



CORE MODULE 2:

Collecting, Analyzing and Using Monitoring Data

Night 1: Entering Data into the Global Spreadsheet

Night 2: Descriptive Statistics and Charts

Monitoring HIV/AIDS Programs

A FACILITATOR'S TRAINING GUIDE

A USAID RESOURCE FOR PREVENTION, CARE AND TREATMENT



In July 2011, FHI became FHI 360.



FHI 360 is a nonprofit human development organization dedicated to improving lives in lasting ways by advancing integrated, locally driven solutions. Our staff includes experts in health, education, nutrition, environment, economic development, civil society, gender, youth, research and technology – creating a unique mix of capabilities to address today's interrelated development challenges. FHI 360 serves more than 60 countries, all 50 U.S. states and all U.S. territories.

Visit us at www.fhi360.org.

Monitoring HIV/AIDS Programs: A Facilitator's Training Guide

A USAID Resource for Prevention, Care and Treatment

Core Module 2: Collecting, Analyzing and Using Monitoring Data

Night 1: Entering Data into the Global Spreadsheet

Night 2: Descriptive Statistics and Charts

September 2004

Family Health International



© 2004 Family Health International (FHI). All rights reserved. This book may be freely reviewed, quoted, reproduced or translated, in full or in part, provided the source is acknowledged. This publication was funded by USAID's Implementing AIDS Prevention and Care (IMPACT) Project, which is managed by FHI under Cooperative Agreement HRN-A-00-97-00017-00

Table of Contents

Collecting, Analyzing, and Using Monitoring Data

Session Overview and Schedule	1
Welcome and Review	3
Data Collection	4
Tools for Monitoring	5
Tools for Monitoring (Continued)	8
Maintaining Data Quality	9
Data Flow	10
Data Analysis	12
Interpreting and Using Monitoring Data for Decision-Making, Advocacy, and Program Improvement	13
Wrap-Up	16

Night 1: Entering Data into the Global Spreadsheet

Session Overview and Schedule	17
Welcome and Introductions	19
Overview and Introduction to Global Spreadsheet and Indicators	19
Basic Excel Activities 1: Preventing Duplicate Entries in Cells or Ranges.....	20
Basic Excel Activities 2: Preventing Accidental Overtyping in Cells or Ranges.....	22
Basic Excel Activities 3: Creating a List of Allowed Entries	23
Basic Excel Activities 4: Dealing with Valid Duplicates	25
Basic Excel Activities 5: Out-of-Range Entries	28
Exercises.....	30

Night 2: Descriptive Statistics and Charts

Session Overview and Schedule	31
Welcome and Introductions	32
Data Entry into Global Spreadsheet.....	32

Creating Pivot Tables.....	32
Creating Charts: Bar Charts, Pie Charts, and Others	35
Basic Analysis: Frequencies, Means, and Other Tips	38
Exercises.....	38
Appendix	42

CORE MODULE 2:

Collecting, Analyzing, and Using Monitoring Data

This Monitoring and Evaluation series is based on the assumption that Core Module 1 (Introduction to Monitoring and Evaluation) is always the first module, that it is followed directly by Core Module 2 (Collecting, Analyzing, and Using Monitoring Data), which is followed by one or more of the optional technical area modules (Modules 4 through 10), and that in all cases the final module is Core Module 3 (Developing a Monitoring and Evaluation Plan). The specified sequence is shown below:

1. *Core Module 1: Introduction to Monitoring and Evaluation*
2. *Core Module 2: Collecting, Analyzing, and Using Monitoring Data*
3. *Optional Technical Area Modules 4 through 10*
4. *Core Module 3: Developing a Monitoring and Evaluation Plan*

Learning Objectives

The goal of this workshop is to build the skills of participants in data collection, analysis, and use for monitoring their programs.

At the end of this session, participants will be able to:

- Name the major steps in planning for data collection, analysis, and use
- Map data flow and identify who is responsible for monitoring the quality of data
- Name several tools for data collection program monitoring
- Better understand how to check, analyze, interpret, and present data
- Better understand how to use results for decision-making, advocacy, and program improvement

Session Overview and Schedule

TIME		TOPIC	TRAINING METHOD
8:30-8:45	15 min	A. Welcome and Review	<i>Facilitator Presentation</i>
8:45-9:30	45 min	B. Data Collection	<i>Facilitator Presentation Group Discussion and Exercises</i>
9:30-10:10	40 min	C. Tools for Monitoring	<i>Facilitator Presentation, Group Discussion and Exercises</i>
10:10-10:25	15 min	BREAK	
10:25-11:00	35 min	C. Tools for Monitoring (cont'd)	<i>Facilitator Presentation, Group Discussion and Exercises</i>
11:00-12:00	60 min	D. Maintaining Data Quality	<i>Facilitator Presentation, Group Discussion and Exercises</i>
12:00-1:00	60 min	LUNCH	
1:00-1:45	45 min	E. Data Flow	<i>Facilitator Presentation, Group Discussion and Exercises</i>

Session Overview and Schedule

TIME		TOPIC	TRAINING METHOD
1:45-2:45	60 min	F. Data Analysis	<i>Facilitator Presentation, Group Discussion and Exercises</i>
2:45-3:00	15 min	BREAK	
3:00-4:00	60 min	G. Interpreting and Using Monitoring Data for Decision-Making, Advocacy, and Program Improvement	<i>Facilitator Presentation, Group Discussion and Exercises</i>
4:00-4:15	15 min	H. Wrap-Up	<i>Facilitator Presentation, Q & A Session</i>

Materials

- Flipchart paper and five stands
- Markers
- Pens or pencils
- Tape or Blue-Tac (six total)
- Cardboard or poster paper for cards
- Handout: Evaluation Form
- Handout: Data Collection Tools and Instruments
- Handout: Group Exercise for Monitoring Tools: Scenario 1
- Handout: Group Exercise for Monitoring Tools: Scenario 2
- Handout: Data Quality Exercise
- Handout: Group Exercise for Data Flow
- Handout: Table for Planning Data Analysis, Interpretation, and Use
- Handout: Data Presentation
- Handout: Examples of Line, Bar, and Pie Charts
- Handout: Group Exercise for Data Interpretation and Packaging Results

A. Welcome and Review

8:30-8:45	15 min	A. Welcome and Review	<i>Facilitator Presentation</i>
-----------	--------	-----------------------	---------------------------------

Overview of Workshop Objectives and Agenda

Thank participants for arriving on time and remind them (in a humorous way) that anyone who arrives late will be subject to shame and humiliation from the whole group.

1. Explain to participants that the purpose of the module is to **briefly review the concepts introduced in Core Module 1** and to build their capacity to plan for data collection, analysis, and use, primarily for program monitoring.
2. The rationale behind the day's workshop is to learn (or to reinforce) how to **operationalize the HIV/AIDS M&E Conceptual Framework** for program monitoring by understanding data collection tools, responsibilities, timeframes, and data flow.
3. Emphasize the importance of **monitoring data quality** at every step of the monitoring process.
4. Understand the **different audiences** for monitoring data and methods for presenting data to those audiences.

We are in the first session of the day. Session 2 is about the data-collection process. Session 3 is about the different tools for data collection, with an exercise in identifying different tools that can be used to monitor a specific program. During this time we will also have a 15-minute break. After discussing data collection tools, Session 4 focuses on data quality. Then we will break for lunch. When we return, Session 5 will involve mapping the flow of the data, including persons responsible and timeframes. We will then hold Session 6 on data analysis, which will be followed by another 15-minute break. Session 7, the last technical session of the day, will be on interpreting and using data. We will then wrap-up the day and you will have the opportunity to evaluate the workshop.

Today we will try to wrap-up by 4:15 so that you have a little extra time before the computer use session tonight. Tonight there will be an evening session on using the global spreadsheet and using Excel, starting at 7:00 p.m.

Brief Review of Conceptual Framework

Building on the conceptual framework discussion in Core Module 1, facilitators will emphasize that there was a great deal of discussion about the conceptual framework. Have one participant create a hypothetical program and have participants give an example indicator for that program from each stage of the conceptual framework. Wrap-up by explaining that, as discussed on Day 1, we are interested in maximizing monitoring data for program use, not in the national-level evaluation components. Today will focus on monitoring data and will not include a discussion of evaluation data.

B. Data Collection

8:45-9:30	45 min	B. Data Collection	<i>Facilitator Presentation, Group Discussion and Exercises</i>
-----------	--------	--------------------	---

Materials

- 5 flipcharts or flipchart paper on wall
- 5 large markers
- Tape

The facilitator could start out by saying something like:

“Data collection is a core component of a monitoring system. After you have identified the questions you need to answer, you must be able to collect data to answer the questions. Instead of us telling you about the process of data collection, we need you to tell us. There is a wealth of experience in this room, and now we are all going to become facilitators for this session. “

Group Exercise on Data Collection

Divide the group into five teams, and give each team one of the following questions about data collection:

- Why do we collect monitoring data?
- What monitoring data do we collect?
- How do we collect monitoring data (methods and tools)?
- Who collects monitoring data?
- What are some of the challenges in collecting the data, and how do you overcome them?

Facilitator Note: Before the exercise begins, the facilitator should write the above questions on five sheets of flipchart paper (one question on each sheet) and hang the flipchart papers in different parts of the room.

Each team will select one facilitator for their question and will spend 10 minutes brainstorming their answers and writing them on the flipchart. At the end of the 10 minutes, all members of the team (except for the facilitator) will move to the flipchart to their left. The facilitators will remain where they are for the next question, explain to the new team what information the original team came up with, and ask for additional responses. The teams will now spend only 3 minutes at each new station before moving on to the next station on their left. The teams will repeat the process, moving to a new station every 3 minutes, until each team has been at all of the stations.

There will not be a group feedback time for this exercise, but after the groups have visited all the stations, the entire group will be asked if they found any unusual answers at any of the stations or if there was any common theme at each station that they thought was particularly important.

C. Tools for Monitoring

9:30-10:10	40 min	C. Tools for Monitoring	Facilitator Presentation, Group Discussion and Exercises
------------	--------	-------------------------	---

Materials

- Flipchart
- Markers
- Handout: Data Collection Tools and Instruments

Now let us think about the tools we use for monitoring. Some countries have displayed their different data collection tools throughout the room. We will have a chance throughout the day to discuss these tools and share information and ideas.

9:30-9:35 (5 min)

1. Methods for Collecting Data

Facilitator Note: Facilitator will open with a brief overview of the different methods of collecting data, including descriptions of what is qualitative and what is quantitative data and how the two methods should compliment each other.

There are various research methods that can be implemented to monitor and evaluate programs. A common way to distinguish between methods is to classify them as either quantitative or qualitative methods.

- **Quantitative methods** are those that generally rely on *structured or standardized approaches* to collect and analyze numerical data. Almost any evaluation or research question can be investigated using quantitative methods, because most phenomena can be measured numerically. Some common quantitative methods include the population census, population-based surveys, and standard components of health facility surveys, including the facility census, provider interviews, provider-client observations, and client exit interviews.
- **Qualitative methods** are those that generally rely on a variety of *semi-structured or open-ended methods* to produce in-depth, descriptive information. Common qualitative methods include *focus group discussions* and *in-depth interviews*.

Quantitative methods and qualitative methods can be used in *complementary* fashion to investigate the same phenomenon.

- One might use open-ended, exploratory (qualitative) methods to investigate what issues are most important and the language to use in a structured questionnaire.
- Alternatively, one might implement a survey and find unusual results that cannot be explained by the survey, but that might be better explained through open-ended focus group discussions or in-depth interviews of a subgroup of survey respondents.
- In addition, one might implement qualitative and quantitative methods simultaneously to gain both numeric and descriptive information about the same topic.

Facilitator Note: Ask the group which method of data collection is generally used to collect monitoring data. However, tell the group that we are not that interested in the “methods” that we use for collecting monitoring data, rather we are interested in the specific “tools,” or instruments, that we can use.

9:35-9:45 (10 min)

Facilitator briefly introduces the section on data collection tools by reviewing some of the information below, but not by reading it directly. The most important thing to point out is that tools (1) are instruments and (2) are structured, or sometimes semi-structured.

2. Data Collection Tools

Whereas a **method** refers to the scientific design or approach to a monitoring, evaluation, or research activity, a data collection **tool** refers to the instrument used to record the information that will be gathered through a particular method.

Tools are central to quantitative data collection because quantitative methods rely on structured, standardized instruments such as questionnaires. Tools such as open-ended questionnaires or checklists are often also used in qualitative data collection as a way to guide a relatively standardized implementation of a qualitative method.

Tools may be used or administered by program staff or may be self-administered (that is, the program participant or client fills in the answers on the tool). If tools are to be self-administered, there should be procedures in place to collect the data from clients who are illiterate. Space, privacy, and confidentiality issues should be observed.

Facilitator then mentions some of the tools used to collect monitoring data from the first group exercise.

Facilitator asks participants to mention some of the key elements in *planning* and *designing* a good monitoring tool.

The responses will be recorded on a flipchart. Responses could include the following:

- Plan the design of new tools in a participatory fashion; that is, include the staff who will use the tools in the design of the tools.
- Tools should always be as simple and as clear as possible.
- Tools should be concise and collect only the information that is necessary and will be used.
- Tools should be pre-tested to ensure that they are user-friendly for the person who will administer the tool or for a program participant/client if the tool will be self-administered.
- Explain to program staff the reasons for collecting data, so that they understand the need for data collection and are able to communicate the importance of the activity to program participants/clients.
- Program staff should be well trained to use data collection tools or to explain and review self-administered data collection tools. Role-play exercises may help to build the communication skills of staff to improve challenging areas of data collection.

9:45-10:10 (25 min)

Group Exercise on Tools for Monitoring

This exercise is designed to reinforce the nature of different types of tools and how different tools can be used for the same program. There are two hypothetical program scenarios. Participants will be broken into 6 groups, and one scenario topic will be given to 3 groups, so more than 1 group will be working on the same scenario. After brainstorming in a group for 25 minutes, we will take a 15-minute break and reconvene for a group discussion.

Group Exercise for Monitoring Tools: Scenario 1**Handout**

You have 20 minutes for this brainstorming exercise. The idea is not to make an exact or all-inclusive list, but rather to share ideas.

Hypothetical Program Scenario 1:

In a hypothetical country, FHI supports voluntary counseling and testing (VCT) services for all adults, but with particular focus on young adults, in four districts. Each of these four districts has an urban center, but the majority of the population lives in rural and semi-rural villages. There are 8 VCT centers, 2 in each district. In each district, 1 VCT center lies in the urban center, and is operated by the Ministry of Health's district hospital. In addition, in each district, 1 VCT center is operated by the Mission Hospital that serves a relatively remote, rural portion of each district.

Exercise:

In your small group, brainstorm about all the tools that might be used to monitor VCT services provided to young adults age 15 to 29. This exercise is not intended to elicit "right" or "wrong" answers, but rather to encourage you to explore various ways to approach the same question. Please remember, your program can implement only one 1-page regular monitoring form, so the data you collect must be concise and a priority for the program.

For each method:

- ✓ Describe what you are going to monitor
- ✓ Describe the tool(s) you would use and why the data from it might be appropriate to answer this question
- ✓ Consider the strengths and the weaknesses of this approach
- ✓ Discuss how and how often data might be collected
- ✓ Discuss who might be responsible for collecting

Group Exercise for Monitoring Tools: Scenario 2**Handout**

You have 20 minutes for this brainstorming exercise. The idea is not to make an exact or all-inclusive list, but rather to share ideas.

Hypothetical Program Scenario 2:

In a hypothetical country, FHI provides capacity-building and support to 5 implementing agencies (IAs) conducting behavior change communication (BCC) activities. All of the IAs have large, comprehensive youth programs in 4 districts, with BCC components covering peer education activities, mass media, and materials development.

Exercise:

In your small group, select one component of FHI's BCC activities and brainstorm about all the tools that might be used to monitor it. This exercise is not intended to elicit "right" or "wrong" answers, but rather to encourage you to explore various ways to approach the same question. Please remember, your program can implement only one 1-page regular monitoring form, so the data you collect must be concise and a priority for the program.

For each method:

- ✓ Describe what you are going to monitor
- ✓ Describe the tool(s) you would use and why the data from it might be appropriate to answer this question
- ✓ Consider the strengths and the weaknesses of this approach
- ✓ Discuss how and how often data might be collected
- ✓ Discuss who might be responsible for collecting

10:10-10:25

15 min

BREAK

C. Tools for Monitoring (cont'd)

10:25-11:00	35 min	C. Tools for Monitoring (cont'd)	<i>Facilitator Presentation, Group Discussion and Exercises</i>
-------------	--------	----------------------------------	---

Materials

- Flipchart
- Markers

10:25-10:55 (20 min)

Group Discussion on Monitoring Tools

One group with each of the scenarios will explain their scenario to the whole group. The three groups with the same scenario will lead a discussion based on the following questions.

Facilitators will summarize the findings on the flipchart.

Questions for Discussion:

What were the most appropriate tools for collecting this information?

What were the strengths and weaknesses? What would you be able to tell about your program afterward?

How often would you collect this information?

Who might be responsible for collecting and analyzing the information?

10:55-11:00 (5 min)

Summary on Monitoring Tools

In summarizing, the Facilitator should make sure that the following key points have been covered:

Facilitator Note: It is worth noting that similar tools may be known by different names; this exercise is designed to share with participants information about the different types of forms, but be flexible about what the tools might be called.

Some common monitoring and evaluation tools include: sign-in (registration) logs; registration (enrollment, intake) forms; checklists; program activity forms; logs and tally sheets; patient charts; and structured questionnaires.

Sign-in or registration logs. Every client who enters the facility is required to “sign in.” Note: If the clinic provides services that may be associated with stigma (e.g., VCT or STI services), measures should be taken to maintain the confidentiality of the information on the log.

Other types of logs may be developed as a way to track program activities daily. Examples of such forms include laboratory, counseling, or other activity logs. They are easy to use for recording a set of minimal data; they are inexpensive and efficient (no need to file), and data are easy to retrieve.

Registration forms may also be known as enrollment forms or intake forms and generally are used to collect personal (name or ID number) and demographic (e.g., age or sex) information.

Checklists can be used as an aid to observers who are monitoring events, procedures, or services.

Program activity forms vary substantially, but are often designed specifically to collect basic information (output indicators) about program activities.

Tally sheets are used to compile raw data from logs on a periodic basis.

Monthly summary forms are also used to compile raw data from other forms on a periodic basis.

Patient records/charts can provide a wealth of information about the content and quality of services. However, patient charts are not inherently intended to be used as a program monitoring tool. Patient charts may be incomplete and/or difficult to read.

Open-ended questionnaires are often used in qualitative data collection methods as a way to guide an in-depth interview or a focus group discussion to seek descriptive information.

Semi-structured questionnaires are often used in quantitative methods as a way to gather information by asking standardized questions in a structured format.

Are there tools that others have used that we have not discussed?

Are there any questions or comments?

D. Maintaining Data Quality

11:00-12:00	60 min	D. Maintaining Data Quality	Facilitator Presentation, Group Discussion and Exercises
-------------	--------	-----------------------------	---

Materials

- Large posterpaper (5)
- Small pieces of posterpaper (many)
- Blu-Tac or tape
- Different colored markers
- Handout: Data Quality Exercise

The data you collect are meaningful only if they are of the highest possible quality. Data quality must be monitored at every single step of the process and such monitoring should not depend on only one person to ensure data quality.

Group Exercise on Data Quality

The Facilitator breaks the participants into five groups and presents each group with a scenario. There are five similar scenarios, all of which are missing one key element of quality assurance. The groups can review the scenarios for 10 minutes and identify the point(s) where something went wrong in maintaining the data quality. Each group then summarizes what step(s) its scenario was missing and posts it on large paper on the wall next to their scenario. The group lists what components could have been in place to make sure that this problem did not occur. These answers will be posted on smaller pieces of paper that are cut up and available for participants. After brainstorming answers to their own questions, all groups will be encouraged to walk around to look at other groups' scenarios for 15 minutes, and to add more possible solutions.

The Facilitator then asks participants to discuss some of the commonalities and differences of the different scenarios.

Summary of Data Quality

Recall that attention to data quality was incorporated into the group exercises earlier in the day. Data quality is important because the *quality of the data determines the usefulness of the results.*

There are many ways to ensure data quality. Most of these measures rely on good planning and supervision. Following are some ways that programs might ensure good data quality:

- Developing clear goals, objectives, indicators, and research questions
- Planning for data collection and analysis
- Pre-testing methods/tools
- Training staff in monitoring and evaluation, data collection
- Creating ownership and belief in data collection among responsible staff
- Incorporating data quality checks at all stages
 - Are forms complete?
 - Are answers clearly written?
 - Are answers consistent?
 - Are figures tallied correctly?
- Checking data quality regularly
- Taking steps to address identified errors
- Documenting any changes and improving the data collection system as necessary

After information has been collected from the field, it is usually entered into a computer. At this stage, more quality checks are necessary because there are some common sources of error that arise during data entry. Following are some *common sources of error*:

- **Transposition**—An example is when 39 is entered as 93. Transposition errors are usually caused by typing mistakes.
- **Copying errors**—One example is when 1 is entered as 7; another is when the number 0 is entered as the letter O.
- **Coding errors**—Putting in the wrong code. For example, an interview subject circled 1 = Yes, but the coder copied 2 (which = No) during coding.
- **Routing errors**—Routing errors result when a person filling out a form places the number in the wrong part or wrong order.
- **Consistency errors**—Consistency errors occur when two or more responses on the same questionnaire are contradictory. For example, if the birth date and age are inconsistent.
- **Range errors**—Range errors occur when a number lies outside the range of probable or possible values.

What to do when mistakes or inconsistencies are found. First, determine the source of the error. If the error arises from a data coding or entry error, it can be resolved in the office. If the entry is unclear, missing, or otherwise suspicious, it may be necessary to contact field staff for correction or verification. Once the source of the error is identified, the data should be corrected, if possible.

12:00-1:00	60 min	LUNCH	
------------	--------	-------	--

E. Data Flow

1:00-1:45	45 min	E. Data Flow	<i>Facilitator Presentation, Group Discussion and Exercises</i>
-----------	--------	--------------	---

Materials

- Flipchart and paper
- Markers
- Handout: Group Exercise for Data Flow

1:00-1:10 (10 min)

Introduction to Data Flow

Facilitate a group discussion on what the participants think data flow is and what are the most important components. Write the components that are mentioned on a piece of flipchart paper for future reference.

1:10-1:30 (20 min)

Group Exercise on Data Flow

Facilitator should give participants the following directions:

This exercise will build on one component of the planning process that we just discussed—namely, mapping the data collection process or the flow of data and results.

In small groups, graphically map (using flipchart paper and color markers) the data collection system (or the data flow) of a hypothetical program. Consider responsibilities, frequency of data collection, and quality of data at every stage. After these maps have been developed and you have considered the discussion topics, we will reconvene and each group will present its map to the larger group. You may choose any way to present your map to the whole group.

Group Exercise for Data Flow

Handout

Hypothetical Program Scenario:

In a hypothetical country, FHI supports voluntary counseling and testing (VCT) services for all adults, but with particular focus on young adults, in four districts. Each of these four districts has an urban center, but the majority of the population lives in rural and semi-rural villages. There are 8 VCT centers, 2 in each district. In each district, 1 VCT center lies in the urban center, and is operated by the Ministry of Health's district hospital. In addition, in each district, 1 VCT center is operated by the Mission Hospital that serves a relatively remote, rural portion of each district.

Exercise:

Graphically map the data collection and reporting system (the flow of data and results). Feel free to use any kind of graphical figures, illustrations, or approaches that you find useful to describe and communicate the data collection and reporting system.

Please work quickly, you have only 5 minutes to answer the questions and 10 minutes to draw your map.

In mapping the flow of data and results, please consider the following issues:

- Who will be responsible for data collection?
- Who will be responsible for supervision of data collection?
- Who will be responsible for ensuring data quality at each stage?
- How are data quality checked at every stage?
- How often are data collected, compiled, sent, analyzed?
- How are data sent (raw, summary)?
- What tools/forms are used, if any?
- What resources (staff, office supplies, computers, transportation) are needed at each stage?
- Who will analyze the data? How often will analysis occur? How often will the results be compiled into reports?
- To whom and how often will the results be disseminated?

Circulate around the room while the groups are discussing to ensure that everyone is clear on the exercise and provide guidance as necessary.

After allowing 15 minutes for the groups to discuss and draw their data flow map, call time and bring the group together again.

1:30-1:45 (15 min)

Group Presentations

Call time for the whole group with a 1-minute warning; then when time is up ask everyone to put down their preparation materials and to post their maps on the walls throughout the room.

Select two maps that present data flow in different ways and ask the whole group to comment on the two selected maps.

F. Data Analysis

1:45-2:45	60 min	F. Data Analysis	<i>Facilitator Presentation, Group Discussion and Exercises</i>
-----------	--------	------------------	---

Materials

- Handout: Table for Planning Data Analysis, Interpretation, and Use
- Handout: Data Presentation
- Handout: Examples of Line, Bar, and Pie Charts

Introduction to Data Analysis

Request that the group discuss why data are analyzed.

The purpose of data analysis is:

- To check whether we are achieving program objectives
- To summarize data and generate new objectives
- Others

Analysis does not mean using a complicated computer analysis package. It means taking the data that you collect and looking at it in comparison to the questions that you need to answer. For example, if what you need to know is if your program is on track, you would look at your program targets and compare them to the actual program performance. This is analysis. We will later take this one step further and talk about interpretation (e.g., through analysis you find that your program achieved only 10% of its target; now you have to figure out why).

The Facilitator should write the following two questions on a flipchart:

1. What question do you want to answer by the analysis?
2. What analysis technique should be used.

Give the group an example question and let them brainstorm about their analysis technique for 10 minutes. Below are several examples.

Focus of Analysis	Analysis Technique	Questions to be Answered
Description of program performance	<ul style="list-style-type: none"> Compare actual performance against targets Compare current performance to prior year Analyze trends in performance (All the above techniques can also be by types of services delivered) 	<ul style="list-style-type: none"> Is the program on track? Did we meet our targets? Why or why not? How does this period's performance compare to last period? What happened that we did not expect? Are new targets needed?
Diversity of target groups/sites	<ul style="list-style-type: none"> Comparison between sites or groups 	<ul style="list-style-type: none"> Are we adequately reaching all the required target groups/sites?
Conformity of program to its design	<ul style="list-style-type: none"> Component Analysis: <ul style="list-style-type: none"> Training Referral system Services 	<ul style="list-style-type: none"> Is the program performing functions as it was expected to or is not performing them as well as it is supposed to? For example, is the referral system working properly by referring clients to appropriate services in good time?

Planning for Data Analysis

Pass out to all participants Handout: Table for Planning Data Analysis, Interpretation, and Use and Handout: Data Presentation. Facilitators should walk the groups through an example and then allow them to fill in the table using SMART objectives that were presented in Core Module 1. Point out what needs to happen at each stage, and make sure that you tell participants that it is not necessary to wait until the end to do analysis.

2:45-3:00	15 min	BREAK
-----------	--------	-------

G. Interpreting and Using Monitoring Data for Decision-Making, Advocacy, and Program Improvement

3:00-4:00	60 min	G. Interpreting and Using Monitoring Data for Decision-Making, Advocacy, and Program Improvement	<i>Facilitator Presentation, Group Discussion and Exercises</i>
-----------	--------	--	---

Materials

- Handout: Group Exercise for Data Interpretation and Packaging Results

Introduction to Interpreting and Using Monitoring Data

There is no point in collecting data unless they are used to improve HIV/AIDS programs to benefit the people from whom they were collected. There are different ways to interpret and use results to make decisions, modify and/or improve programming, and advocate to different audiences.

3:00-3:15 (15 min)

Data Interpretation

Different results can be modified in different ways. Give some examples of different findings from a monitoring system and ask participants to interpret the findings. Ask them who is their audience, and how would they verify their answers?

Data Use and Presentation

Lead the large group in discussing the key components in data use and presentation. Refer to the examples that were just "interpreted."

- How might *results of program monitoring and evaluation* be used? Possible answers include the following:

- To highlight successful strategies or program components for replication, scale-up, and so on
 - To determine whether program targets are reached (or not)
 - To determine whether target populations are reached (or not)
 - To identify weaknesses of a program that need to be improved or phased out
 - To advocate for increased funding or program expansion
- What are **audiences** that you might tailor your findings to? Possible answers include the following:
 - Affected populations
 - Community leaders
 - Program management
 - Media
 - Funders
 - Politicians, policymakers, and other government officials
 - What does **packaging** mean and why is it important?
 - Packaging entails selecting the right product and presentation strategy for the right audience
 - What might be some things you consider when deciding how to **appropriately present findings to a particular audience**? Possible answers include the following:
 - Do you want or need their input?
 - What makes them tick?
 - What language do they speak?
 - What is their attention span?
 - Who is the best messenger?
 - How can you relate your data to their concerns?
 - Other?

3:15-3:45 (30 min)

Group Exercise on Data Interpretation and Use

The Facilitator will lead the group in continuing to fill out the table that was started in the Data Analysis session; now we will add information to the Interpretation and Audience columns.

The objective of this exercise is for participants to work out ways to present information about the same results to different audiences. As with other group exercises, there are no “right” or “wrong” answers.

- Distribute Handout: Group Exercise for Data Interpretation and Packaging Results and break the participants into six groups. Instruct the groups to review and discuss the materials for about 10 minutes.
- Two groups will work together to role-play four different scenarios of different ways to interpret and use monitoring data. Each group will act as the audience for two scenarios and the presenters for two scenarios.

Group Exercise for Data Interpretation and Packaging Results**Handout**

In a hypothetical country, FHI supports **two** implementing agencies to provide a comprehensive intervention for high-risk men, including STI diagnosis and management, condom distribution, and a BCC campaign with peer educators. Monitoring data for selected program indicators are reported below for Implementing Agencies 1 and 2 in 2001 and 2002. Each group should review the data and select no more than two key messages for their audience. Each group will then decide who will present the data, what is the appropriate language for the presentation, and then present their data and results to the entire group for no more than 5 minutes.

Review the table and charts and consider how you might present these findings to various audiences. You might want to consider the following questions:

- What is your goal?
- Who is your audience?
- Do you want or need their input?
- What makes them tick?
- What language do they speak?
- What is their attention span?
- Who is the best messenger?
- How can you relate your data to their concerns?
- What are the three points that are most important to convey?
- What methods and materials might you use to convey your information/message?
- What questions do you expect they might ask?

What this means in effect is that after assigning participants to groups, the facilitator will distribute the following data sets to groups (each group will work with data of either implementing agency 1 or 2)

Implementing Agency 1

Indicator	2001	2002
Number of condoms distributed	100,000	250,000
Proportion of condoms distributed through social marketing	15%	25%
Number of peer educators trained	40	60
Proportion of peer educators participating in intervention for 6 or more months	50%	35%
Number of high-risk men reached by peer educators	200	250

Implementing Agency 2

Indicator	2001	2002
Number of condoms distributed	80,000	100,000
Proportion of condoms distributed through social marketing	50%	60%
Number of peer educators trained	35	45
Proportion of peer educators participating in intervention for 6 or more months	85%	75%
Number of high-risk men reached by peer educators	800	1,200

Facilitator Note: Mention that other data could also be used here.

Audiences

Potential audiences include the following:

1. **Donor:** The donor is generally pleased with its program and is considering whether to increase funding for the program. Convince the donor that the program should be expanded to additional target areas.
2. **Country Director:** A Country Director would like to receive information about why certain decisions were made to change components of one program.
3. **Implementing Agency:** The Ministry of Health would like to get an update on the achievements of the organization
4. **Peer Educators:** The peer educators involved would like to see if they are making a difference in the program.

3:45-4:00 (15 min)

Summarize Activities

To summarize, encourage participants to discuss methods (especially innovative ways) they have used to monitor data in their own countries and how it compared to this scenario.

H. Wrap-Up

4:00-4:15	15 min	H. Wrap-Up	<i>Facilitator Presentation, Q & A Session</i>
-----------	--------	------------	--

Materials

- Evaluation Form

Ask participants to describe two major lessons they learned during the workshop.

Write each of the lessons mentioned on a flipchart (or ask a participant to do so).

Distribute the workshop Evaluation Form to participants and ask them to fill it out and submit it before leaving the classroom.

CORE MODULE 2:

Night 1: Entering Data into the Global Spreadsheet

This Monitoring and Evaluation series is based on the assumption that Core Module 1 (Introduction to Monitoring and Evaluation) is always the first module, that it is followed directly by Core Module 2 (Collecting, Analyzing, and Using Monitoring Data), which is followed by one or more of the optional technical area modules (Modules 4 through 10), and that in all cases the final module is Core Module 3 (Developing a Monitoring and Evaluation Plan). The specified sequence is shown below:

5. Core Module 1: Introduction to Monitoring and Evaluation
6. Core Module 2: Collecting, Analyzing, and Using Monitoring Data
7. Optional Technical Area Modules 4 through 10
8. Core Module 3: Developing a Monitoring and Evaluation Plan

Learning Objectives

At the end of this session, participants will be able to:

- Understand the functions and utilities of the global spreadsheet
- Enter data on the activities of implementing partners into the global spreadsheet
- Set validation rules for preventing duplicates
- Set validation rules for preventing accidental overtyping
- Create a list of allowed entries into the spreadsheet (e.g., for: Type of Partner Agency, Funder, and Target Group)
- Set validation rules for preventing out-of-range entries

Session Overview and Schedule

TIME		TOPIC	TRAINING METHOD
7:00-7:10	10 min	A. Welcome and Introductions	<i>Facilitator Presentation</i>
7:10-7:50	40 min	B. Overview and Introduction to Global Spreadsheet and Indicators	<i>Facilitator Presentation</i>
7:50-8:00	10 min	BREAK	
8:00-8:10	10 min	C. Basic Excel Activities 1: Preventing Duplicate Entries in Cells or Ranges	<i>Facilitator Presentation, Practical Activities</i>
8:10-8:20	10 min	D. Basic Excel Activities 2: Preventing Accidental Overtyping in Cells or Ranges	<i>Facilitator Presentation, Practical Activities</i>
8.20-8:30	10 min	E. Basic Excel Activities 3: Creating a List of Allowed Entries	<i>Facilitator Presentation, Practical Activities</i>
8:30-8:40	10 min	F. Basic Excel Activities 4: Dealing with Valid Duplicates	<i>Facilitator Presentation, Practical Activities</i>

Session Overview and Schedule

TIME		TOPIC	TRAINING METHOD
8:40-8:50	10 min	G. Basic Excel Activities 5: Out-of-Range Entries	<i>Facilitator Presentation, Practical Activities</i>
8:50-9:00	10 min	H. Exercises	<i>Facilitator Presentation, Practical Activities</i>

A. Welcome and Introductions

7:00-7:10	10 min	A. Welcome and Introductions	Facilitator Presentation
-----------	--------	------------------------------	--------------------------

Thank participants for arriving on time. As this module will be delivered after Core Module 1: Introduction to Monitoring and Evaluation and after Core Module 2: Collecting, Analyzing, and Using Monitoring Data, participants will have become familiar with each other.

B. Overview and Introduction to Global Spreadsheet and Indicators

7:10-7:50	40 min	B. Overview and Introduction to Global Spreadsheet and Indicators	Facilitator Presentation
-----------	--------	---	--------------------------

Review and Short Description of Items in Global Spreadsheet

The use of spreadsheets has already been introduced in Module 1, so participants will continue to familiarize themselves with the GLOBAL SPREADSHEET by visual inspection and by identifying the worksheets and cell locations of the various components. A portion of the spreadsheet used for behavior change communication (BCC) is reproduced below.

Implementing Partner	Type of Partner (CBO - 1, NGO - 2, FBO - 3)	FCDB	Funder *	Target Group **	# of trainings	# of peer SV trained	# of peer youth trained	# of peer men trained	# of Uniformed Services peers trained
					0	0	0	0	0
Summary indicators									
PDB required indicators									
IMPACT 1		Sex Worker	1						
Bi-Lateral 2		MSM	2						
DFID 3		Youth	3						
CDC 4		General Pop. Adult	4						
World Bank 5		Truckers	5						
GATES 6		Mobile populations	6						
EGPAF 7		Uniformed Services	7						
JICA 8		PLVHA	8						
Other 9									

7:50-8:00	10 min	BREAK	
-----------	--------	-------	--

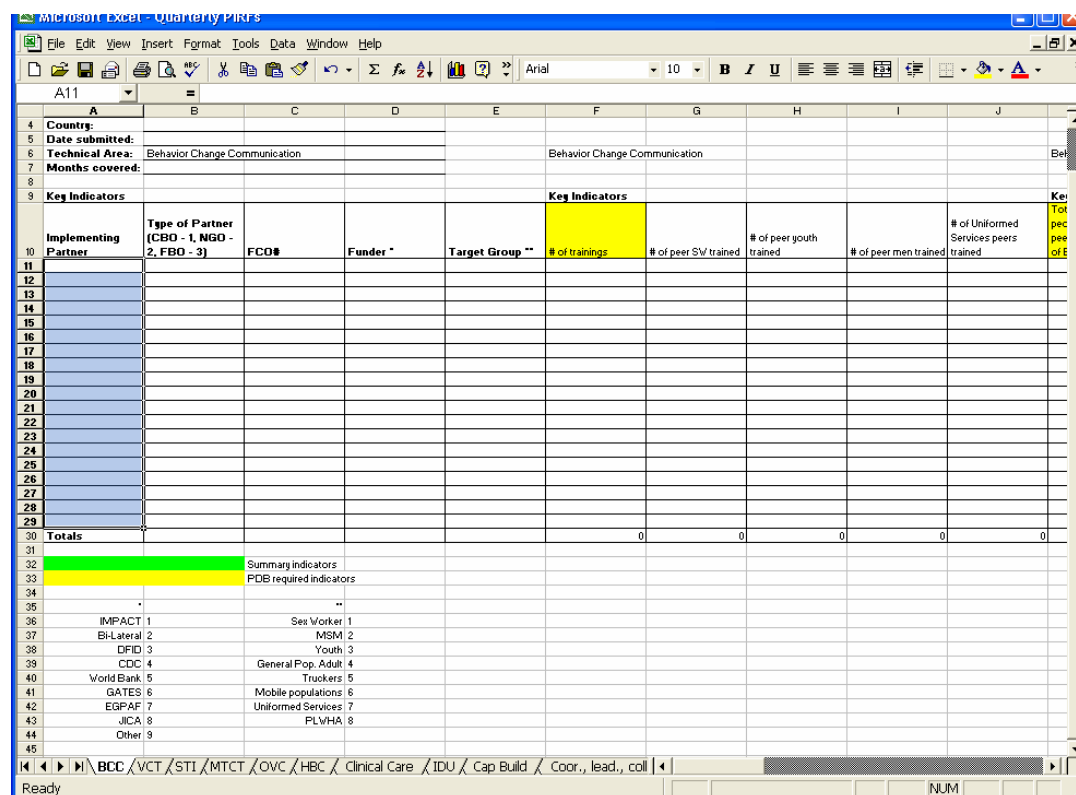
C. Basic Excel Activities 1: Preventing Duplicate Entries in Cells or Ranges

8:00-8:10	10 min	C. Basic Excel Activities 1: Preventing Duplicate Entries in Cells or Ranges	Facilitator Presentation, Practical Activities
-----------	--------	---	---

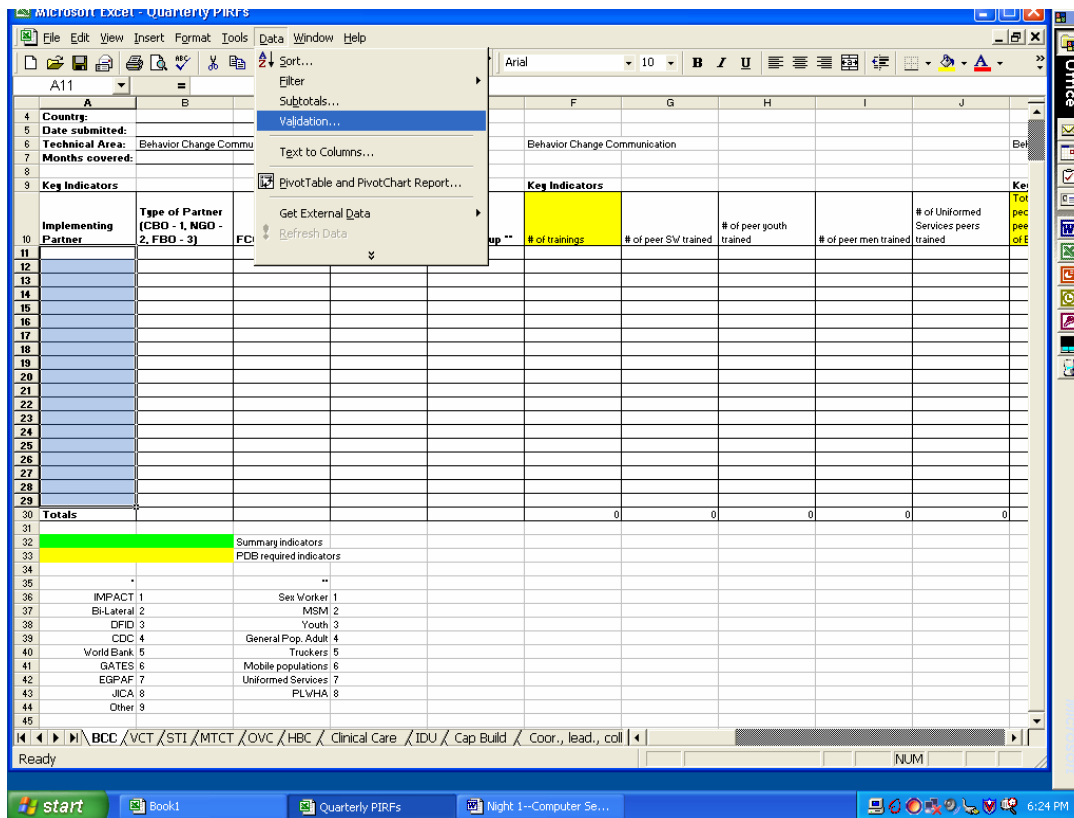
This session is concerned with how to prevent data entry persons from entering numbers or text that have already been entered into any given column/row or range (i.e., Preventing Duplicates). This is usually done before data are entered into the spreadsheet.

Let us assume that in Country X each Implementing Partner deals with only **ONE target group** and is funded by only **ONE donor**. In this case, Column A for Implementing Partner can have only one unique name for each Implementing Partner. Therefore, to prevent duplicate entry into any cell in Column A (from cell A11 to cell A29, which is the range A11:A29) follow the steps below:

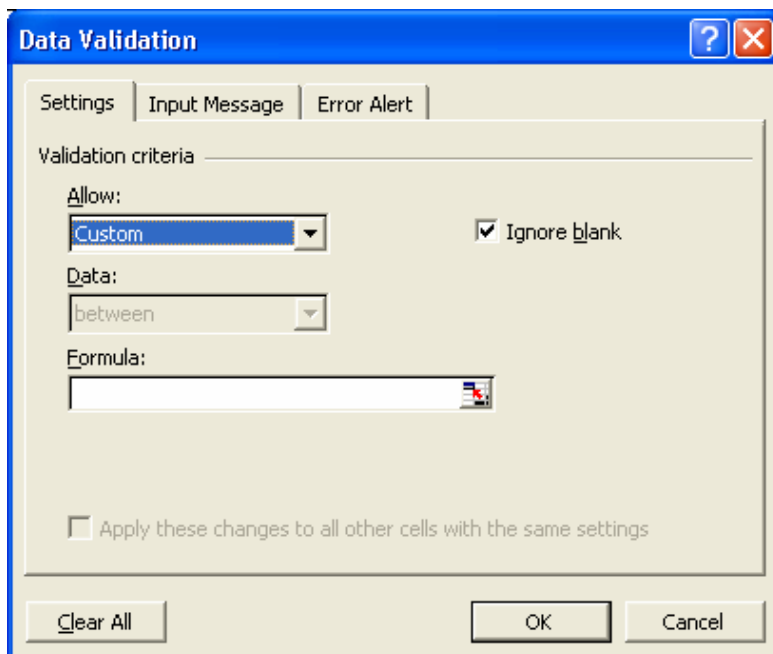
Step 1: Click in Cell A11, hold down the left mouse button, and highlight down to Cell A29. See the picture below where the cells in the range A11:A29 are highlighted in blue.



Step 2: From the top menu click on **Data**, then choose **Validation**. See the picture that follows.



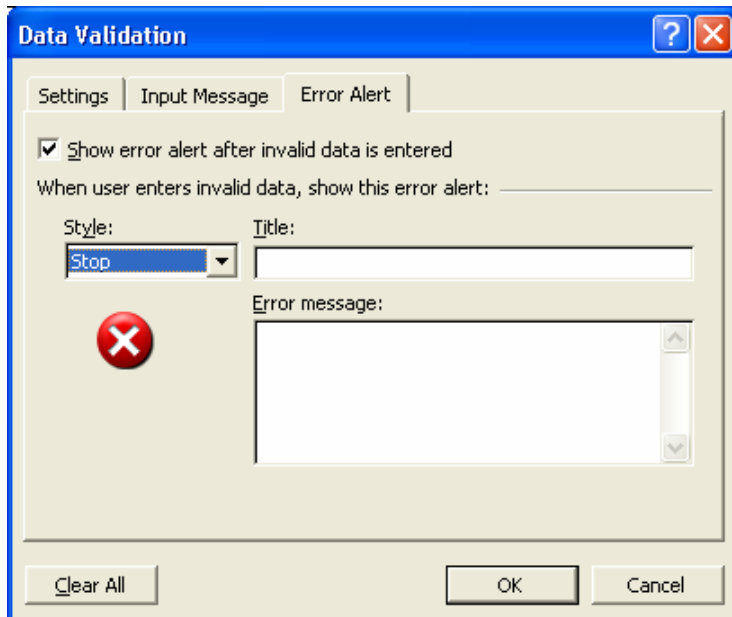
Step 3: After you click on Validation in Step 2, the following “Data Validation” dialog box should appear. In the “Allow:” box, select “Custom,” and the “Formula:” box should appear. See picture below.



Step 4: In the “Formula” box, type the following formula: =COUNTIF(\$A\$11:\$A\$29,A11)=1

Step 5: Click the “**Input Message**” tab and type in a message, which the data entry person will see when the cursor is in any of the cells within the range being protected from duplicate entries. You can type in a message such as “Avoid duplicating entries” or some other suitable message in the “**Input Message**” box.

Step 6: Click the “**Error Alert**” tab and type a message in the “**Error message**” box, which will appear and alert the data entry person if he/she types in a duplicate entry. Now set the error level to STOP, INFORMATION, or WARNING in the “**Style**” box to the left. (STOP: if you type a value that already exists in the cell range A11:A29, this forces you to enter another value in the field. INFORMATION or WARNING: if you type a value that already exists in the cell range A11:A29, this informs you that your entry is a duplicate and gives you a choice to accept or change the duplicate entry). When satisfied with all the settings, click “**OK**” to return to the spreadsheet.



Step 7: Try and type the same word or number in any two cells within the range A11:A29.

D. Basic Excel Activities 2: Preventing Accidental Overtyping in Cells or Ranges

8:10-8:20	10 min	D. Basic Excel Activities 2: Preventing Accidental Overtyping in Cells or Ranges	Facilitator Presentation, Practical Activities
-----------	--------	---	---

We know that certain cells, columns, rows, or ranges of cells contain important data, such as FCO numbers or formulas for computing totals or other values. To ensure data entry people do not accidentally overwrite the data in these cells, columns, rows, or ranges of cells (e.g., Column C, which contains the FCO numbers (i.e., cells C11 to C29 in this example), follow the steps below.

Step 1: Note that column C contains the FCO numbers and that you want to protect this column from accidental overtyping. Select the cell range C11:C29, and then repeat steps 1 to 3 under Preventing Duplicates above, until you reach the “**Data Validation**” dialog box. (Note: If any of the selected cell

contain previous validation instructions, a message will appear asking you to extend/cancel the previous validation because you are not allowed to have two validation instructions active at the same time within the same range.)

Step 2: In the “**Formula**” box type the following formula: **=””** (Please use 2 double quotes, not 4 single quotes. Remember, do not put spaces between the quotes.)

Step 3: Click the “**Input Message**” tab and type in a message that the data entry person will see if they happen to select the cell (e.g., “Are you sure you want to type in this column?” or “Do you really want to type inside this cell?”)

Step 4: Click the “**Error Alert**” tab and type a message the data entry person will see if he/she tries to type in the cell.

Step 5: Set the error level from the “**Style**” box to the left. When satisfied with all of your settings, click “**OK.**”

Step 6: Try and type in any cell within the range **C11:C29** and you will receive the error message you set.

E. Basic Excel Activities 3: Creating a List of Allowed Entries

8.20-8:30	10 min	E. Basic Excel Activities 3: Creating a List of Allowed Entries	Facilitator Presentation, Practical Activities
-----------	--------	--	---

When we want to restrict entries to specific values for particular cells, columns, rows, or ranges, then we need to create a list of the allowed entries from which the data entry person can choose. This may be necessary for Type of Partner, Funder, Target Group, and so on.

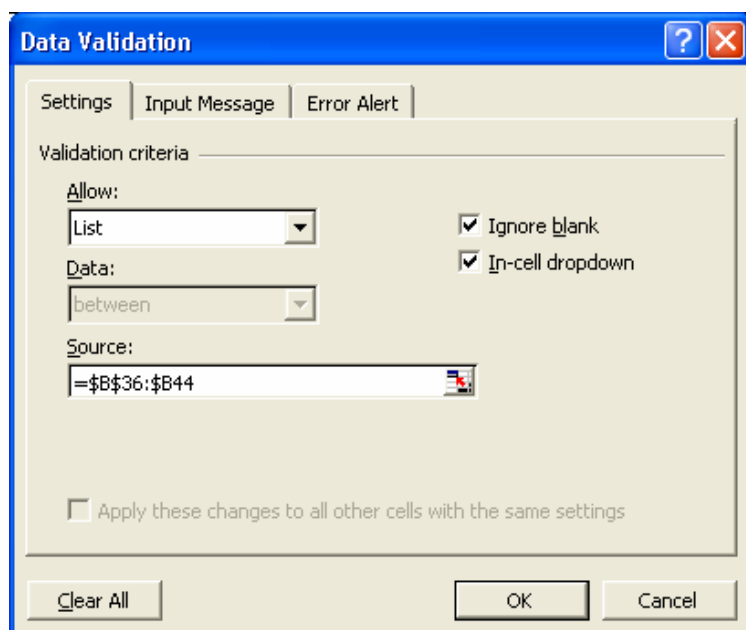
The three variables below (Column B, Type of Partner; Column D, Funder; and Column E, Target Group) are already pre-coded, so they can take only the following numbers (i.e., only the numbers indicated can be typed into the cells):

Column B: Type of Partner	Column D: Funder	Column E: Target Group
1=CBO	1=IMPACT	1=Sex Worker
2=NGO	2=Bi-Lateral	2=MSM
3=FBO	3=DFID	3=Youth
	4=CDC	4=General Pop. Adult
	5=World Bank	5=Truckers
	6=GATES	6=Mobile Populations
	7=EGPAF	7=Uniformed Services
	8=JICA	8=PLWHA
	9=Other	

To restrict entries into Column D (Funder) follow the steps on the next page.

Step 1: Select the range **D11: D29** in **Column D** where data about funders are entered.

Step 2: After you have selected the correct **RANGE D11:D29**, click on **Data** at the top menu, then select **Validation**, and then navigate to the “**Data Validation**” dialog box, shown below.



Step 3: In the “**Data Validation**” dialog box, under the “**Settings**” tab, in the “**Allow:**” box, select “**List**” and the “**Source:**” box should appear. Make sure the “**In cell drop down**” box is checked.

Step 4: In the “**Source**” box type: **=\$B\$36:\$B44**

*(Note: **\$B\$36:\$B\$44** refers to the range from Cell B36 to Cell B44 where the information on the types of Funders are listed in this specific worksheet; so, if this information is kept elsewhere in the worksheet on which you are working, just remember the cell location/address and type it into the “**Source**” box).*

Step 5: Click the “**Input Message**” tab and type in a message that the data entry person will see if they happen to select the cell (e.g., “**Values to be chosen from the displayed list**”).

Step 6: Click the “**Error Alert**” tab and type a message the data entry person will see if they type an entry in the cell that is not part of the list of allowed entries (e.g., “**Please select from the displayed list**”).

Step 7: Set the error level from the “**Style**” box to the left. When satisfied with the settings, click “**OK**”

Step 8: Select any cell within the range **D11: D29**, and you will see a drop arrow, click the drop arrow and you will see the list (1 to 9) that you set. If the data entry person tries to type in an entry that is not part of the list, he/she will receive the error message you set.

F. Basic Excel Activities 4: Dealing with Valid Duplicates

8:30-8:40	10 min	F. Basic Excel Activities 4: Dealing with Valid Duplicates	Facilitator Presentation, Practical Activities
-----------	--------	---	---

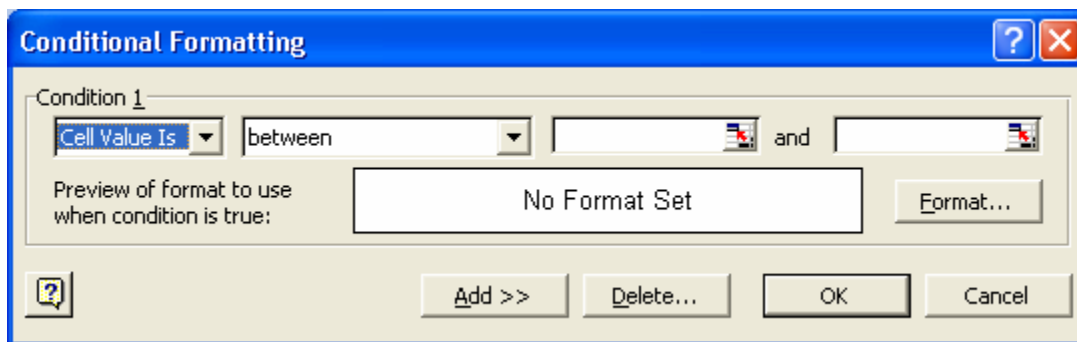
In some situations, one implementing partner may deal with two target groups and may also receive funds from more than one funder. This means that in our example case, Column A—Implementing Partner can have duplicate entries (i.e., the same implementing partner can appear in several cells in the column), so restricting Column A to only one unique name for an implementing partner is not recommended. This section describes how to allow a data entry person to enter duplicates that will be highlighted so that he/she can check the validity of the entries. Other columns that can have duplicates are Type of Partner, Funder, FCO, and Target Group.

It is best for each column to have its own color for highlighting duplicates, instead of one color for all duplicate occurrences in the worksheet. This aids visual comprehension,

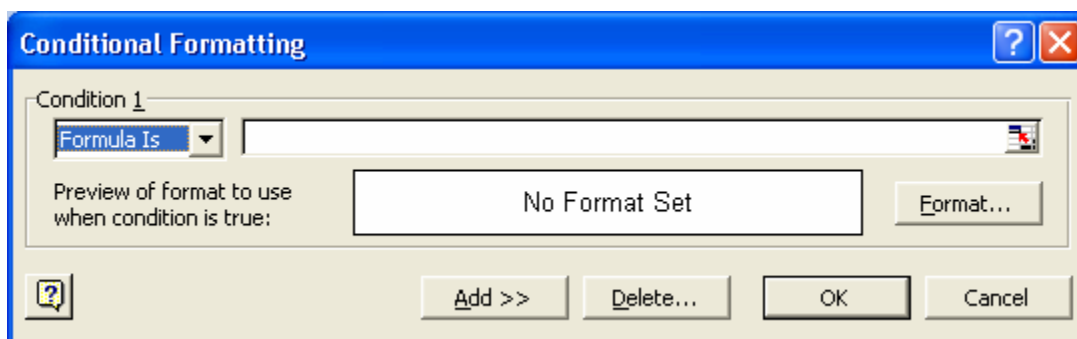
To set up a color scheme for Implementing Partners (range **A11:A29**), use the following steps:

Step 1: Select the range of cells that you know will contain valid duplicates (e.g., **A11:A29**).

Step 2: Select “**Format**” from the top menu, then click on “**Conditional Formatting**.” The “**Conditional Formatting**” dialog box will appear. See picture below.



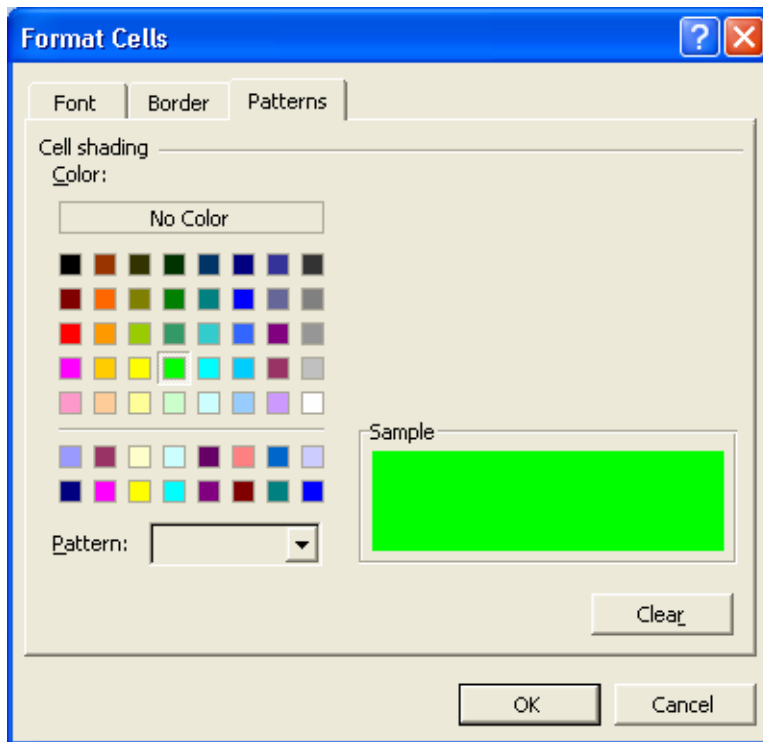
Step 3: In the box directly below “**Condition 1**,” select “**Formula Is**.” The following menu should appear:



Step 4: In the box to the right of the “**Formula Is**” box, type the following formula:
=COUNTIF(\$A\$11:\$A\$29, A11)>1

(This will highlight all the duplicates within range **A11:A29** (i.e., all entries that occur more than once).

Step 5: While still in the “**Conditional Formatting**” dialog box, click the “**Format**” button on the right and then select the format you want to use to highlight duplicate entries in the column. You can also change the background color on the “**Patterns**” tab to a bright color. In our example, we selected the bright green color to highlight duplicates. See picture below.



Step 6: When data are entered, any duplicates will be colored green. This makes them easy to find, and then you can decide whether or not they are valid entries.

When validating data, do not set the message style as “**STOP**” as we did in the first example or you will not be able to enter duplicates even if you do the conditional formatting.

Color Coding Highlighting

Now we know how to highlight duplicates. But Excel allows you to use different colors to highlight entries that appear three (i.e., triplicates), four, or more times.

In this section, we will follow the above steps for duplicates again, but will have a different color to highlight triplicates or data that appear even more than three times.

Step 1: Block the range **A11:A29**.

Step 2: Select the “**Conditional Formatting**” option from the main menu.

Step 3: In the “**Conditional Formatting**” dialog box, select “**Formula Is**” from the box directly below “**Condition 1.**”

Step 4: In the blank box immediately to the right of “Formula Is,” type the following formula:
`=COUNTIF(A11:A29,A11)>3`

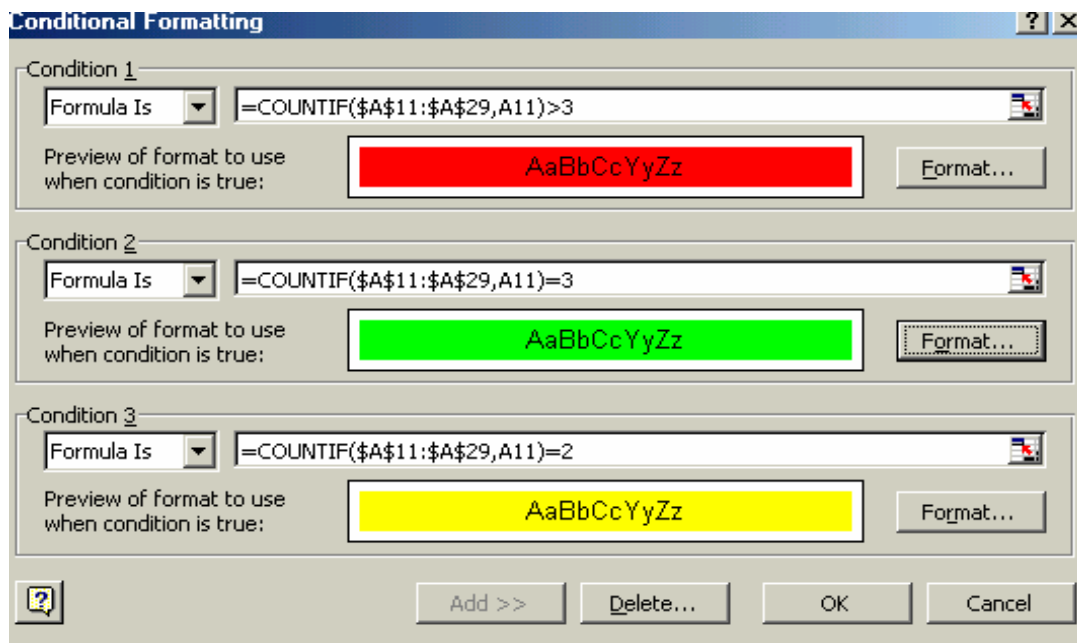
(This will highlight all entries that occur more than three times within the cells in the range A11: A29.)

Step 5: Click the “Format” button and select the format you want to use on all entries that occur more than three times by changing the background color on the “Patterns” tab. If you are satisfied with the color, click “OK.” This should take you back to the “Conditional Formatting” dialog box.

Step 6: Do not click the “OK” button in the “Conditional Formatting” dialog box yet. Click the “Add>>” button. Repeat steps 3, 4, and 5 above to set the format for triplicates. The formula for triplicates is: `=COUNTIF(A11:A29,A11)=3`

Step 7: Do not click the “OK” button in the “Conditional Formatting” dialog box yet. Click the “Add>>” button. Repeat steps 3, 4, and 5 above to set a format for duplicates. The formula for duplicates is: `=COUNTIF(A11:A29,A11)=2`

Step 8: You should end up with the following picture. Now you click the “OK” button in the “Conditional Formatting” dialog box.



All entries that occur twice will appear in one color, all entries that occur three times will appear in another color, and all entries that occur more than three times will appear in yet another color.

G. Basic Excel Activities 5: Out-of-Range Entries

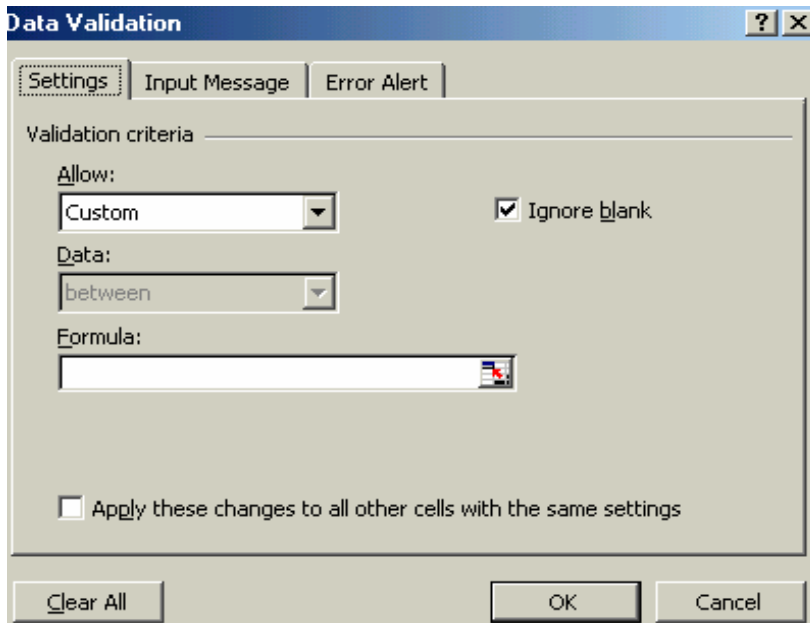
8:40-8:50	10 min	G. Basic Excel Activities 5: Out-of-Range Entries	Facilitator Presentation, Practical Activities
-----------	--------	--	---

The following procedure will help us set minimum and maximum values by modifying the “**Creating List of Allowed Entries**” procedure to prevent any out-of-range entry. This helps limit the errors that occur when entering the input and output data for each implementing partner. You can still use the above procedures for color highlighting while entering both input and output data.

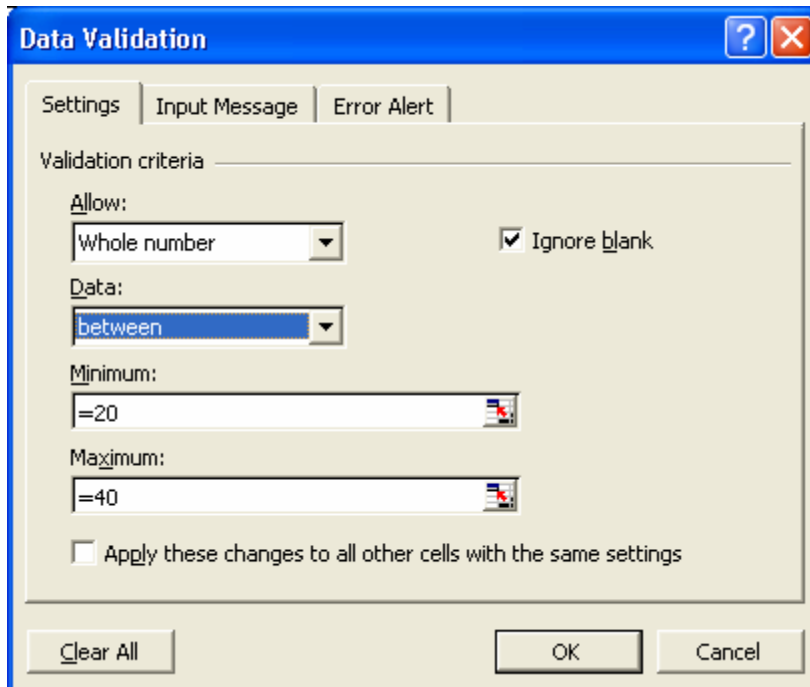
Step 1: Using a hardcopy of the data to be entered, identify the minimum and the maximum values for each variable. For example, for “# of trainings” note the minimum number of trainings and the maximum number of trainings. For example, minimum = 20 and maximum = 40. In the GLOBAL SPREADSHEET Excel spreadsheet, data on “# of trainings” is entered in Column F. Because we know that there were never less than 20 trainings and never more than 40 trainings, we want to format Column F to allow values only between 20 and 40.

Step 2: Select the range where data on “# of trainings” will be entered (i.e., cell F11 to cell F29, range F11:F29).

Step 3: After you have selected the correct range, click on “**Data**” at the top menu, then select “**Validation.**” This will bring up the “**Data Validation**” dialog box (see picture below).



Step 4: From the “**Allow:**” box, select “**Whole number,**” and then in the “**Data:**” box, select “**between.**” The “**Minimum:**” and “**Maximum:**” boxes will be active. In the “**Minimum:**” box, type in =20 (the minimum value as identified from the data set). In the “**Maximum:**” box, type in =40 (the maximum value as identified from the data set). See the example that follows.



Step 5: Click the “**Input Message**” tab and type in a message that the data entry person will see if they happen to select the cell (e.g., “Entries must be within a specified range”).

Step 6: Click the “**Error Alert**” tab and type a message that the data entry person will see if they type an entry in the cell that is not between the values of **20** and **40** (e.g., “Check to ensure that your entry is correct”).

Step 7: Set the error level from the “**Style**” box to the left. When satisfied with the settings, click “**OK.**”

Step 8: If the data entry person tries to enter data in cells F11 to F29 that is not between the values of 20 and 40, he/she will receive the error message you set.

H. Exercises

8:50-9:00	10 min	H. Exercises	<i>Facilitator Presentation, Practical Activities</i>
-----------	--------	--------------	---

1. Each participant should fill in a hard copy of the spreadsheet up to “**Total number of people reached one-on-one**” using the Behavior Change Communication form.
2. In the Excel spreadsheet, each participant should set validation rules allowing only specified entries for: Type of Partner, Funder, and Target Group.
3. In the Excel spreadsheet, each participant should set validation rules allowing only specified entries for “# of peer sex workers (SW) trained.”

Tips:

Depending on what you want to do, carefully select the type of error message you want. When you select STOP for an error message during the validation process, it will prevent the computer from accepting anything that you try to type in. However, if you select WARNING or INFORMATION, the computer will give you the choice of either keeping what you have typed or changing it.

For the section on overtyping, after the validation, each time you enter data the error message you entered will pop up. Do not be concerned; this is a normal occurrence.

CORE MODULE 2:

Night 2: Descriptive Statistics and Charts

This Monitoring and Evaluation series is based on the assumption that Core Module 1 (Introduction to Monitoring and Evaluation) is always the first module, that it is followed directly by Core Module 2 (Collecting, Analyzing, and Using Monitoring Data), which is followed by one or more of the optional technical area modules (Modules 4 through 10), and that in all cases the final module is Core Module 3 (Developing a Monitoring and Evaluation Plan). The specified sequence is shown below:

9. *Core Module 1: Introduction to Monitoring and Evaluation*
10. *Core Module 2: Collecting, Analyzing, and Using Monitoring Data*
11. *Optional Technical Area Modules 4 through 10*
12. *Core Module 3: Developing a Monitoring and Evaluation Plan*

Learning Objectives

At the end of this session, participants will be able to:

- Create simple charts from the GLOBAL SPREADSHEET file
- Calculate the mean for some indicators from the GLOBAL SPREADSHEET file

Session Overview and Schedule

TIME		TOPIC	TRAINING METHOD
7:00-7:10	10 min	A. Welcome and Introductions	<i>Facilitator Presentation</i>
7:10-7:40	30 min	B. Data Entry into Global Spreadsheet	<i>Facilitator Presentation, Practical Activities</i>
7:40-8:00	20 min	C. Creating Pivot Tables	<i>Facilitator Presentation, Practical Activities</i>
8:00-8:10	10 min	BREAK	
8:10-8:30	20 min	D. Creating Charts: Bar Charts, Pie Charts, and Others	<i>Facilitator Presentation, Practical Activities</i>
8.30-8.50	20 min	E. Basic Analysis: Frequencies, Means, Other Tips	<i>Facilitator Presentation, Practical Activities</i>
8:50-9:00	10 min	F. Exercises	<i>Facilitator Presentation, Practical Activities</i>

A. Welcome and Introductions

7:00-7:10	10 min	A. Welcome and Introductions	Facilitator Presentation
-----------	--------	------------------------------	--------------------------

Thank participants for arriving on time. This is the second computer night, so participants will have become familiar with the procedures and with each other.

B. Data Entry into Global Spreadsheet

7:10-7:40	30 min	B. Data Entry into Global Spreadsheet	Facilitator Presentation, Practical Activities
-----------	--------	---------------------------------------	---

Participants should enter data into the Global Spreadsheet from a printed hardcopy of the “**Quarterly PIRFs test example.XLS**” that is already filled in by the mock data system up to Column P entitled **Key Indicators: Total Number of People reached one-on-one [sum of J11-M11]**.

After entering data into the Global Spreadsheet, participants will proceed through the steps in the following section, which show how to construct pivot tables (a pivot table is an interactive table that you can use to quickly summarize large amounts of data). Information from the pivot table can then be used to develop the three basic types of charts: bar charts, pie charts, and line charts.

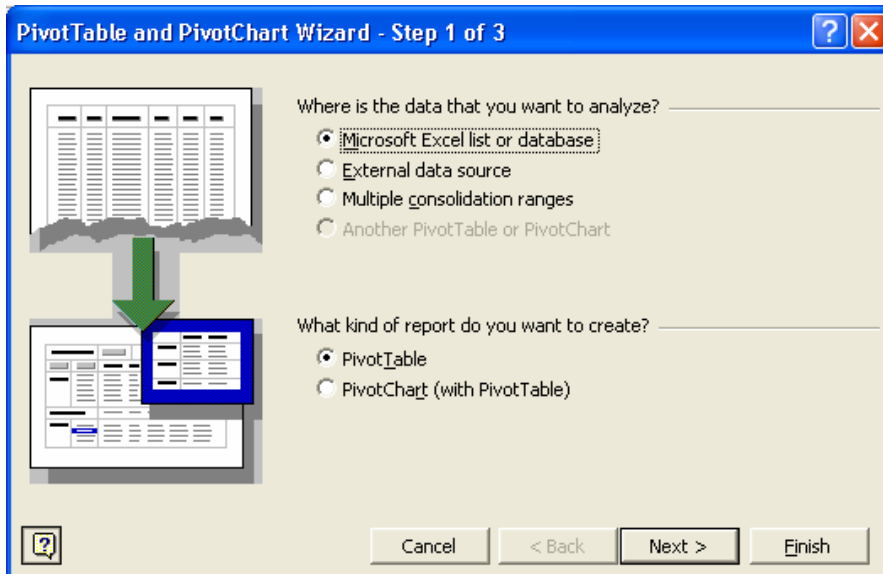
C. Creating Pivot Tables

7:40-8.00	20 min	C. Creating Pivot Tables	Facilitator Presentation, Practical Activities
-----------	--------	--------------------------	---

To create a pivot table, use the following steps.

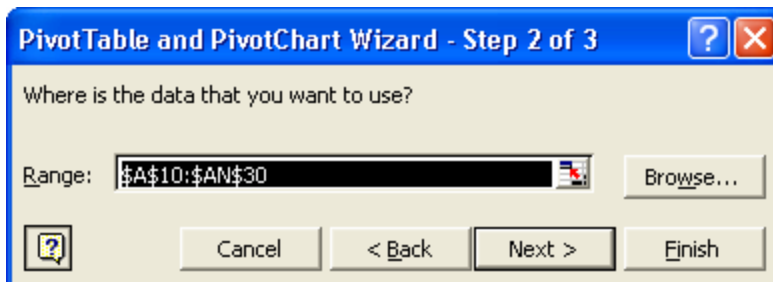
Step 1: Select the part of the Global Spreadsheet that contains the data to be analyzed. In this example, select the range **A11:AN29**. Note that this does not include the row that contains the row total.

Step 2: Go to the menu and click on “**Data.**” Then click “**PivotTable and PivotChart**” to get to the window shown in the picture below.



Step 3: Make sure that “Microsoft Excel list or database” and “Pivot Table” are selected.

Step 4: If you click the “Next >” button, you will see the following window, “Where is the data you want to use?” The entire worksheet will be displayed in the range. However, edit this to ensure that the range field contains \$A\$10:\$AN\$29. This is the range of this particular Excel spreadsheet, excluding the row containing the totals. (Note: if you did not do Step 1 properly, then the range field will not be filled.)

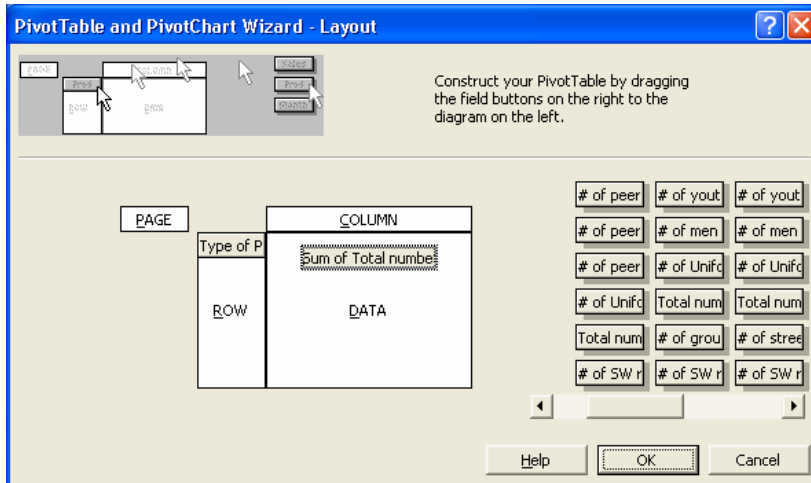


Step 5: Click the “Next >” button again to display the dialog box shown below. Make sure “Existing worksheet” is selected. (This will put the resulting table in an existing worksheet).

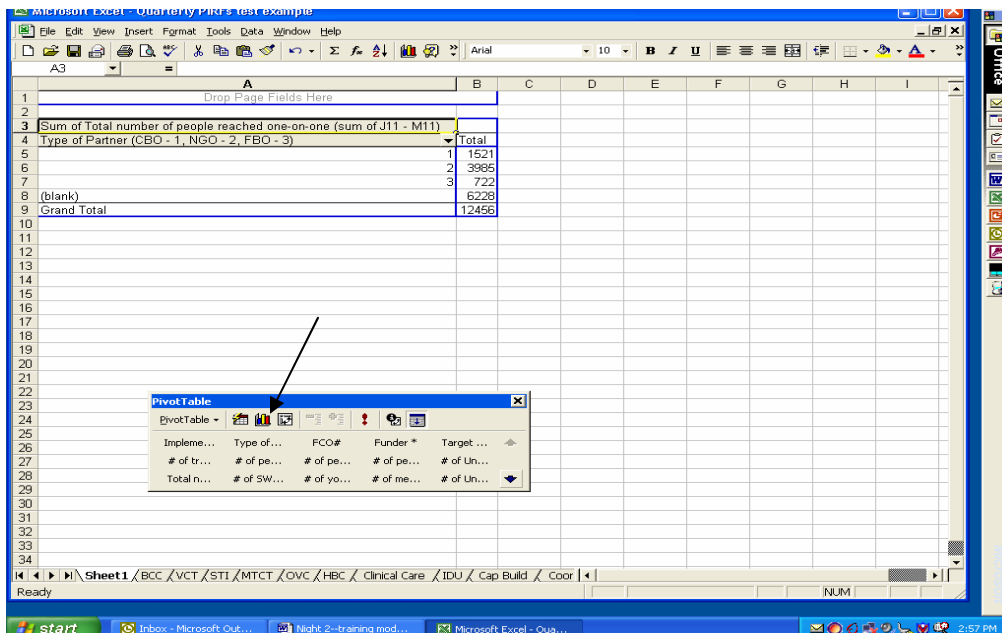


Step 6: Click the “Layout” button to get to the following window. Study the window, and note that the layout table is on the left and the list of fields is on the right.

This is where you tell the computer how to construct the table. In our example, we want the type of partner to be in the **ROW** and the total number of people reached (by each of the partners) in the **COLUMN**. You can select more than one field to be in the rows and more than one field to be in the column. To pick a data field, locate the field on the right side of the window, click and drag the required field to the place where you want it (column or row) on the left side. (Note that the title of the fields may not appear in full; however, moving the cursor over any truncated title will cause the title to be displayed in full.)



When you finish, click the “OK” button and you will return to the previous window. Then click “Finish” and you will see the window below, which contains the results.



Step 7: In the picture above, the data we are interested in is contained in a small table at the top of the spreadsheet and a Pivot Table window at the bottom.

8:00-8:10	10 min	BREAK	
-----------	--------	-------	--

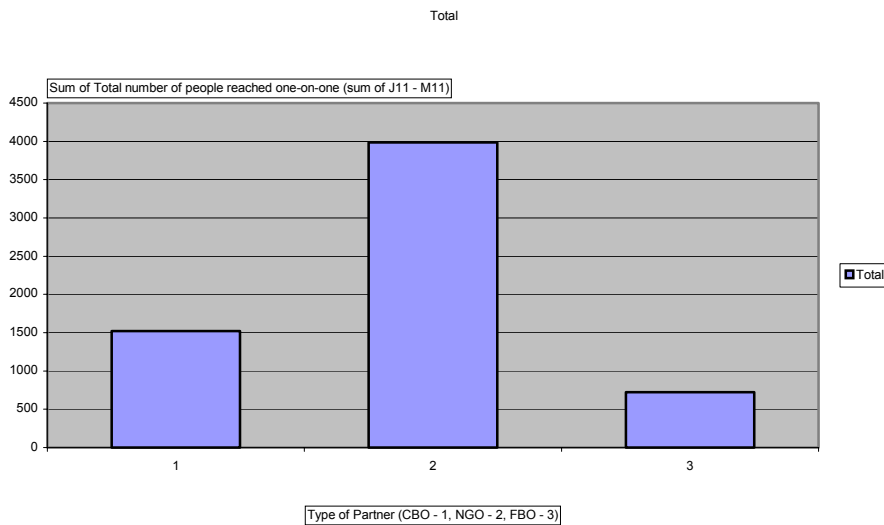
D. Creating Charts: Bar Charts, Pie Charts, and Others

8:10-8:30	20 min	D. Creating Charts: Bar Charts, Pie Charts, and Others	<i>Facilitator Presentation, Practical Activities</i>
-----------	--------	--	---

Bar Charts

To draw charts, click on the **chart button** (see arrow in picture above) in the **Pivot Table** window. When you click on it, you will get the bar chart (as a default) shown below. You can now try making other charts, such as pie charts, horizontal bar charts, or others.

Example of Bar Chart



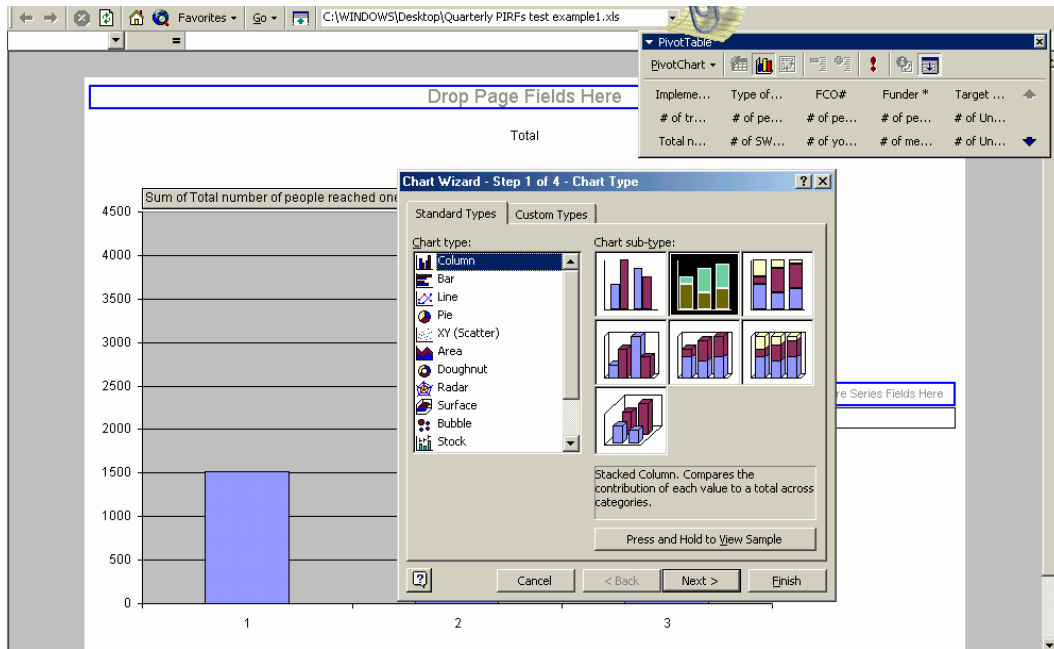
Drawing Other Types of Charts

Once you construct a pivot table, you can produce a bar chart using the same data. You can also produce other types of charts (e.g., pie and horizontal bar charts) using this data.

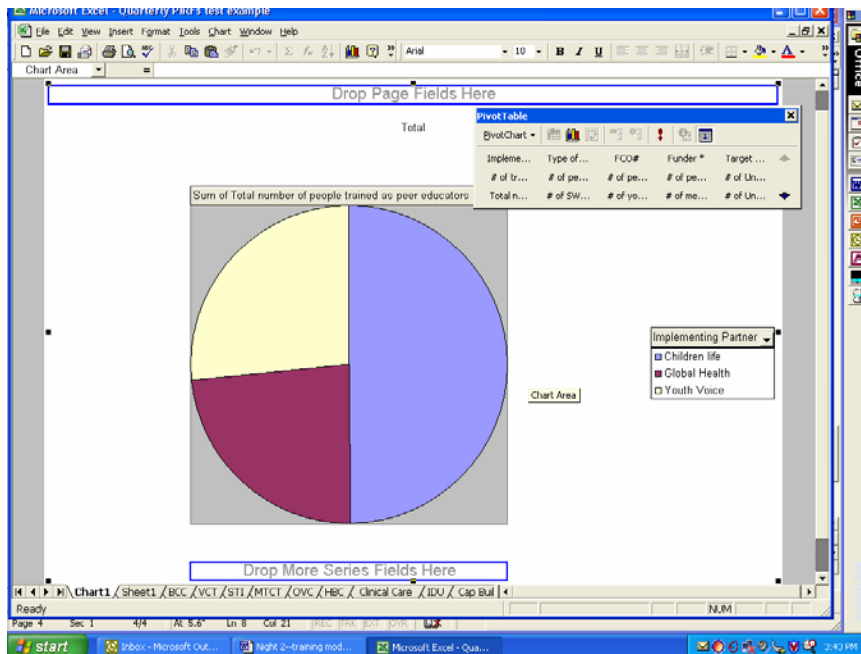
Step 1: Construct a pivot table as before. This time, select “Implementing Partners” for the **Row** and “Total number of people trained as peer educators” for the **Data** item.

Step 2: Click on the **Chart** button to get a bar chart.

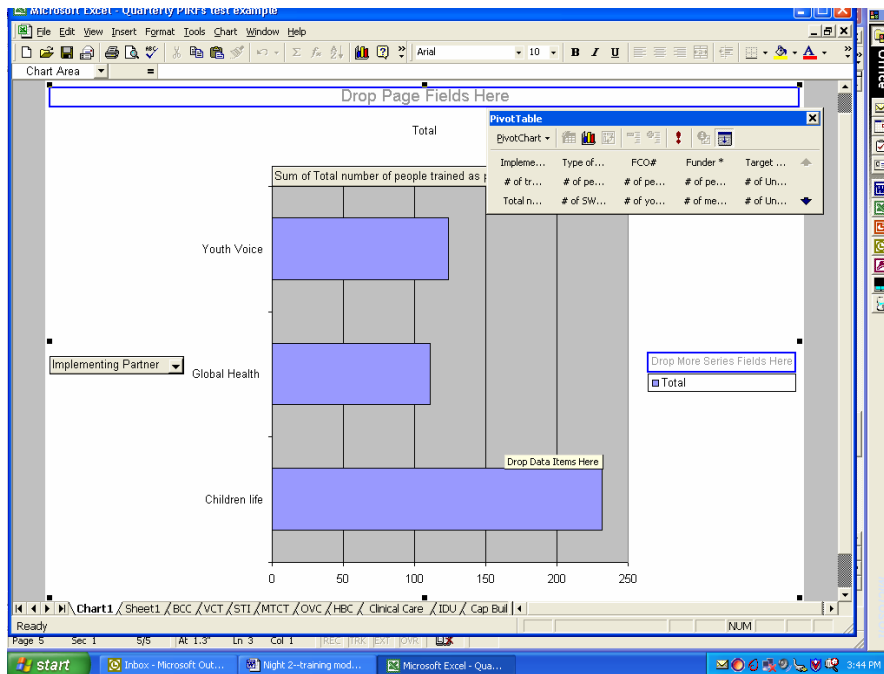
Step 3: Click on the **Chart** button again to get the screen below.



In the **Chart type** column, pick the **Pie chart** option (to draw a pie chart from the column chart) and then pick any subtype (as displayed). Then click on **“Finish.”** (To explore the range of other chart options, click on the **“Next >”** button. You will be asked to provide a legend, titles, data label options for the pie chart, whether you want the pie chart in a new or an existing worksheet, and other items.)



The bar chart below was drawn from the same pivot table used to produce the pie chart above.



Tips:

1. At times you may want to change the data field displayed in a chart. For example, you may want a graph of Type of Partner (on the X-axis) by Total Number of People Reached One-on-One from an existing graph that shows Implementing Partner (on the X-axis) by the Total Number of People Trained as Peer Educators. To change the data field displayed in a chart:
 - a. First, go to the pivot table displayed in the graph.
 - b. Select and drag your choice for the X axis from the fields displayed in the pivot table (i.e., type of partner) to the X-axis where the implementing partner is written on the graph. The computer will ask if you want to replace the contents of the destination cells. Answer “Yes.” The two field names will be displayed side by side.
 - c. Right click the mouse on the field name that you want to change. You will be given some options; select the “remove field” option. This will remove the field that you want to replace.
 - d. To change the other variable, return to the pivot table, select the new field, drag it beside the field you want it to replace, and the new field will again appear beside the field on the X-axis. Right click one new field beside the X-axis field; this will give you the name of the fields that you want to replace and the one you just brought from the pivot table. Deselect the one that you do not want anymore.
2. To get rid of variables in any field, click on the arrow next to the field and deselect the unwanted variable. Click “OK”.
3. Click different buttons and see what you can do.
4. You can also double-click on the bar to change the color.
5. If you lose your pivot table, go to the menu bar, click on “View,” then on “Toolbars,” and select “Pivot Table.” The pivot table should pop up.
6. If you have a major problem, just restart the process from the beginning.

E. Basic Analysis: Frequencies, Means, and Other Tips

8.30-8.50	20 min	E. Basic Analysis: Frequencies, Means, Other Tips	Facilitator Presentation, Practical Activities
-----------	--------	---	---

Mean—The mean is an index of central tendency that statisticians use to indicate the point on a scale of measure where the population is centered. The mean is the average of the scores in the population. Numerically, it equals the sum of the scores divided by the number of scores. The mean is the one value that, if substituted for every score in a population, would yield the same sum as the original scores, and hence it would yield the same mean.

Median—The median is an index of central tendency that statisticians use to indicate the point on a scale of measure where the population is centered. The median of a population is the point that divides the distribution of scores in half. Numerically, half of the scores in a population will have values that are equal to or larger than the median and half will have values that are equal to or smaller than the median.

Mode—The mode is a measure of central tendency that statisticians use to indicate the point (or points) on a scale of measure where the population is centered. It is the score in the population that occurs most frequently. Please note that the mode is not the frequency of the most numerous score. It is the value of that score itself.

Minimum—Lowest value/number

Maximum—Highest value/number

F. Exercises

8:50-9:00	10 min	F. Exercises	Facilitator Presentation, Practical Activities
-----------	--------	--------------	---

Graphing the Mean

Exercise 1:

Question 1: Using pivot tables, calculate the mean number of people reached per peer educator trained (assuming that all of those trained as peer educators were active) by each implementing partner.

Question 2: Draw a bar chart showing the mean number of people reached per peer educator by type of implementing partner.

Answer for Question 1:

This is given by the total number of people reached by each implementing partner divided by the total number of peer educators trained by each Implementing partner.

Tips:

Step 1: Set up a pivot table to show the total number of people reached one-on-one by each implementing partner.

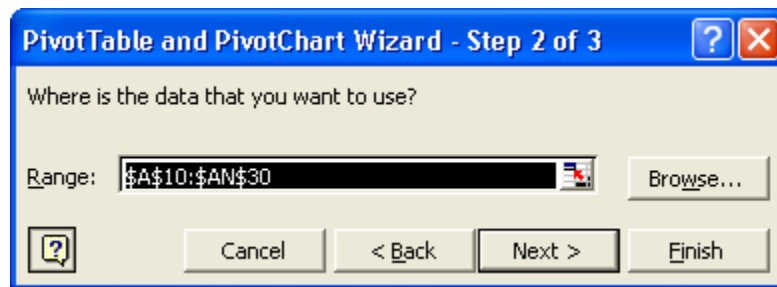
Sum of total number of people reached one-on-one (sum of J11 - M11)	
Implementing Partner	Total
Children Life	3194
Global Health	1671
Youth Voice	1363
Grand Total	6228

Step 2: Set up another pivot table* (see below) on the same worksheet to show the total number of people trained as peer educators by each implementing partner.

Sum of total number of people trained as peer educators (sum of E11 - H11)	
Implementing Partner	Total
Children Life	232
Global Health	111
Youth Voice	124
Grand Total	467

*Set up another pivot table on the same sheet containing a previous pivot table.

1. Note the name of the sheet where the previous pivot table was displayed (Sheet4, Sheet3, and so on).
2. Set up the pivot table as before. (Note: The range should contain the worksheet that contains the data to be analyzed. Remember to adjust the range to *exclude* the row that contains the total, as before.) However, after the screen below is displayed, you will be asked *if you want your new report to be based on the same data as your existing report*. Answer “**No.**”



3. You will then be asked where you want to put the new pivot table. Choose “**Existing worksheet,**” as shown in the picture that follows.



4. Place the cursor in the box below **“Existing worksheet,”** then click on the tab for the sheet where the previous pivot table is located (Excel will automatically put the name of the sheet in the box described above). This will display the previous pivot table.
5. Click in the cell where the new Pivot Table should be located (Excel will again automatically put the cell address after the name of the sheet described in Step 4 above).
6. You can then go ahead to describe the layout for the table.
7. Click **“OK”** when you are through, as before.

Step 3: Copy the total column of the second table (total number of peer educators trained by each implementing partner) and paste it beside the total column of the first table. This should give you the following table.

Sum of Total number of people reached one-on-one (sum of J11 - M11)		
Implementing Partner	Total 1	Total 2
Children Life	3194	232
Global Health	1671	111
Youth Voice	1363	124
Grand Total	6228	467

Now, calculate the mean number of people reached by each peer educator trained. In the column to the right of the Total 2 column, type **“Mean number of people reached by one trained peer educator.”** Immediately below this cell enter the formula $=A1/A2$.

Where:

- A1=Cell address of the cell containing 3194 (i.e., B2, or any other)**
- A2=Cell address of the cell containing 232 (i.e., B2, or any other)**

Copy this formula into each cell where you want the mean to be computed.

Implementing Partner	Total 1	Total 2	Mean number of people reached by one trained peer educator
Children life	3194	232	13.76724
Global Health	1671	111	15.05405
Youth Voice	1363	124	10.99194
Grand Total	6228	467	13.33619

Creating a Bar Chart

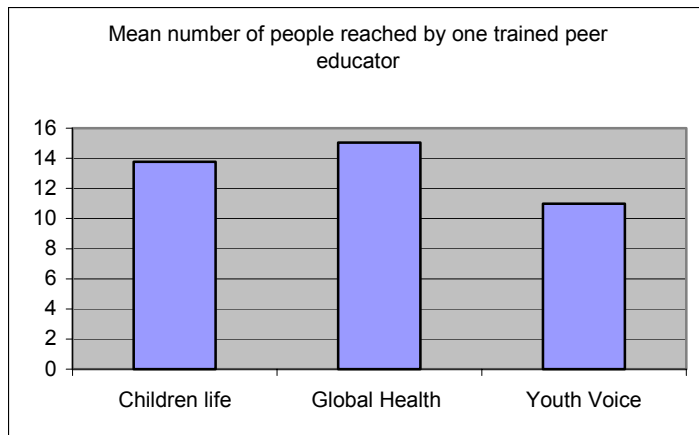
To create a bar chart, follow the steps below.

Step 1: Copy out the section of the table containing the data that you want to plot, starting from the row containing the text “**Implementing Partner**” (i.e., *do not include* the row on top that contains “**Sum total number of people reached...**”). Paste the data into a lower part of the worksheet.

Step 2: Select the cell containing the text “**Implementing Partner**” and the cells below it that contain the data to be plotted.

Step 3: Hold down the “**Control**” (Ctrl) button on the keyboard, and using the mouse, click once on the cell containing the header for the calculated mean values. Release the control button, and select the rest of the cells containing the mean values for each implementing partner.

Step 4: Click the “**Chart**” button and draw the chart following the instructions. This will generate the chart below.



Exercise 2:

Following the same steps as above, do the same exercise using “type of partner” and “mean number of youth reached by each trained peer educator.”

Appendix

Core Module 2: Collecting, Analyzing, and Using Monitoring Data

Data Collection Tools and Instruments (Handout)	1
Group Exercise for Monitoring Tools: Scenario 1 (Handout).....	3
Group Exercise for Monitoring Tools: Scenario 2 (Handout).....	4
Table for Planning Data Analysis, Interpretation, and Use (Handout).....	5
Data Presentation (Handout).....	6
Graphical Presentation of Data (Handout).....	8
Examples of Line, Bar, and Pie Charts (Handout).....	9
Group Exercise for Data Flow (Handout)	10
Data Quality Exercise (Handout).....	11
Group Exercise for Data Interpretation and Packaging Results (Handout).....	17

Data Collection Tools and Instruments

Some common monitoring and evaluation tools include: sign-in (registration) logs; registration (enrollment, intake) forms; checklists; program activity forms; logs and tally sheets; patient charts; and structured questionnaires. (Note that similar tools may be known by different names. This exercise shares different types of forms with participants, but be flexible about what these tools might be called.)

- **Sign-in or registration logs** are kept by many types of programs and facilities. Every client who enters the facility is required to “sign in.” The information collected in these logs varies substantially. A log may have only enough space for state, name, time-in, and time-out, or it may require a longer list of demographic, personal, or service-related information (e.g., age, residence, marital status, or reason for attending). Note: If the clinic provides services that may be stigmatized (like VCT or STI services), measures should be taken to maintain the confidentiality of the information in the log.
- **Other types of logs** may be developed as a way to track program activities daily. Examples of these include laboratory, counseling, or other activity logs. Information is usually written on one line, following appropriate column instructions. Logs have several favorable features. They are easy for recording a set of minimal data; they are inexpensive and efficient (no need to file); and data are easy to retrieve. Logs are best used when program staff do not expect multiple or complex interactions with individuals.
- **Registration forms** (also known as enrollment forms or intake forms) generally are used to collect personal (name or ID number) and demographic (e.g., age or sex) information. These forms may look like a checklist or short questionnaire, and they may be self-administered or be completed (during an interview) by program staff.
- **Checklists** can be used as an aid to observers who are monitoring events, procedures, or services. A checklist might help to check the consistency of a process on the basis of an ideal or widely accepted way to implement that process. For example, an observer may check whether a healthcare provider follows STI diagnosis and treatment procedures as detailed in a flowchart. Following are some suggestions for the development of a checklist:
 - Review the steps of the process or elements of the performance that you want to observe.
 - Select the critical steps of the process.
 - Make a list of questions to check if the steps are performed. These should be “closed” questions that can only be answered by “yes” or “no.”
 - Perform the observations, filling out the checklist either during or immediately after the observation.
- **Program activity forms** vary substantially, but are often designed specifically to collect basic information (output indicators) about program activities, such as the number of people reached, the number of events/activities conducted, or the number of materials developed or distributed.
- **Tally sheets** are tools used to compile raw data from logs on a periodic basis. Row headings guide the categories to be tallied, and information can be quickly and easily transferred from logs.
- **Monthly summary forms** are used to compile raw data from other forms on a periodic basis. For example, a separate client intake form or program activity form may be completed for every event or service. The program might either enter this information directly into a

computer or might compile this information on a monthly summary form to be sent to others for a higher level of aggregation or for entry into a computer system. Information is always lost on a monthly summary form, so great care must be taken when developing these forms to ensure that the necessary information can be aggregated.

- **Patient records/charts** can provide a wealth of information about the content and quality of services. However, patient charts are designed primarily to remain at a facility in a patient file in order to track patient care or progress over time; they are not inherently intended as a program monitoring tool. Thus, there may be constraints to using patient records or charts for monitoring program progress and quality. Charts may be incomplete or difficult to read, they may contain much more information than is desired for program monitoring, and great care must be taken to ensure a patient's privacy and confidentiality. Still, periodic chart review may be an effective method for monitoring and/or evaluating program activities and quality.
- **Open-ended questionnaires** are often used in qualitative data collection methods as a way to guide an in-depth interview or a focus group discussion to seek descriptive information. This list of questions might include stem questions and a list of suggested probes that follow on the same topic and might be of central interest to the research or evaluation question. The administration of the questionnaire is relatively flexible and allows the interviewer some discretion to steer discussions deeper into particular areas as perceived useful.
- **Semi-structured questionnaires** are often used in quantitative methods as a way to gather information by asking standardized questions in a structured format. The answers are usually coded numerically and analyzed with quantitative methods. The administration of this type of questionnaire is (mostly) structured and, thus, does not allow for interviewer flexibility or deviation from the wording or order of questions as they are written. There may be select questions that require the interviewer to write down or enter a respondent's answer verbatim, but these are infrequent.

Group Exercise for Monitoring Tools: Scenario 1

You have 20 minutes for this brainstorming exercise. The idea is not to make an exact or all-inclusive list, but rather to share ideas.

Hypothetical Program Scenario 1:

In a hypothetical country, FHI supports voluntary counseling and testing (VCT) services for all adults in four districts with particular focus on young adults. Each of these four districts has an urban center, but the majority of the population lives in rural and semi-rural villages. There are eight VCT centers, two in each district. In each district, one VCT center lies in the urban center and is operated by the Ministry of Health's district hospital. In addition, in each district, one VCT center is operated by the Mission Hospital that serves a relatively remote, rural portion of each district.

Exercise:

In your small group, brainstorm all of the tools that might be used to monitor VCT services provided to young adults ages 15 to 29. This exercise is not intended to elicit "right" or "wrong" answers, but rather to encourage you to explore various ways to approach the same question. Remember, your program can implement only one single-page regular monitoring form, so the data you collect must be concise and a priority for the program.

For each method:

- Describe what you are going to monitor.
- Describe the tool(s) you would use and why the data might be appropriate to answer this question.
- Consider the strengths and the weaknesses of this approach.
- Discuss how and how often data might be collected.
- Discuss who might be responsible for collecting data.

Group Exercise for Monitoring Tools: Scenario 2

You have 20 minutes for this brainstorming exercise. The idea is not to make an exact or all-inclusive list, but rather to share ideas.

Hypothetical Program Scenario 2:

In a hypothetical country, FHI provides capacity-building and support to five implementing agencies (IAs) conducting behavior change communication (BCC) activities. All of the IAs have large, comprehensive youth programs in four districts, with BCC components covering peer education activities, mass media, and materials development.

Exercise:

In your small group, select one component of FHI's BCC activities and brainstorm all of the tools that might be used to monitor it. This exercise is not intended to elicit "right" or "wrong" answers, but rather to encourage you to explore various ways to approach the same question. Remember, your program can implement only one single-page regular monitoring form, so the data you collect must be concise and a priority for the program.

For each method:

- Describe what you are going to monitor.
- Describe the tool(s) you would use and why the data might be appropriate to answer this question.
- Consider the strengths and the weaknesses of this approach.
- Discuss how and how often data might be collected.
- Discuss who might be responsible for collecting data.

Table for Planning Data Analysis, Interpretation, and Use**Overview of Monitoring and Evaluation System**

Program Objectives	Monitoring Questions	Indicators	Data Collection Tools	Analysis Method	Interpretation and Audience

Data Presentation

Ask participants to turn to this section in their binders and to follow along with the charts and graphs as they are discussed.

Four common ways to present data include tables, line charts, bar charts, and pie charts.

Tables

Tables are the most common way to present analyzed data. Use a table when presenting large amounts of data, such as in Tables 1, 2, and 3 (refer to handout). Table 1 is an example of data from a program with one site; Table 2 shows data from a program with more than one site. Tables are used to show and to compare similar things (e.g., number of sites) and to show trends.

Tables 1, 2, and 3 are frequency tables in which the calculated percentages show the magnitude of each sub-category of the variable out of a constant number (100). They show what would have been the expected number of clients in each age sub-category if there had been exactly 100 clients. Percentages are calculated so that the numbers can be compared with the numbers from programs that have more sites, such as the data shown in Tables 2 and 3.

- **Column Percentage:** Is calculated from the total of all the sub-categories of age that are displayed along a column in different rows in relation to only one sub-category of the site. In Table 2, figures in parentheses are the column percentages calculated out of the total of all age sub-categories (100) in relation to only one sub-category of the site (site A). For example, suppose you want to find out age distribution of clients visiting site A. The site category A shows that of the 100 clients, 22 (22%) are ages 25 to 29, while only 3 (3%) are ages 55 and above.
- **Row Percentage:** Is calculated from the total of all the sub-categories of site that are displayed along a row in different columns in relation to only one age sub-category. For example, in Table 3 figures in parentheses are the row percentages calculated out of the total of all site categories (A and B) in relation to only one age sub-category. The data are the same as in Tables 1 and 2. For example, out of those who are ages 35-39, 61 percent visit site B, while only 39 percent visit site A. Therefore, the row percentage gives you the variation in terms of site among those who are ages 35-39. It shows how 43 clients who are ages 35-39 differ from one another in where they go for voluntary counseling and testing services. Similarly, you can select any other age sub-category to examine its variation in relation to where its members go for voluntary counseling and testing services.

How you do your percentages will depend upon what type of research question you want to answer. For example, Table 2 tries to answer the question of profiling the clients using a given site, while Table 3 tries to answer a specific research question like “Where do most teenagers go for their voluntary counseling and testing services?”

Hints on How to Prepare a Table

- A table must have a title indicating the table’s number and describing the type of data it contains.
- Usually, background information like age, education, and religion are listed on the Y-axis (vertical, left side), while other information is listed on the X-axis (horizontal, at top of table).
- If data are taken from another source, the source of the data should be identified at the bottom of the table.
- Other explanatory notes should be added at the bottom of a table.

Table 1. VCT Clients, by Age (hypothetical data)

Age (years)	Number of VCT Clients	
< 20	2	(2)
20-24	12	(12)
25-29	22	(22)
30-34	14	(14)
35-39	17	(17)
40-44	10	(10)
45-49	11	(11)
50-54	9	(9)
> 55	3	(3)
Total	100	(100.0)

Note: Figures in parentheses are percentages.

Table 2. VCT Clients, by Age (hypothetical data)

Age (years)	Number of VCT Clients at Site A		Number of VCT Clients at Site B	
< 20	2	(2)	1	(0.6)
20-24	12	(12)	17	(10.9)
25-29	22	(22)	23	(14.7)
30-34	14	(14)	18	(11.5)
35-39	17	(17)	26	(16.7)
40-44	10	(10)	16	(10.3)
45-49	11	(11)	18	(11.5)
50-54	9	(9)	27	(17.3)
> 55	3	(3)	10	(6.4)
Total	100	(100.0)	156	(100.0)

Note: Figures in parentheses are percentages.

Table 3. VCT Clients, by Age (hypothetical data)

Age (years)	Number of VCT Clients at Site A		Number of VCT Clients at Site B		Total	
< 20	2	(66.7)	1	(33.3)	3	(100.0)
20-24	12	(41.1)	17	(58.6)	29	(100.0)
25-29	22	(48.9)	23	(51.1)	45	(100.0)
30-34	14	(43.4)	18	(56.6)	32	(100.0)
35-39	17	(39.5)	26	(60.5)	43	(100.0)
40-44	10	(38.5)	16	(61.5)	26	(100.0)
45-49	11	(37.9)	18	(62.1)	29	(100.0)
50-54	9	(25.0)	27	(75.0)	36	(100.0)
> 55	3	(23.1)	10	(76.9)	13	(100.0)
Total	100	(100.0)	156	(100.0)		

Note: Figures in parentheses are percentages.

Graphical Presentation of Data

Graphic data presentation includes line charts, bar charts, and pie charts.

Line Charts

Line charts are used to look at trends over time. It is recommended that you have at least three data points. The example below has five data points in time.

Bar Charts

Bar charts are used to compare similar items such as sites or gender. They are used primarily for categorical data. Bar charts can show comparisons between similar times/items/trends.

Guidelines for Preparing Line and Bar Charts

- Give each chart a title explaining X-axis, Y-axis, and where and when the data are from.
- Use horizontal lines.
- Provide a key/legend to explain special shadings or types of lines.
- Keep charts/lines as uncluttered as possible.
- Use line charts to compare data over many points in time.
- Choose the values for the Y-axis so that the results are accurate reflections of the data. For example, when comparing many sites over time, it is better to present percentages at the Y-axis instead of just absolute numbers (see example). If you do not start at 0, indicate this directly on the chart.
- Choose equal intervals on the X-axis when illustrating change. For example, if the base year is 2000 and the interval should be every two years, then the X-axis should have data points for 2000, 2002, 2004, 2006.

Pie Charts

Pie charts are used to show components of one whole such as all clients with HIV, what proportion are youth or children less than 18 years, what proportion are youth age 18 to 24 years, and what proportion are adults age 25 and above.

Guidelines for Preparing Pie Charts

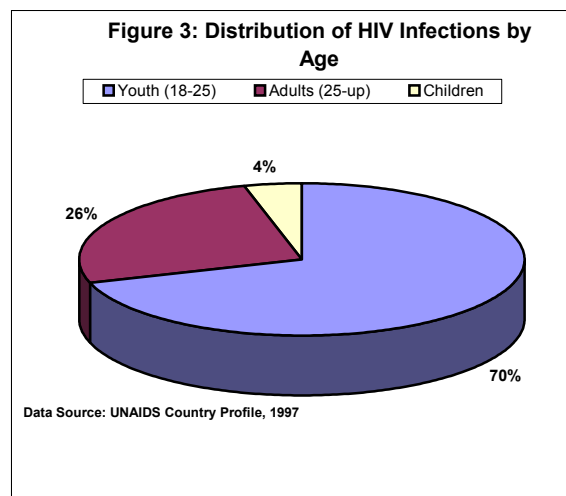
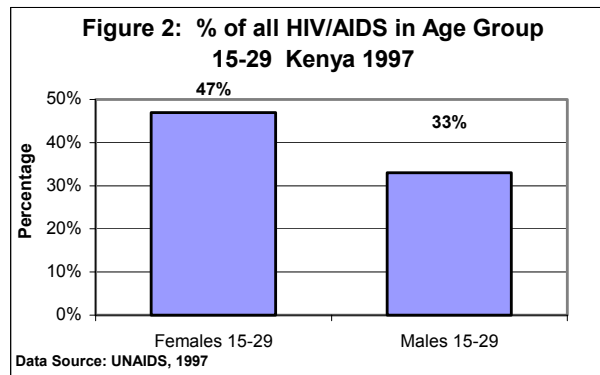
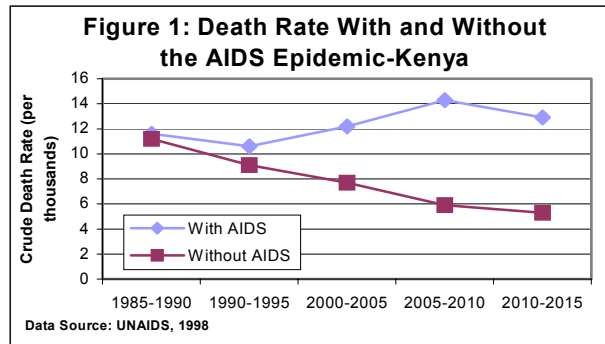
- Use pie charts to express proportions or percentages.
- Give a pie chart a title as explained above in “Guidelines for Preparing Line and Bar Charts.”
- Use no more than eight slices.
- If necessary, group the smallest slices together and label them “Other.”
- To emphasize a slice, separate it from the remainder of the pie.
- To emphasize changes over time, use larger pies to show growth and smaller ones to show shrinkage.

Summary

Graphic presentations can be effective, but it is important to:

- Avoid chart junk
- Use colors creatively
- Use clear data labels
- Use highlighters (text boxes, arrows)

Examples of Line (Figure 1), Bar (Figure 2), and Pie (Figure 3) Charts



Group Exercise for Data Flow

Hypothetical Program Scenario:

In a hypothetical country, FHI supports voluntary counseling and testing (VCT) services for all adults in four districts, with particular focus on young adults. Each of these four districts has an urban center, but the majority of the population lives in rural and semi-rural villages. There are eight VCT centers, two in each district. In each district, one VCT center lies in the urban center and is operated by the Ministry of Health's district hospital. In addition, in each district, one VCT center is operated by the Mission Hospital that serves a relatively remote, rural portion of each district.

Exercise:

Graphically map the data collection and reporting system (the flow of data and results). Feel free to use any kind of graphical figures, illustrations, or approaches that you find useful to describe and communicate the data collection and reporting system.

Work quickly. You have only 5 minutes to answer the questions and 10 minutes to draw your map.

In mapping the flow of data and results, consider the following issues:

- Who will be responsible for data collection?
- Who will be responsible for supervision of data collection?
- Who will be responsible for ensuring data quality at each stage?
- How are data quality checked at every stage?
- How often are data collected, compiled, sent, and analyzed?
- How are data sent (raw, summary)?
- What tools/forms are used, if any?
- What resources (staff, office supplies, computers, transportation) are needed at each stage? Who will analyze the data? How often will analysis occur? How often will the results be compiled into reports?
- To whom and how often will the results be disseminated?

Data Quality Exercise

Master Scenario

An FHI country office is developing a comprehensive VCT program that incorporates pre- and post-counseling, voluntary testing, promotion of VCT activities to the community, and referral to home-based and community care structures. You are the M&E Officer responsible for monitoring the quality of this program, and you have developed a number of tools and methods for doing so.

Before the start-up of the program, staff and beneficiaries sat down for several days and developed clear goals and objectives for the program as well as measurable indicators and questions that needed to be answered by the monitoring system.

Staff developed and pre-tested their monitoring tools in the field and adjusted them according to their findings.

A training was conducted for data collectors and their supervisors and periodic refresher trainings were budgeted for later in the year to respond to possible changes in the data collection tools.

The staff responsible for collecting the data were thoroughly briefed on the purpose of collecting the data, and their input into the process was received and used to strengthen the system.

A staff member in the country office was assigned to provide consistent monitoring of data quality checking and feedback on the results to implementing agencies.

Data Quality Exercise

Scenario 1

An FHI country office is developing a comprehensive VCT program that incorporates pre- and post-counseling, voluntary testing, promotion of VCT activities to the community, and referral to home-based and community care structures. You are the M&E Officer responsible for monitoring the quality of this program, and you have developed a number of tools and methods for doing so.

Staff developed and pre-tested their monitoring tools in the field and adjusted them according to their findings.

A training was conducted for data collectors and their supervisors and periodic refresher trainings were budgeted for later in the year to respond to possible changes in the data collection tools.

The staff responsible for collecting the data were thoroughly briefed on the purpose of collecting the data, and their input into the process was received and used to strengthen the system.

A staff person in the country office was assigned to provide consistent monitoring of data quality checking and feedback on the results to implementing agencies.

Staff and implementing agencies felt that the materials and supervision of the monitoring was strong; however, they were not sure what they were supposed to be measuring and what the data they were collecting were supposed to answer. Staff felt that there was a key element of ensuring data quality missing in their process. Can you identify what step(s) may have been missing?

Data Quality Exercise

Scenario 2

An FHI country office is developing a comprehensive VCT program that incorporates pre- and post-counseling, voluntary testing, promotion of VCT activities to the community, and referral to home-based and community care structures. You are the M&E Officer responsible for monitoring the quality of this program, and you have developed a number of tools and methods for doing so.

Before the start-up of the program, staff and beneficiaries sat down for several days and developed clear goals and objectives for the program as well as measurable indicators and questions that needed to be answered by the monitoring system.

After setting indicators and identifying questions, the program manager developed the monitoring tools.

A training was conducted for data collectors and their supervisors and periodic refresher trainings were budgeted for later in the year to respond to possible changes in the data collection tools.

The staff responsible for collecting the data were thoroughly briefed on the purpose of collecting the data, and their input into the process was received and used to strengthen the system.

A staff person in the country office was assigned to provide consistent monitoring of data quality checking and feedback on the results to implementing agencies.

Staff and implementing agencies felt that the materials were confusing and did not address the data collection needs in the field. Staff felt that there was a key element of ensuring data quality missing in their process. Can you identify what step may have been missing?

Data Quality Exercise

Scenario 3

An FHI country office is developing a comprehensive VCT program that incorporates pre- and post-counseling, voluntary testing, promotion of VCT activities to the community, and referral to home-based and community care structures. You are the M&E Officer responsible for monitoring the quality of this program, and you have developed a number of tools and methods for doing so.

Before the start-up of the program, staff and beneficiaries sat down for several days and developed clear goals and objectives for the program as well as measurable indicators and questions that needed to be answered by the monitoring system.

Staff developed and pre-tested their monitoring tools in the field and adjusted them according to their findings, and gave them to the staff who were responsible for data collection.

The staff responsible for collecting the data were thoroughly briefed on the purpose of collecting the data, and their input into the process was received and used to strengthen the system.

A staff person in the country office was assigned to provide consistent monitoring of data quality checking and feedback on the results to implementing agencies.

Although the responsible staff felt that the materials were strong and understood the objectives of the monitoring system, they were unclear exactly how to use the different tools in the field. Staff felt that there was a key element of ensuring data quality missing in their process. Can you identify what step may have been missing?

Data Quality Exercise

Scenario 4

An FHI country office is developing a comprehensive VCT program that incorporates pre- and post-counseling, voluntary testing, promotion of VCT activities to the community, and referral to home-based and community care structures. You are the M&E Officer responsible for monitoring the quality of this program, and you have developed a number of tools and methods for doing so.

Before the start-up of the program, staff and beneficiaries sat down for several days and developed clear goals and objectives for the program as well as measurable indicators and questions that needed to be answered by the monitoring system.

Staff developed and pre-tested their monitoring tools in the field and adjusted them according to their findings.

A training was conducted on how to collect the data and periodic refresher trainings were budgeted for later in the year to respond to possible changes in the data collection tools.

A staff person in the country office was assigned to provide consistent monitoring of data quality checking and feedback on the results to implementing agencies.

The responsible staff understood how to use the tools, but were unsure about why they were collecting monitoring data and what it would be used for. Therefore, they thought that collecting the information was a waste of time. Staff felt that there was a key element of ensuring data quality missing in their process. Can you identify what step may have been missing?

Data Quality Exercise

Scenario 5

An FHI country office is developing a comprehensive VCT program that incorporates pre- and post-counseling, voluntary testing, promotion of VCT activities to the community, and referral to home-based and community care structures. You are the M&E Officer responsible for monitoring the quality of this program, and you have developed a number of tools and methods for doing so.

Before the start-up of the program, staff and beneficiaries sat down for several days and developed clear goals and objectives for the program as well as measurable indicators and questions that needed to be answered by the monitoring system.

Staff developed and pre-tested their monitoring tools in the field and adjusted them according to their findings.

A training was conducted for data collectors and their supervisors and periodic refresher trainings were budgeted for later in the year to respond to possible changes in the data collection tools.

The staff responsible for collecting the data were thoroughly briefed on the purpose of collecting the data, and their input into the process was received and used to strengthen the system.

Staff and implementing agencies felt that the materials and training were strong. However, they did not know who they were reporting the information to and did not know who to contact when they had questions in the field. Because of this, the country office often received incomplete or inconsistent data from the field. There was a key element of ensuring data quality missing in their process. Can you identify what step may have been missing?

Group Exercise for Data Interpretation and Packaging Results

In a hypothetical country, FHI supports two implementing agencies to provide a comprehensive intervention for high-risk men, including STI diagnosis and management, condom distribution, and a BCC campaign with peer educators. Monitoring data for selected program indicators are reported below for Implementing Agencies 1 and 2 in 2001 and 2002. Review the data and select no more than two key messages for the audience. Decide who will present the data and what the appropriate language for the presentation is. Then present the data and results to the entire group, taking no more than five minutes.

Review the table and charts and consider how you might present these findings to various audiences. You might want to consider the following questions:

- What is your goal?
- Who is your audience?
- Do you want or need their input?
- What makes them tick?
- What language do they speak?
- What is their attention span?
- Who is the best messenger?
- How can you relate your data to their concerns?
- What are the three points that are most important to convey?
- What methods and materials might you use to convey your information/message?
- What questions do you expect they might ask?

Implementing Agency 1

Indicator	2001	2002
Number of condoms distributed	100,000	250,000
Proportion of condoms distributed through social marketing	15%	25%
Number of peer educators trained	40	60
Proportion of peer educators participating in intervention for 6 or more months	50%	35%
Number of high-risk men reached by peer educators	200	250

Implementing Agency 2

Indicator	2001	2002
Number of condoms distributed	80,000	100,000
Proportion of condoms distributed through social marketing	50%	60%
Number of peer educators trained	35	45
Proportion of peer educators participating in intervention for 6 or more months	85%	75%
Number of high-risk men reached by peer educators	800	1,200



**Family Health International
Institute for HIV/AIDS**

2101 Wilson Blvd. • Suite 700
Arlington, VA 22201

Tel: 703-516-9779
Fax: 703-516-9781

www.fhi.org