LEARN HOW TO ANALYZE, SUMMARIZE, AND COMMUNICATE EVALUATION RESULTS

K. S. U. (Jay) Jayaratne, Ph.D.
Professor and State Leader for Extension Evaluation
North Carolina State University

Analyzing, Summarizing, and Communicating Evaluation Results

Calculation of percentages, means, and standard deviations will adequately summarize Extension evaluation data, with no need for more complicated data analysis techniques. Evaluation reports are prepared for policymakers and key stakeholders. Therefore, it is important to use percentages and means to report your evaluation data. *Mean* is the statistical term used for average. Standard deviation explains the variability of your data. You don't need to worry about calculating any of these statistics. Microsoft Excel can derive these statistics.

How to Analyze Evaluation Data

If you follow the guidelines listed below, data analysis is simple:

1. Data-analyzing Excel files have been set up for you. Select the appropriate Excel file for your evaluation. For example, if you are analyzing data from a one-time short training activity collected by using Tool Template 1A, then use the Excel file 1A for data analysis. Each of these Excel files can be used to analyze data received from 245 participants or less.
2. If your evaluation is pre- and post-tests, you need to match each respondent's pre-test with his or her post-test before entering data into the Excel file.
3. If you used knowledge-testing true and false questions, grade those tests and calculate percentages of pre- and post-test scores before you enter data.
4. After selecting the correct Excel file, customize it to match the contents in your survey. For example, if your survey is waste management, change items in column one to match the items in your survey. When you customize items, remember to do it in the green area. Place the cursor in the box that you need to change and type the item as it appears in your survey. Don't do any changes in red area because it may erase the calculation functions of the file.
5. After customizing the content of the Excel file to match your survey, start entering data into the file. Enter data starting from the P1 column. P1 means first respondent's data. P2 means the second respondent's data. You can enter up to 245 respondents' data. (If you are doing a media program evaluation or a camp evaluation you can enter up to 2500 data entries.)
6. Make sure that you enter data into the correct box.
7. Once you finish entering data, your analysis is ready to report. The Excel file provides you two evaluation summaries instantly.
   a. Summary of results is available in table form on sheet 2.
   b. Summary of results is available in chart form on sheet 3.
8. When you are at this stage, your data analysis is complete. You can use the "copy and paste" function to insert charts in reports and newsletters.

How to Summarize Program Improvement Data

Program improvement data are common across all types of evaluations. The following examples of table and chart formats can be used to summarize program improvement data.

Example:

- *Use of percentages for summarizing data (1=Not satisfied, 4=Very satisfied)*

| How satisfied are you with:	Not Satisfied	Somewhat Satisfied	Satisfied	Very Satisfied
The relevance of information to your needs?	0%	10%	70%	20%
Presentation quality of instructor(s)?	0%	20%	20%	60%
Subject matter knowledge of instructor(s)?	0%	10%	70%	20%
Training facilities?	10%	30%	20%	40%
The overall quality of the training?	0%	10%	50%	40%

- *Use of means and standard deviations for summarizing data (1=Not Satisfied, 4=Very Satisfied)*

Evaluating Item	Mean	St. Deviation
The relevance of information to your needs?	3.1	0.568
Presentation quality of instructor(s)?	3.4	0.843
Subject matter knowledge of instructor(s)?	3.1	0.568
Training facilities?	2.9	1.101
The overall quality of the training?	3.3	0.675

When participants' rating of the program is presented in a report, use charts to elaborate evaluation results. Here is an example.

Example: *Participants' satisfaction with the overall training*

Participants' rating of the overall program was received on a 4-point Likert scale ranging from 1 (not satisfied) to 4 (very satisfied). Of the participants, 90% indicated that they satisfied or very satisfied with the overall program as shown in the chart below.

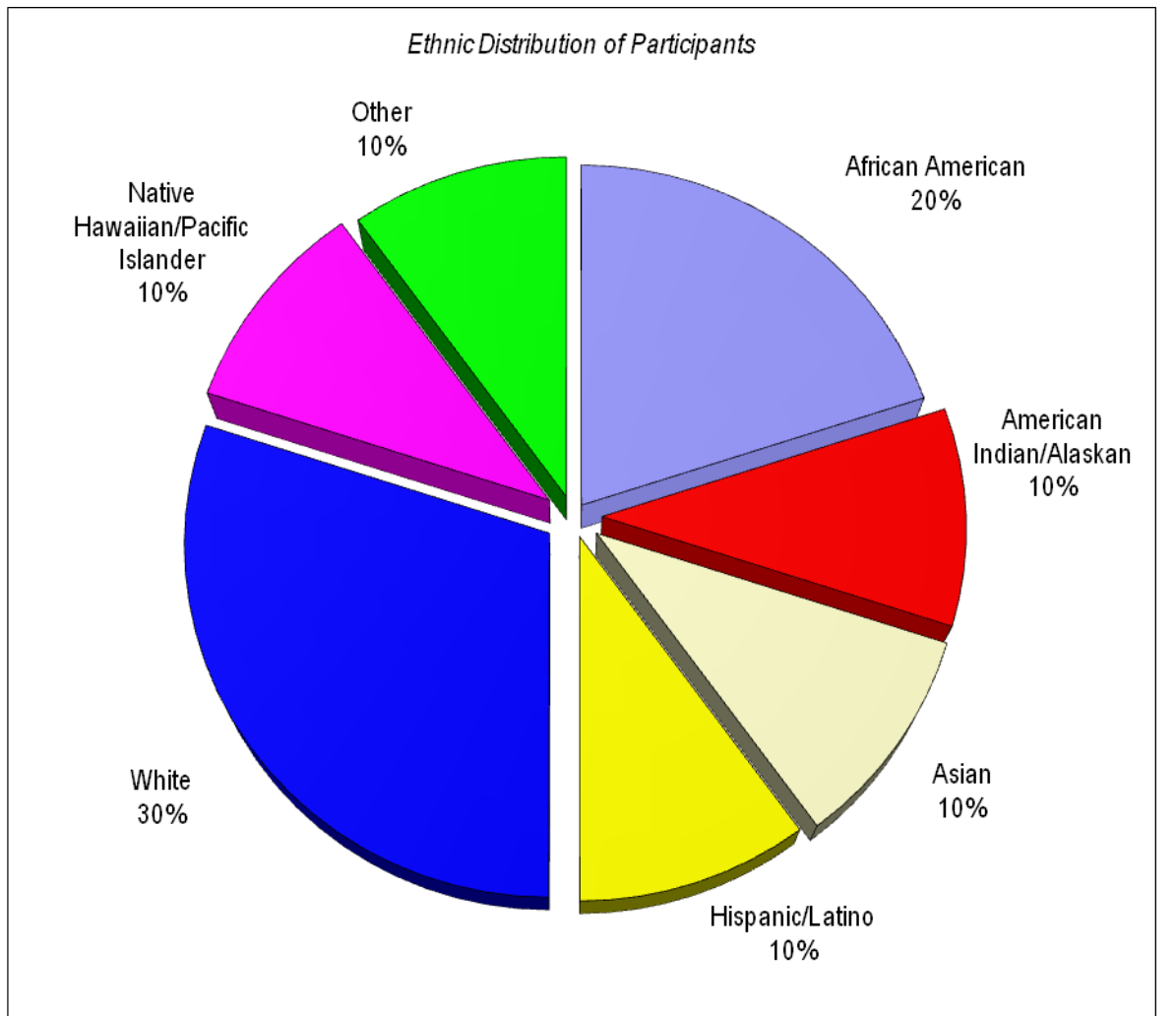*Participants' Rating of the overall Program*
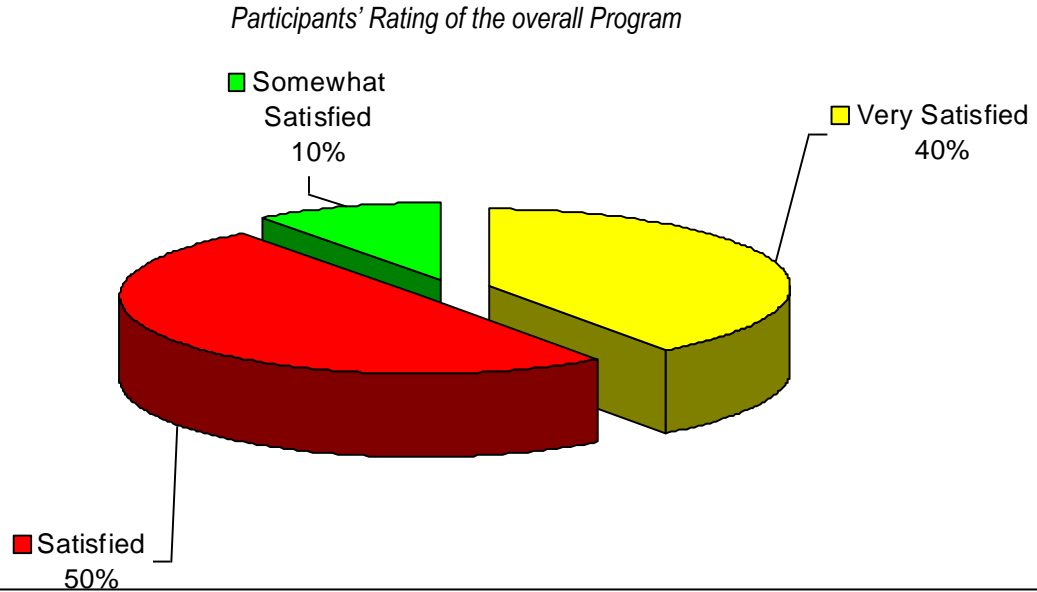
How to Analyze Demographic Data

Demographic data can be summarized by using a table or pie chart as illustrated in the following example.

Example: *Distribution of Participants by Ethnicity (Summarized in table format)*

Item	*African American*	*American Indian/Alaskan*	*Asian*	*Hispanic/Latino*	*White*	*Native Hawaiian/ Pacific Islander*	*Other*
Number of Participants	4	2	2	2	6	2	2
Percentage of Participants	20%	10%	10%	10%	30%	10%	10%

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Distribution of Participants by Ethnicity (Summarized in chart format)

Ethnic Distribution of Participants

Other 10%

Native Hawaiian/Pacific Islander 10%

African American 20%

American Indian/Alaskan 10%

Asian 10%

Hispanic/Latino 10%

White 30%

# How to Summarize Impact Data

Participants' change in knowledge about the content

Data related to participants' change in knowledge can be summarized in a table or in a chart as illustrated in the following example.

- Example: *Change in Participants' Knowledge*

Percentage of the participants who improved their knowledge	Pre-test Mean	Post-test Mean
88%	52%	85%

- *Change of Participants' Knowledge*
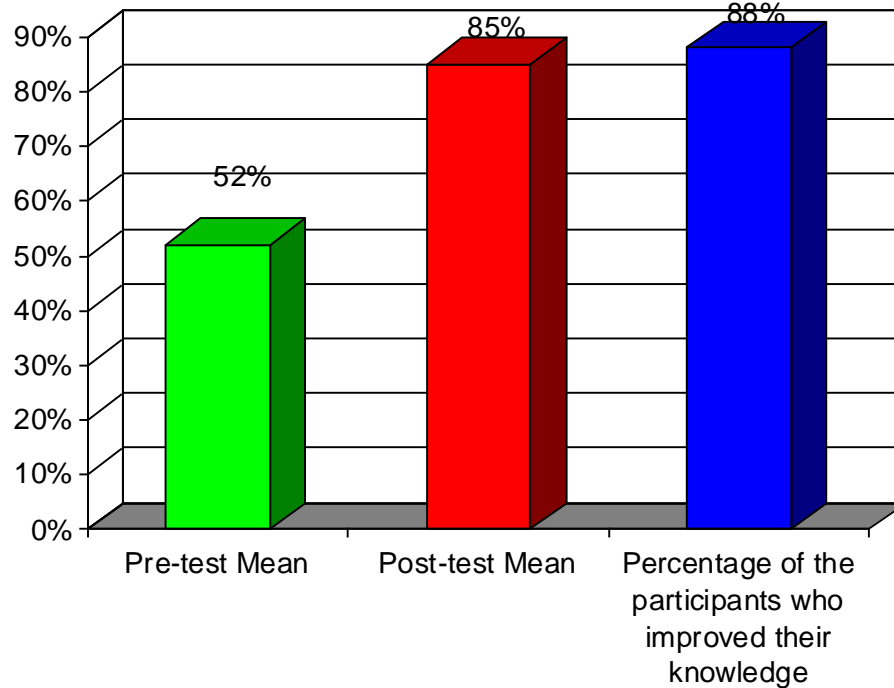
Participants' Change of Confidence (Skill) to Apply Learned Practices

Participants' confidence levels to apply targeted behavior/practices are recorded on a 5-point Likert scale ranging from 1 being "not confident" to 5 being "very confident" at the beginning and end of the training. Participants' confidence data on this scale can be summarized in a table or a chart as illustrated in the following example.

Example:
- *Participants' Change of Confidence to Apply Learned Skills (1 = not confident, 5 = very confident)*

Skills	Percentage of the Participants Who Increased Their Confidence Levels	Pre-test Mean	Post-test Mean
1. Select an appropriate crop rotation for your operation?	90%	1.8	3.5
2. Control weeds with minimum tillage?	80%	2.4	4.0
3. Reduce irrigation cost?	90%	2.2	3.9
4. Manage a ground cover?	90%	2.6	4.3
5. Apply conservation tillage practices?	100%	2.5	4.7

Comparison of Participants' Confidence Levels Before and After Training

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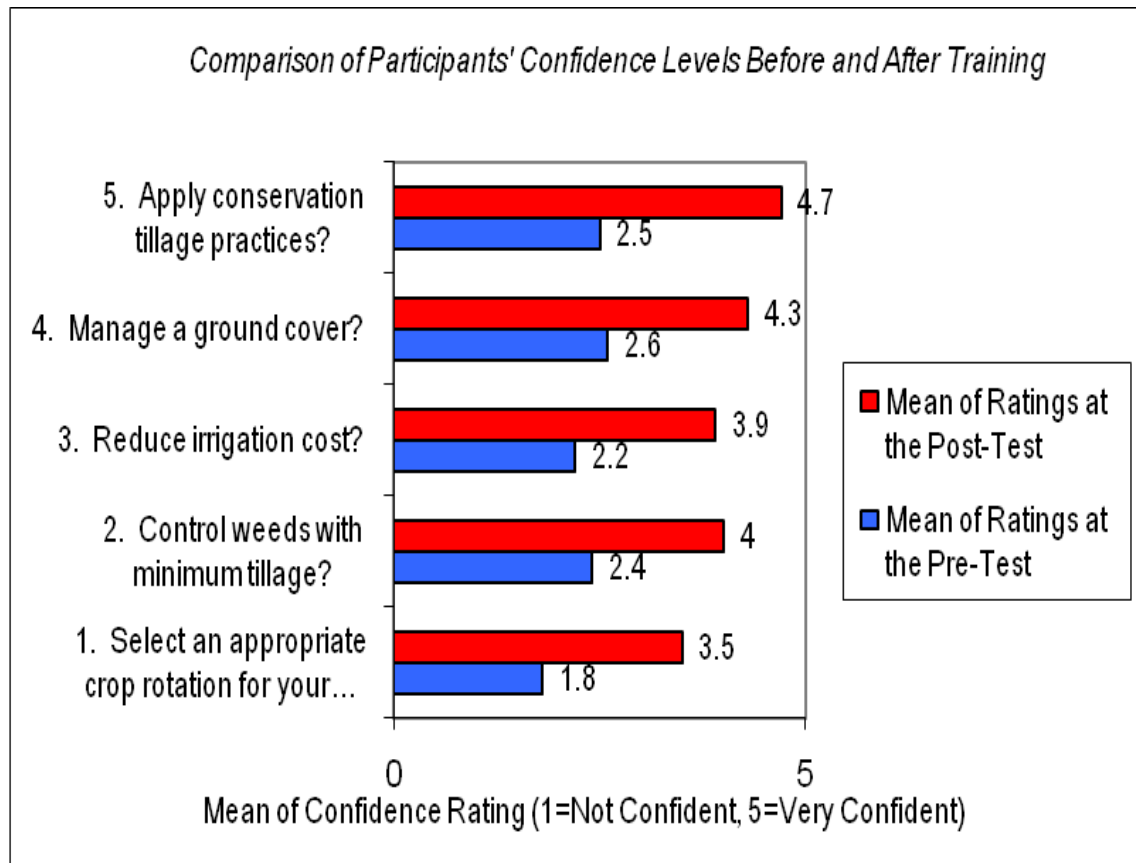
How to Summarize Aspiration Data

This is common for short training (Tool 1) and long training (Tool 2) evaluations. Responses to this section of the survey can be summarized by using percentages in table or chart format as illustrated in the following example.

- Example: Participants' *Intended Behaviors (After completing a conservation tillage Extension training)*

Intended financial behavior	No	Maybe	Yes	Already doing this
1. Apply conservation tillage practices?	10%	20%	70%	0%
2. Follow a crop rotation?	10%	0%	70%	20%
3. Follow minimum tillage practices?	0%	10%	30%	60%
4. Use crop residue as a ground cover?	0%	20%	60%	20%
5. Use cover crops?	0%	30%	40%	30%

A bar chart can be used to present these data in a report as illustrated in the following example.

- Example: *Intended Behaviors/Practices After Completing a Conservation Tillage Extension Training*
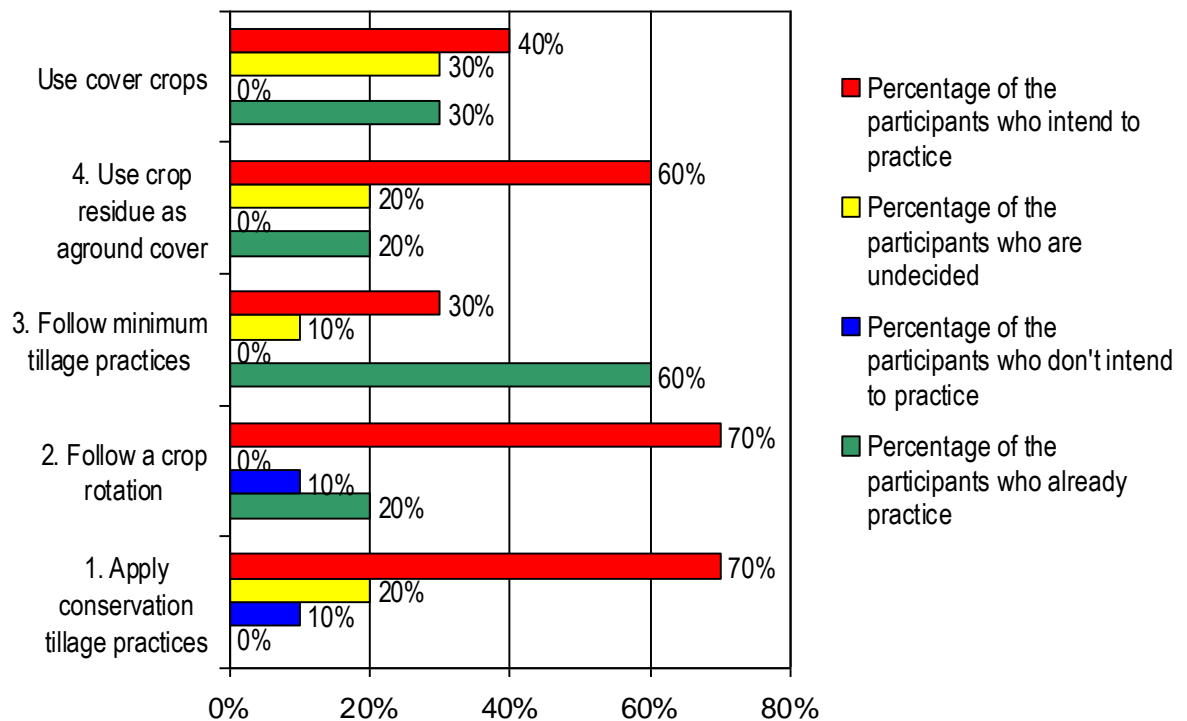
How to Summarize Behavior Change Data

You can calculate the percentage of the participants who improved their behavior or practice at the end of the program. If you can't match the benchmark survey and the end-of-program evaluation for each participant, you have to use the means to assess the program impact. Data can be summarized in a table or in a chart as illustrated in the following example.

Example:

- *Participants' Change of Practices/Behavior (1= I am not considering this, 2= I am considering this, 3= I am doing this sometimes, 4= I am doing this most of the time, 5= I am doing this all of the time)*

Practice/Behavior	*Percentage of the Participants Who Improved Their Practice/Behavior During the Program*	*Mean At the Benchmark Evaluation*	*Mean At the End of Program Evaluation*
Reading nutrition labels to make healthy food choices.	*56%*	*3.5*	*4.2*
Eating baked, broiled, or grilled foods rather than eating fried foods.	*58%*	*3.5*	*4.9*
Doing some type of moderately intense physical activity at least 30 minutes five or more days a week.	*45%*	*2.4*	*4.5*
Eating the recommended servings from the five food groups daily.	*51%*	*2.8*	*4.6*

- *Percentage of the participants who improved their healthy lifestyle*
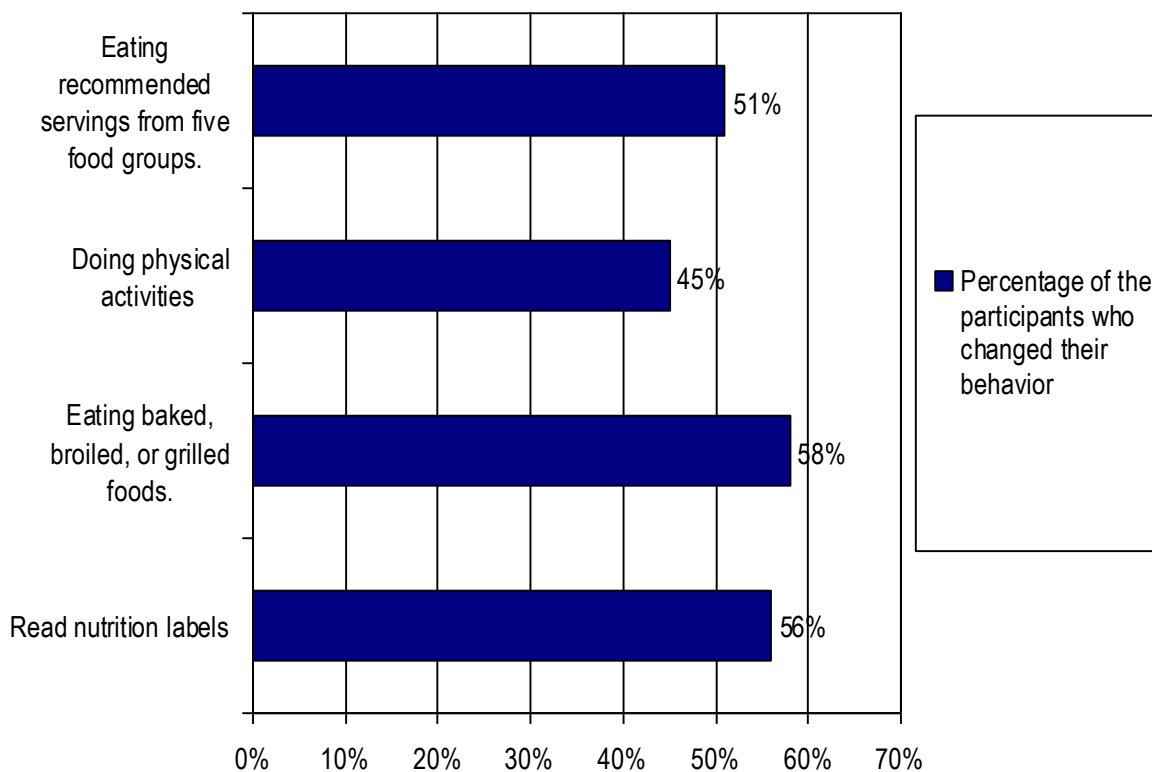
How to Analyze and Summarize Qualitative Data

Normally, participants' responses to open-ended questions, focus group interviews, and success stories comprise qualitative data. Follow these steps to analyze and summarize most of the qualitative data and information.

     a. List the responses to the question in bullet form.
     b. Review all the responses and group them into identifiable unique categories based on the content or the underlying theme of the response.
     c. Name each of the categories based on the underlying theme.
     d. Observe all the categories to understand the situation.
     e. Prioritize the response categories based on the number of responses to each theme.
     f. Select and include the most significant themes in the report.

How to Identify Evaluation Findings?

After data analysis, you should review evaluation summaries objectively to identify evaluation findings. The evaluation findings vary with the purpose of evaluation. Normally, Extension evaluation has accountability and program improvement purposes. Table 1 is a guideline for you to identify evaluation findings.

Table 1. **Identification of Key Findings**

Purpose of Evaluation	Focus of the Evaluation Results
Extension accountability	If the objective is accountability, then you need to consider outcomes and impacts of the program. This includes the following results: Impacts: - Look for the evidence to document participants' change in practices/behaviors - If possible, document economic, social and/or environmental condition improvement of participants - Look for testimonies and success stories of program participants - If data are available, assess the cost-benefit of the program Outcomes: - Look for results to assess participants' knowledge improvement - Document participants' confidence/skill building - Use results to document participants' intended behavior changes (Participants' aspirations)
Program improvement	- Review results to determine the strength of the program - What participants liked the most - Whether information is easy to understand - Identify excellent instructors - Identify good facilities for programs - Identify participants' comments and suggestions for further improvement of the program *Plan to build your program on identified strengths* - Review results to determine weaknesses of the program - Identify what participants dislike about the program - Whether information is difficult to understand - Identify poorly rated instructors - Identify poorly rated facilities for programs *Eliminate identified weaknesses for improving your program* - Review demographic data to determine whether the program is complying with Extension policies.

How to Communicate Evaluation Results

It is important to communicate evaluation results to key Extension stakeholders enabling them to make informed decisions about your program.
The following guidelines are helpful to organize evaluation reports:

A. Decide whom you want to target your evaluation results
B. Decide the purpose of communication of evaluation results (Decide whether it is marketing Extension, accountability, or improvement)
C. Identify the key results you want to communicate
D. Write your report clearly and concisely in nontechnical language
E. Use charts and tables to highlight main results.
F. Make sure to include outcomes and impacts
G. If you have data, report economic social and/or environmental impacts.
H. Include one or two success stories/testimonies
I. If possible, present cost benefits analysis results.
J. If your report is focusing on program improvement, make suggestions to further improve your Extension training.
K. Include an executive summary when you present data to county commissioners and other key stakeholders.

    The executive summary should include the following major items. It is a good idea to limit it to one double spaced page:
    a. State main objectives of the program
    b. State the number of clients served and their learning outcomes
    c. Highlight major accomplishments in terms of impact
    d. If you have data, state the economic value of the program in terms of benefit-cost ratio

Using Evaluation Results

Evaluation is meaningful only if you use your evaluation results. Program evaluation provides useful information, which helps you make programmatic decisions before you move into the next program cycle. Evaluation findings help build better programs by keeping you accountable for resources used and for being responsive to participant needs. The following sections describe how evaluation findings are used to achieve these two purposes.

Accountability

Meeting the needs of society's diverse groups is a challenging task because of limited resources. Therefore, you must be prepared to distinguish effective Extension programs from ineffective ones. This determination can be achieved only by using program impact as a measure to discern effective programs, especially if you use cost-effective analysis data. If an Extension program or activity is effective in terms of bringing desired impacts to the target population, the program should continue. Additionally, program impact is useful as a public accountability measure to secure stakeholder support for Extension programs. For this purpose, we need to communicate program impact with key stakeholders to make them understand the significance of funding for Extension programs.

Communication of program impact with key stakeholders such as county commissioners, city and community leaders, and other decision-makers is essential to convince them of the impact of the resources invested in Extension. This is a very important task in receiving the

due attention and support from the public and policymakers on Extension education.

The following guidelines are helpful for being accountable to funding agencies:
    a. Document the program's impact.
    b. Compare the impact of different Extension programs and activities.
    c. Select high-impact programs to continue.
    d. Drop or modify low-impact programs before the next program cycle.
    e. Communicate program impact to key stakeholders.
        i. Funders and decision-makers- Use reports to show program outcomes.
        ii. Public and policymakers – Executive summaries, news releases, and articles for newspapers.

Program Improvement

Program improvement is an important objective of the evaluation. Impact and process evaluation data help Extension educators to improve their programs. Reviewing impact data shows whether a program is achieving set objectives or not. If the program outcome is below expectation, you should identify alternatives to modify it before presenting it again. Programs can be improved with process evaluation data that reveals their strengths and weaknesses. The following steps will help you use impact and process evaluation data to improve educational programs.

    a. Compare outcomes with the program objectives and goals.
    b. If the outcome is below expectations, find alternatives to improve the program before presenting it again.
    c. Identify weaknesses.
    d. Review strengths and participants' comments in view of finding alternatives for weaknesses.
    e. Identify or develop alternatives before the next program cycle
    f. Review process evaluation data such as participants' rating of instructors and education materials.
    g. If there is a low rating for any item such as educational materials or instructors, modify that item or find alternatives before you present the next program.
    h. Evaluate continuously to further improve programs. This process helps maximize the cost-effectiveness of Extension education.

Funding

Funding is essential to continue financial education programs. Funding agencies look for successful programs and are sensitive to the cost-effectiveness of Extension programs. Cost-effectiveness can be achieved by using evaluation data to distinguish effective programs from ineffective programs and further improve effective programs. Competition for limited funding is high. Therefore, we must be prepared to justify investing in Extension. The following steps are important tips in using evaluation for funding support.

a. Make evaluation an integral part of your Extension program or activity.
b. Document Extension's impact.
c. Document process evaluation.
d. Use evaluation data to achieve cost-effectiveness of the program.
e. Clearly communicate program outcome with decision-makers and key stakeholders.
f. Communicate outcomes with potential funding agencies for future funding.
g. If the program is cost-effective, highlight the cost-effectiveness to sustain funding for its continuity. If the program does not appear to be cost-effective, then find ways to make the program more effective.

Partnerships

Partnerships involve two or more individuals, groups, or organizations working together for a common goal. It is important that all partners understand the program development and delivery process. If changes are made to program delivery, all the partners should understand the rationale for those changes. The process evaluation data can be used to justify the changes needed without favoring one partner. This is an essential element for managing partnerships. The following tips will help you use evaluation results to build strong partnerships:
a. Keep partners informed about the evaluation plan.
b. Share process evaluation data with partners on a regular basis.
c. Use evaluation data as the basis for making changes to the program.
d. Document and share impact with partners to highlight the worth of the partnership.
e. Acknowledge the contribution of each partner to impact.

References

Jayaratne, K. S. U., Lyons, A. C., & Palmer, L. (2007). *Financial education evaluation manual.* Englewood, Colorado: National Endowment for Financial Education.

Patton, M.Q. (1997). *Utilization focused evaluation, 3rd Ed.* Sage Publications, Inc. Thousand Oaks, California.