ORGANIZING AND ANALYZING YOUR DATA

Tips for conducting program evaluation

Once you have collected your evaluation information, you must determine the best strategy for organizing and analyzing it. The right analysis approach will help you understand and interpret your findings, and ultimately use them to guide program and policy improvement.

In this tip sheet, we provide some basic options for organizing and analyzing quantitative and qualitative data. Quantitative data is information you collect in numerical form, such as rating scales or documented frequency of specific behaviors. Qualitative data is non-numerical information, such as responses gathered through unstructured interviews, observations, focus groups, or open-ended survey questions.

Organizing your data and designing your analysis plan

It is important to keep your evaluation information organized. Depending on your needs and available resources, you may want to create a database or spreadsheet to organize your data. Readily available computer programs, such as Excel and Access, may be useful. Software is also available for quantitative and qualitative analysis (such as SPSS or Atlas-TI). Some of this software is expensive, however, and you may be able to analyze your findings without it. Before investing in software, consider seeking consultation to determine if it is needed.

If you create an electronic database with your evaluation results, be thoughtful about its organization. Decisions made as you design and begin to enter information will influence how easy or difficult it will be for you to analyze your results. Tips for designing your database include:

■ Assign a unique identifier to each individual in your dataset.

■ Include all information about an individual in one row of your database, rather than having the same person appear in multiple places.
■ Limit responses so that incorrect information cannot be entered (such as not allowing numbers that fall outside of your response choices).
■ Code text responses into numerical form so that they are easier to analyze (e.g., 1=yes, 2 =no).
■ Enter data in a consistent format, such as always using a "1" to reflect female gender, rather than using various labels (e.g., "F," "female," "girl," etc.).

The best time to start thinking about your analysis plan is when you are first identifying your key evaluation questions and determining how you will collect the needed information. It's important to match the analysis strategy to the type of information that you have and the kinds of evaluation questions that you are trying to answer.

Analyzing quantitative data

While statistical analysis of quantitative information can be quite complex, some relatively simple techniques can provide useful information. Descriptive analysis is used to reduce your raw data down to an understandable level. Common methods include:

- **Frequency distributions** – tables or charts that show how many of your participants fall into various categories.

- **Central tendency** – the number that best represents the "typical score," such as the mode (number or category that appears most frequently), median (number in the exact middle of the data set), and mean (arithmetic average of your numbers).

- **Variability** – amount of variation or disagreement in your results, including the range (difference between the highest and lowest scores) and the standard deviation (a more complicated calculation based on a comparison of each score to the average).

Inferential analysis is used to help you draw conclusions about your results. The goal is to determine whether results are meaningful. For example, did participants change in important ways over time? Were participants different from people who did not receive services? The meaningfulness of findings is typically described in terms of "significance." There are two common forms of significance.

Using probability theory, **statistical significance** indicates whether a result is stronger than what would have occurred due to random error. To be considered significant, there must be high probability that the results were not due to chance. When this occurs, we can infer that a relationship between two variables is strong and reliable. Several factors influence the likelihood of significance, including the strength of the relationship, the amount of variability in the data, and the number of people in the sample.

Statistical significance can be difficult to obtain, especially when data are available for a small number of people. As a result, some evaluations focus instead on **clinical significance**. Clinical significance compares results to a pre-established standard that has been determined to be meaningful (such as, average functioning of a non-problematic peer group, cultural norms, or goals set by staff or participants). Clinical significance is sometimes seen as having more practical value, but only when there is a clear and rationale for establishing the underlying standards.

Many statistical tests can be used to explore the relationships found in your data. Common statistical tests include chi-squares, correlations, t-tests, and analyses of variance. If these statistics are not familiar to you, seek consultation to ensure that you select the right type of analysis for your data and interpret the findings appropriately.

Analyzing qualitative data

On its own, or in combination with quantitative information, qualitative data can provide rich information about how programs work. The first step in analyzing qualitative information is to reduce or simplify it. Because of its verbal nature, simplification may be difficult. Important information may be interspersed throughout interviews or focus group proceedings.

During this stage, you must make important choices about which information should be emphasized, minimized, or even left out of the analysis. It is important to remain focused on the questions that you are trying to answer and the relevance of the information to these questions.

When analyzing qualitative data, look for trends or themes. Depending on the amount and type of data that you have, you might want to code the responses to help you group the comments into categories. You can begin to develop a set of codes before you collect your information, based on the theories or assumptions you have about the anticipated responses. However, it is important to review and modify your codes as you proceed to ensure that they reflect the actual findings. When you report the findings, the codes will help you identify the most prevalent themes. You might also want to identify quotes that best illustrate the themes, for use in reports.

Interpreting your results and drawing conclusions

While analysis can help you identify key findings, you still need to interpret the results. Drawing conclusions involves stepping back to consider what the results mean and to assess their implications. Consider the following types of questions:

- What patterns and themes emerged?
- Are there any deviations from these patterns? If yes, are there factors that might explain these deviations?
- Do the results make sense?
- Are there findings that are surprising? If so, how do you explain these results?
- Are the results significant from a clinical or statistical standpoint? Are they meaningful in a practical way?
- Do any interesting stories emerge from the responses?

- Do the results suggest any recommendations for improving the program?
- Do the results lead to additional questions about the program? Do they suggest that additional data may be needed?

Involve stakeholders. While findings must be reported objectively, interpreting the results and reaching conclusions can be challenging. Consider including key stakeholders in this process by reviewing findings and preliminary conclusions with them prior to writing a formal report.

Consider practical value, not just statistical significance. Do not be discouraged if you do not obtain statistically significant results. While a lack of significance may suggest that a program was not effective, other

factors should also be considered. You may have chosen an outcome measure that was too ambitious, such as a behavioral change that takes longer to emerge. In interpreting your results, consider alternate explanations. It is also important to consider the practical significance of the findings. Some statistically significant results are not helpful in guiding program enhancements, while some "insignificant" findings end up being useful.

Watch for, and resolve, inconsistencies. In some cases, you may obtain contradictory information. For example, stakeholders may describe important benefits of the services, but these improvements do not appear in pre-post test comparisons. Various stakeholders may also disagree, such as staff reporting improvements in participants that are not reported by the participants themselves. Consider the validity of each source, and remember that stakeholders can have valid viewpoints that vary based on their unique perspectives and experiences. Try to resolve discrepancies and reflect them in your findings to the extent possible.

Tips for analysis

- Review and correct data before beginning your analysis.
- Leave enough time and money for analysis.
- Identify the appropriate statistics for each key question – get consultation if needed.
- Do not use the word "significant" to describe your findings unless it has been tested and found to be true either statistically or clinically.
- Keep the analysis simple.

Quick links to more information

Department of Education: Interpreting and reporting evaluation findings
http://www.ed.gov/offices/OUS/PES/primer7.html

W.K. Kellogg Foundation Evaluation Tool Kit: Data analysis
http://www.wkkf.org/Default.aspx?tabid=90&CID=281&ItemID=2810017&NID=2820017&LanguageID=0

In future tip sheets

Communicating evaluation results (4/08)
Using evaluation for program improvement (7/08)
Using evaluation for policy development and advocacy (10/08)

Find previous tip sheets on the web: www.ojp.state.mn.us/grants/index.htm or www.wilderresearch.org.

February 2008

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