

Preparing Effective Posters for Professional Presentations in the Data Sciences

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Scholarship takes many different forms. From oral presentations to panels to round table discussions, they all have a prominent place in the dissemination of technical information. Poster presentations, however, are unique in that they emphasize visual and artistic information alongside the more traditional text-based findings. Recently, the Society for Clinical Data Management (SCDM) has expanded the types of programs offered at its annual conference to include poster presentations. Now in its fourth year of implementation, scientific poster presentations appear to have solidified their spot in the broader scientific program.

Rowe and colleagues have reported that not only are posters a common format for presenting biomedical research, but that medicine and healthcare now account for approximately 70% of all scientific posters presented at academic meetings and conferences^{1, 2}. The purpose of this article is to educate SCDM members about the purpose of scientific posters, their key components, contributions to science and the profession, and recommendations for best practice.

Purpose of Scientific Posters

The purpose of a scientific poster is to describe the objectives, methods, and relevant findings of a study in a rigorous and visually appealing way—one that includes text as well as pictures, graphics, or other visual images. Poster presentations are often used for completed studies as well as interim steps in larger studies for which reportable data are available.

Key Components

Many presenters think of 'posters' as simply the trifold or stand-up cardboard easels of one's elementary school years. And, while cardboard or foam board posters are still used in some settings, scientific posters have evolved to more finished types of displays that include paper, fabric, and even electronic media. Because posters are citable documents in their own right, they should contain the same rigor and general structure of other scientific reports. The five basic sections of a scientific poster are identical to those listed by Ittenbach et al. as key components of a scientific abstract³:

- **Background** Summary statement of the science to date, including key findings and gaps in the professional literature. All information presented should be based upon the scientific literature as opposed to speculation or personal perspectives or preferences.
- **Objectives** Organizing framework for the study. Acceptable forms of objectives include hypotheses, research questions, or specific aims.

- **Methods** Description of subjects, clinical or operational procedures, and analytical methods used.
- **Results** Findings from the analytic phase of the study. These findings may take many forms: quantitative or qualitative, descriptive or inferential. All findings can be valuable if analyzed with rigor and within the context of the scientific method.
- **Conclusion** Summary statements pertaining to each objective and recommendations for practice or additional inquiry.

Because posters are finished reports in their own right, they should have two additional sections not generally included in abstracts:

- **References** Listing of sources used in the creation of the poster.
- **Acknowledgments** Formal recognition of individuals or funding sources that made the research possible.

In terms of the poster's physical features, posters may take any size. However, the maximum allowable space at most professional meetings is 4' (height) x 8' (width). Because the frame itself often accounts for several inches of that space, presenters are generally encouraged to limit the size of their poster to no larger than 3' x 6', with fonts that are easily readable from 6 feet away.

Contributions to Science and the Profession

As mentioned previously, posters now constitute a well-accepted means of sharing one's findings at professional meetings and conferences in the biomedical sciences¹. Beyond the benefits of dissemination, scientific posters have also found value for teaching, professional skill building, and interdisciplinary collaboration⁴. In short, posters have a lot to offer not only the researchers themselves but the broader and evolving discipline of clinical data management, as well.

Posters offer researchers a number of distinct advantages over other types of formats. For example, studies with prominent visual or graphic components, including analytic findings, patterns, or processes, posters offer an ideal format to engage the reader. Second, posters are most appropriate when there are one or two main findings to report⁵. Third, posters expand the range of informational sessions available at a conference, resulting in a two-fold benefit that gives attendees more options for learning as well as more options for involvement (benefitting both the attendees and the society). Many professionals shy away from oral presentations but thrive when given the opportunity to share their research with others in a more individualized setting. Fourth, for

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professionals early in their career, posters offer a pathway for entry into scholarly research. With the aid of an experienced mentor, most researchers can quickly transfer study essentials to a more visual format.

As appealing as posters may be to some, they are not an ideal solution for all. For example, they may not be a good choice for highly complex or highly conceptual studies for which there are limited visual components. Posters with rich or electronic media are an exception to this rule. Second, posters require that interested colleagues come by and read most if not all of the material when both are available. Sometimes just finding a specific poster in a packed venue can be a real challenge. Third, posters are costly to make. The larger the poster, more sophisticated the display, better the materials and tighter the deadline, the more costly the posters will be to produce, sometimes as much as \$200. Finally, while posters are often indexed by academic databases, they are often hard to access following the conference².

Recommendations for Best Practice

Poster presentations have their own niche within professional meetings. Blending both artistic and technical detail, posters describe the objectives, methods, and relevant findings of a study in a rigorous and visually appealing way, but within a well-defined 4' x 8' area. Listed below are some suggestions for optimizing the impact of your poster.

Know your audience. The most important factor when making any presentation, including posters, is to know your audience—know their terminology, expertise, and expectations. Poster presenters have the flexibility to be creative but within professional limits and norms. Too much creativity can detract from the science and is not likely to be well received by the scientific community.

Presentation appeal. Posters are designed to be viewed from a distance of 4 to 6 feet away, often in spaces where people are able to gather in large numbers. As such, it is recommended that authors use sans-serif (not ornate) fonts with a minimum font size of 20pt for text and 48pt font for titles⁶. Further, researchers are encouraged to be consistent across sections and limit the accentuating characteristics (colors, fonts, and highlighting) to a few types of each so as not to be distracting to the overall message of the poster. When considering colors, be sure to get others' advice on what looks good together—remember, you are sharing your science, not hosting a 'fire-sale'!

Figures, graphs, and illustrations. Visually appealing artwork is an essential component of all poster presentations as they are the best vehicle to draw interest and spark discussions with casual audiences. Figures should be uncluttered, use primary colors with consistency, and deliberate in design to communicate a clear message. Similarly, graphs should be accurate, display relevant scale ranges, labeled with appropriate units, include a legend, and use primary colors to highlight differences between comparators. Illustrations and

other artwork should be comparable in size and dimensionality to one another and complement the text. Importantly, artwork should not stand alone and should be referenced in text and laid out in correct chronology that coincides with the intended narrative of the poster.

Accompanying talk. Many societies require that posters be displayed for brief periods of time while others, like SCDM, require that the posters be displayed for the entire conference. Either way, most presenters are asked to appear with their poster at some point during the conference to answer questions from interested colleagues, thereby making the poster presentation an actual 'presentation.' Miller⁵ suggests developing a brief synopsis of your poster to help with the questions and answers as they come up. This is particularly helpful for those who are new to presenting or are somewhat shy in more formal settings. Being sure to have handouts, business cards, and/or copies of the poster for others to take away is a nice finishing touch and increases the possibility that your work will be cited and used by others later on!

Printing. Not all vendors are equally skilled at printing posters. Take your time to find a printer that can advise you on fit and finish of your poster to assure the best product possible (e.g., sizing, colors, material, finishing touches, logos). Many printers offer proofreading and graphic support services that can be well worth the extra cost. Some even offer handouts and 24 hour delivery to the conference. The more experienced the vendor is with posters, the fewer surprises you will have with the finished product.

Beginning with the right template. Depending upon the actual software that you will be using, you may be restricted to a specific size poster. For example, if you want to have a poster that measures 36" x 72," you will need to begin with an 18" x 36" template that can be doubled in size. But, if you desire a poster that is 36" x 60" you will need to begin with a template that is 18" x 30." In short, not all templates can be expanded to all sizes of posters without loss of resolution or proportionality. Beginning with the correct template is essential to a professional looking poster.

Make time your ally. Although posters appear simple and straightforward when finished, they can be deceptively complex to compose. As with all research documents, be sure to leave enough time to adequately prepare your poster, with sufficient time to review and seek feedback from others, most especially your co-authors. Professional societies like SCDM very often have additional guidelines pertaining to the presentation of the posters. It is recommended that before you submit your poster for printing, you have read and reread the society's guidelines to make sure that your poster is in compliance with the conference's expectations and requirements.

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References

1. Ilic, Dragan, and Nicholas Rowe. "What is the evidence that poster presentations are effective in promoting knowledge transfer? A state of the art review," *Health Information Libraries Journal*, vol. 30, no. 1, 2013, pp. 4-12.
2. Rowe, Nicholas M. *Tracing the 'grey literature' of poster presentations: A mapping review.* *Health Information and Libraries Journal* (in press).
3. Ittenbach, Richard F., et al. "Preparing a Successful Scientific Abstract for Professional Meetings in the Data Sciences," *Data Basics* (in press).
4. Murray, Rowena, et al. "Visual literacy: Designing and presenting a poster," *Physiotherapy*, vol. 84 no. 7, 1998, pp. 319-327.
5. Miller, Jane E. "Preparing and presenting effective research posters," *Health Services Research*, vol. 421, no. 1 (Pt 1), 2007, pp. 311-328.
6. Nicol, Adelheid A. and Penny M. Pexman. *Displaying your findings*, American Psychological Association, 2003.



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