Effective Reporting, Second Edition

By

Liz Sanders and Joseph Filkins

THE ASSOCIATION FOR INSTITUTIONAL RESEARCH

1435 E. Piedmont Drive, Suite 211
Tallahassee, FL 32308

Printed in the United States

ISBN 1-882393-17-1

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PROLOGUE

It is with great pride and enthusiasm that I write this brief prologue to the second edition of *Effective Reporting*. Now ten years old, the first edition was written to recognize the importance of oral, narrative, and graphical presentations of the work of institutional researchers. The intent was to provide simple, clear, and useful information about how best to present research to a variety of audiences. Ten years ago, websites were relatively rare; now, they are central for communicating both to internal and external audiences. Ten years ago, text messaging was in its infancy; now, we Twitter in short phrases in real time. Ten years ago, we had access to some graphics programs; now, technology lets us all create multi-media presentations using sound and motion to augment words and pictures.

Some things haven't changed, however. Then, and now, practitioners familiar and comfortable with dense tables of data, arcane statistical formulas and scholarly language–and also pressed by ever-increasing workloads and accountability demands–focus more on the content of their work than on communicating it. Then, and now, we need simple, clear, and useful information about how best to present research in a variety of modes, including the Web. Then, and now, we need to take time and give careful consideration not only to what we are communicating, but how.

Liz Sanders and Joseph Filkins have given us new ideas and brought *Effective Reporting* to the 21st century. I am sure my IR colleagues join me in thanking them for their fine work.

Trudy Bers
July 2009

INTRODUCTION

This is the second edition of the *Effective Reporting* monograph published by the Association for Institutional Research (AIR). AIR's mission is to improve institutional research (IR) in postsecondary education and to provide professional development for researchers. Thus the organization's focus on reporting is obvious. In addition to having research skills and a strong analytical mind, the institutional researcher needs to be able to communicate his or her findings effectively in order to affect decision-making. That is why, in essence, we can not stress strongly enough the importance of effective reporting. A good analysis sitting under a stack of papers on a Vice President's desk, or languishing for weeks in an executive's mailbox is, regardless of the statistics involved, simply not a good analysis.

After reviewing the first edition of *Effective Reporting* (Bers & Seybert, 1999) for the AIR Foundations Institute course by the same title, we felt that while that volume provided a strong foundation for institutional researchers, there had been important changes in the field that should be reflected in a new publication. Since the release of the first edition in 1999, the information world has changed dramatically, and the Internet is now a critical part of our communication strategy. New software applications make the construction of graphic depictions of data easier technically, but ease of production does not necessarily translate to as clear a presentation of data as we might wish. In addition, new literature on the importance of graphical design for quantitative information augments the foundation built by Edward Tufte in the 1980s (Tufte, 1983). And, frankly, information overload continues to plague us as institutional researchers, so the need to cut through the noise is as important as ever.

In addition to these changes in the field, many of the core drivers for creating the first monograph remain true today. As was the case then, even today, in 2009, examples abound of poor quality graphics and ineffective visual representations of quantitative data. While in the past, our challenge was to get researchers to use more sophisticated graphics packages, today our challenge is to move researchers away from simply relying on the software's default settings for graphical outputs and to encourage them to take the needed time to create an effective graphical display—one that communicates quantitative data in a way that the reader understands and remembers.

With this edition, we hope to achieve what the original volume did so well—to provide a short, user-friendly, comprehensive guide for institutional researchers. While effective reporting is critical to our success, most researchers do not have the time or resources to commit to a thorough review of the literature on effective presentation of quantitative data. Researchers need practical, hands-on resources and examples to both encourage and enable them to think creatively about data presentation. This monograph provides short and concise advice, checklist guides, and examples of good and not-so-good representations of quantitative data.

We begin the volume by backtracking a little to the context of reporting and why institutional researchers do what they do. Institutional researchers exist, in large part, to support fact-based decision-making. In a typical year, we conduct analyses for university administrators from the President to the Directors of special programs. There is no shortage of work, nor is there a shortage of questions requiring data-based answers. However, the nature of the work can discourage an unseasoned researcher. Often, there is no definitive answer, contrary to the desire of the research sponsor; often, the requested analysis does not lead to a decision, but to a request for additional analysis.

In cases like these, it is not that the institutional researcher provides unusable information, but rather that the information generated from any particular analysis has an indirect path to decision-making (Weiss, 1980). The information from any one analysis joins all the other information generated by all the other inquiries on the topic—along with people's informed and not-so-informed opinions—to create a context for informed decision-making. The information from these analyses frames problems, defines issues, and orients decision-makers. For a researcher's work to be a part of this process, it must first reach its intended readers and deliver a message perceived to be both relevant and important in a format that is understandable, inviting, accurate, and memorable. An effective report is one that has cut through the noise, connected with the reader, and successfully contributed to informed discussions.

After this conceptual discussion of purpose, we get down to business with the specifics of what goes into reports and how presenting information via a written report differs from (and is similar to) sharing information via an oral presentation. While the researcher may feel more comfortable writing up her report in the privacy of her own office (or cubicle, for that matter) and then posting it on the website, a critical part of the researcher's job is to be an advocate for her analysis and findings. This often means passing on key findings to decision-makers by presenting results in meetings and developing good presentation skills, not only for formal presentations, but for more informal, often impromptu opportunities that may arise.

There are also important distinctions between the kinds of information the researcher presents. For example, the researcher may share access to raw data in spreadsheets; he may share tables of information that have been distilled from the raw data in a first level of analysis; and/or he may share insights gleaned from analysis of the data. Each time the institutional researcher begins an analysis, he must ask himself: who is the audience? what do they really need? how can I best communicate with them?

Effectively reporting information is both an art and a science, as we have learned from our review of literature on how the brain perceives information. A good visual display of information, whether a table or a graph, draws the viewer in, helps her understand what the institutional researcher is trying to communicate, and helps the viewer remember the important information so that it can be used later. Guidelines and principles for constructing good graphs are reviewed in the last part of the monograph and will provide quick reference for the institutional researcher.

In this monograph, we follow the naming convention for visual displays outlined by Kosslyn (2006, p. 228). Visual displays can convey quantitative information or qualitative information. *Graphs* convey quantitative information (e.g., the number of freshmen in the fall term), even if the measurements apply to discrete entities (e.g., states). In contrast, *charts* and *diagrams* convey qualitative information. A *chart*, such as an organizational chart of a university division, conveys information about qualitative relationships among entities. *Diagrams* are schematic pictures of objects or events that rely on conventionally defined symbols (e.g., arrows to indicate force or perhaps direction). A visual representation of the process an Admission office undertakes to complete a freshman "Search" mailing, from data pull to responder-email sequencing, is best depicted in a diagram. While there are other terminological conventions, this convention is appropriately descriptive for our purpose. You will note that we have labeled all visual displays throughout the monograph as figures, for ease of referencing.

But even before the decision-maker can connect with the research and store findings in long-term memory for a later meeting with the Provost, she has to receive it. We will discuss push and pull strategies for disseminating information, when each is most appropriate, and the role of the Web in communicating with your audience. In today's data-dense, insight-impoverished environment, waiting for the Vice President to come to you may not be the most effective way to advocate for your research findings. While the Web may be a critical piece of the communication strategy, relying on the Web alone is not the answer, as the IR website can often be somewhere between provocative draw and an overcrowded storage basement.

As Bers and Seybert (1999) mentioned in the Introduction to the monograph's first edition, we have also learned through experience that work enhanced by high-quality visual displays of quantitative information is received more favorably, travels farther, and touches more decision-makers than a text-dense analytical report, and yes–it is challenging and fun (yes, fun) to create visual displays of data. And, as effective reporting requires thought and planning and an understanding of the *who, what, why,* and *how,* we begin this monograph with some general observations about a Vice President's overcrowded desk.

Liz Sanders and Joe Filkins
July 2009

ELECTRONIC APPENDIX

A decade ago, Trudy Bers and Jeffrey Seybert coauthored the first edition of *Effective Reporting*. As these authors pointed out, the decision to use or not to use color in a presentation or report may influence the audience's perceptions of the presenter's professionalism, in spite of the content quality. In this second edition of *Effective Reporting,* authors Liz Sanders and Joe Filkins are likewise using the Web to illustrate the use of colors in graphical presentations to enhance the "black and white" graphics presented in the book. The figures in the volume, with color, were created and are posted at: www.airweb.org/EffectiveReportingGraphics. As in the first *Effective Reporting* volume, we believe that the graphic illustrations contained in this "electronic appendix" will increase the usefulness of this updated edition of *Effective Reporting*.

Richard D. Howard
Editor

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CHAPTER 1

THE CONTEXT OF REPORTING

The Purpose of Institutional Research

The role of the institutional researcher is to conduct research to provide information which supports institutional planning, policy formation, and decision-making (Saupe, 1990). Now, take a stroll down the hall to your Director's or Vice President's office and take a look at his desk. You will likely see stacks of reports, analyses, articles, books, and other documents containing valuable pieces of information that will contribute to discussions about policies and decisions on campus. Quite probably, some of your very own reports are in these stacks already. How, then, do we as institutional researchers ensure that we are successful in advancing our research through this already cluttered decision-support environment?

This can be a daunting challenge for a new researcher. In a typical year, we will conduct analyses for university administrators from the President to the Directors of special programs. There is no shortage of work, nor is there a shortage of questions needing data-based answers. However, there are often few definitive answers, contrary to the desire of the research sponsor, and often the requested analysis does not lead to a decision, but rather a request for additional analyses.

In this chapter, we will talk about how information is used in decision-making, and how the institutional researcher can best prepare himself to deliver useful information.

How Information is Used in Decision-making

Feldman and March (1981) summarize important differences between how we think information is used and how it is really used in decision-making. We assume that relevant information will be gathered prior to decision-making, information that is gathered will be used, available information will be used before new information is gathered, needs for additional information will be determined before new information is requested, and information irrelevant to the decision will not be gathered.

What we find when we observe how information is being used can be quite different, according to the authors:

- Much of the information that is gathered and communicated in organizations is not relevant to the decision.
- Much of the information that is used to justify decisions is collected and interpreted after decisions are made.
- Much of the information gathered in response to requests for information is not considered in making the decision for which it was gathered.

- More information is requested, regardless of what is available.
- Complaints are made that the organization does not have enough information to make a decision, while available information is ignored.
- The relevance of the information to the decision being made is less conspicuous than the insistence on information.

The authors suggest that, in reality, information is used symbolically to justify that we are good managers and decision-makers.

Each college and university is different, and each has its own culture. While this research may not reflect your experience as an institutional researcher, it is likely that elements of this description are true for most researchers. The route from data to decision is often not clear and—even in the best case—may be circuitous. Weiss (1980) suggests that policymakers use research less to arrive at decisions than to orient themselves to problems. The information that is used has bubbled up, or percolated, into university discourse and become part of the stock of knowledge shared in informed discussion. In this way, information shapes decisions and the context in which decisions are made.

The information from these analyses frames problems, defines issues, and orients decision-makers. For a researcher's work to be a part of this process, it must first reach its intended readers and deliver a message perceived to be both relevant and important in a format that is understandable, inviting, accurate, and memorable. An effective report is one that has cut through the noise, connected with the reader, and successfully contributed to informed discussions.

In this monograph, we discuss how to prepare an effective report with content, tables, and graphics that connect with the reader to become part of the stock of knowledge for informed discussion.

Preparing for Effective Reporting

When we talk about effective reporting, we are not just talking about how to format and write a report; we are talking more broadly about how to effectively report information. Before any data are collected, any SPSS analysis is executed, or any pie graph is generated, it is important to organize the research project. A good researcher starts any research project by asking the right questions. Usually, the researcher asks these questions sequentially, but often new information becomes available during the process that requires the researcher to circle back to earlier questions to revise the research plan. We call this list of questions the *Research Checklist:*

- **Who is the client of my research?** The client is the individual (or office) who commissioned the research and resulting report. He or she is probably the primary user of the information and may stipulate deadlines and delivery styles. For example, the client could be the Provost who is looking for an analysis of key factors related to student persistence. She may be a Director of Enrollment Management seeking insights about inquirers, applicants, and enrollees.

  In the next chapter, we discuss the importance of knowing the client and audience in more depth. For the purposes of the *Research Checklist*, keep in mind that the client may not be the report's sole reader. It is typical for the researcher to receive requests for reports that must meet the needs of more than one audience.

- **What information is the client requesting?** Typically, the client's question will seem clear enough on the surface to provide the researcher with the necessary direction. It is important, however, to clarify any issues about the analysis prior to beginning. For example, for the Provost requesting information about the factors related to persistence, the researcher may ask follow-up questions to clarify whether this question relates specifically to freshman retention or whether retention of students transferring into the institution is also a concern, whether or not to differentiate students who participate in special freshman programs from those who do not, whether historical trends over time are important, and whether freshman persistence is the focus or the interest includes persistence over multiple terms through degree completion or departure.

  Once the researcher has resolved the follow-up questions, she determines whether information already exists that answers these questions. The client may be unaware of existing data and reports.

- **Why is the client asking for this report, and what is its intended use?** It is important to know why the client is requesting this information, in order to (a) make sure the analysis is as complete as possible and (b) produce a report that is most likely to be used in discussion and decision-making. Is the report intended to inform, persuade, or both? Is the client asking for the report to comply with external reporting requirements, to meet the needs of senior management or the Board of Trustees, to fulfill requirements for accreditation or program review, to fulfill a public relations need internally or externally, to present basic information about the institution or its students, to investigate an issue or problem, to counter existing information about an issue or problem, to support university planning processes, or to record historical trends?

  Often, a report has more than one purpose and may have a stated, intended purpose and another secondary purpose that may be less visible—or, even incompatible. For the client requesting a report on freshman persistence, for example, the researcher may want to provide historical trends on freshman cohorts that mirror officially reported figures, data reflecting factors thought to be important to retention, comparative data from peer institutions (if available), and breakouts by subgroups such as those freshmen who meet standard admission requirements and participants in special programs. Often institutional anecdotes and so-called urban legends shape conventional wisdom about an issue, but data and information may show these to be unrelated to reality. When the researcher knows the intended purposes, she can manage the client's expectations more effectively and prepare a report that is most likely to be useful.

- **What information does the client really need?** Knowing what information the client thinks she wants, and what she intends to do with it, provides valuable information to the researcher about what the client may really need. One of the greatest challenges for an institutional researcher is to prepare a report that answers the client's questions, because often the client does not know what she really wants (until she sees the report she has requested and then realizes it is not responding to her questions). This situation may happen for many reasons: the client does not know what information is available, the client speaks in more general policy terms and the researcher speaks in more data-specific terms, or the client has not clearly linked the report's answers to her questions.

An example will help to illustrate how this miscommunication can occur. Let's say the Vice President, the client, is interested in sharing information in an upcoming cabinet meeting about when and why students leave the institution, and asks the institutional researcher for a report on factors influencing student persistence. While the client sees this as a specific question, the analytic process requires more detail. Variables must be defined, student cohorts must be chosen, and numbers must be calculated. The institutional researcher hears "retention" and prepares a report on freshman retention based on external reporting standards of fall-to-fall freshman enrollment. When the researcher delivers the report, the client considers the report incomplete because the researcher has not given her information that answers her questions. Upon further discussion, the researcher learns the reason for the client's original request, and the purpose of the report, and realizes that this information would have provided valuable clarity prior to the analysis. Instead, additional analysis and editing must be done in order to provide the client with useful information.

- **With whom will the client share the report?** Knowing the answer to this question is important for at least two reasons. First, the researcher needs to prepare a report that can be understood by the intended audience. If the client is very data-oriented and knowledgeable about statistics, the researcher's inclination may be to prepare a report that summarizes statistical procedures and data in a detailed, analytical style, as one researcher would prepare a report for another researcher or a professional journal. However, if the client intends to share the report with a secondary audience that is not statistically savvy, these readers may not connect with the report, and the opportunity to influence the decision-making process may be lost. The researcher should prepare a report that will be effective with both intended audiences.

  Second, if the client plans to share the report with others, the report should be prepared for formal distribution. **A good rule of thumb for the institutional researcher is to prepare any piece of information as if it will be shared with the President of the institution.** This approach minimizes the confusion that quick, informal analyses can cause due to incomplete data definitions, unclear labels and missing data sources. This approach also ensures that an executive summary of the key findings is a standard part of the report, another good rule of thumb for the institutional researcher.

  Finally, if the report is intended for an external, public audience, additional time may be needed to obtain design, editorial, and production assistance and to send the report for printing. A public document of this nature is likely to take on a different tone and character than a report for internal use.

- **When is the research needed?** It is important to clarify at the outset when the client needs the report and when the client plans to share the findings. Understanding when the client may be planning to share the research tells the researcher how hard or soft the deadline is. If the report is complex, the findings politically charged, or the client's needs are to some degree ambiguous, the researcher should plan to share drafts of the report to confirm that the analysis is on track, and include this step in the timeline.
- **How is the report best prepared?** This question relates primarily to the style in which the report is produced, and the answer is influenced by the institutional culture, the intended audiences, and the style of the IR office. The researcher should consider the following questions:
  - Should this report be a written document or prepared in presentation style?
  - If this is a written document, is the analysis best prepared as a full formal written report or a short summary memo?
  - Are data tables and graphs included in the body of the report, or are they presented as attachments?
  - Will the report be produced as a formal document for public distribution or will it remain as an internal report or working document?
  - If this is a presentation, is this a detailed analysis or a summary of the findings?
  - Will the presentation be shared with the intended audience? If so, will the client provide input into the final presentation?
  - Will the presentation be shared beyond the intended audience? Does that audience require a different format or media?

  An example may help illustrate the researcher's choices. The client requests information on persistence to present at the next monthly meeting of the committee on the freshman experience. Depending on the institutional culture, the client may want to prepare an executive summary of a written report that can be distributed and digested at the meeting. Alternatively, the client may want to walk through a presentation-style report informally with the group or may want to build this presentation herself, using the research report as part of the input. The client may also want the institutional researcher to prepare the formal presentation for the group.
- **How is the report best delivered?** This is a question of modes of distribution: paper vs. electronic; push vs. pull. Again, this is in part driven by the client and the culture of the institution. **As a rule of thumb, a multi-pronged proactive approach may be most effective**: push information out to the client via an executive summary (which can be oral or written) and pull readers in to