size, apply the label, and then cut off the excess.

At the conference, attach the colored backing to the backboard fabric with self-adhesive velcro dots (supplied by the conference). Few velcro dots are required -- one at each corner of the backing usually is sufficient. One square centimeter of velcro will hold about 12 ounces. Do not use pins or tape.

ACCESSORY MATERIALS

Attach a pocket to the backboard (with velcro) containing handouts or related reprints to provide further detail. A smaller pocket can be used to collect business cards from attendees requesting additional information. Consider attaching a picture of the author so that attendees will know to whom additional questions should be addressed.

Bring a supply of items such as rubber cement or glue stick, black fine-line marking pen, eraser, and scissors to the conference for last-minute fixes and touch-ups. A supply of your own business cards also is useful. Take a photograph of the finished product for future reference.

CONCLUSIONS

Posters provide an excellent means of presenting information in visual form at SAS conferences. Computer resources available today make it relatively easy to create effective posters. As with traditional oral presentations, knowledge of the subject and audience and good organization of materials are essential. Quality and arrangement of text, lettering, graphs, charts, illustrations, color, and use of materials are key factors in preparing posters that attract attention, hold interest, and present concepts so clearly that they are retained by the attendee after viewing the poster.

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