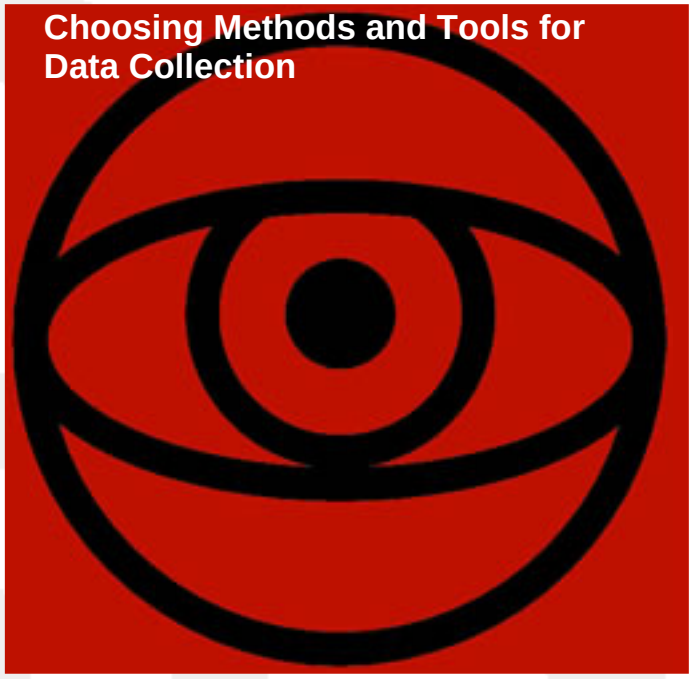
Choosing Methods and Tools for Data Collection



Monitoring & Evaluation Guidelines

United Nations World Food Programme
Office of Evaluation

Choosing Methods and Tools for Data Collection

Overview

Introduction. The purpose of this module is to describe a number of data collection tools and methods appropriate for monitoring and evaluation (M&E) data collection in WFP.

Why is this Module important?

Data collection is a key activity in the implementation of an M&E strategy, and it must be carefully planned to provide information that allows WFP managers to assess achievements and changes connected to WFP operations. This module is important because it provides an overview of quantitative and qualitative data collection tools and methods, describing their strengths and weaknesses, as well as when it is appropriate to use each of them.

The difference between probability and non-probability sampling is explained, and guidance on the appropriate use of both is provided. The module also describes a number of qualitative data collection techniques, such as key informant interviews, focus group discussions and observation. In addition, participatory and rapid rural data collection methods are introduced, and the usefulness of these methods vis-à-vis different kinds of WFP operations is outlined.

The module gives staff with responsibility for M&E design a quick review of key methods and tools for data collection.

What does this Module aim to achieve?

This module has the following objectives:

- Describe 2 broad categories of data – primary and secondary - and the appropriate use of each in providing information for use in the M&E of WFP operations.
- Describe the procedure for assessing the availability, relevance, appropriateness, reliability and replicability of secondary data.
- Describe the characteristics, strengths, weaknesses and possible uses of each of the 2 broad categories of data collection methods – quantitative and qualitative.
- Explain what sampling is, and describe when to use probability and when to use non-probability sampling.
- Define 2 broad categories of sample surveys, and analyse their strengths and weaknesses in order to help determine their appropriateness for a specific operation.
- Illustrate the key techniques used in qualitative methods.
- Describe the characteristics of rapid and participatory qualitative methods, and demonstrate how to select and combine the methods in the context of WFP operations.
- Describe the main types of interviews used in qualitative methods – individual and group – and, within these main types, distinguish among different interviewing techniques, highlighting the role of the interviewer in each.
- Describe some of the communication tools that are used to stimulate dialogue and enhance participation during qualitative interviews and discussions.
- Describe direct observation and when and how it can be applied as a data collection technique.

What should be reviewed before starting?

- What is RBM Oriented M&E

- Identifying M&E Indicators
- What is Beneficiary Contact Monitoring and how is It conducted
- How to design a Results-Oriented M&E Strategy for EMOPs and PRROs
- How to design a Results-Oriented M&E Strategy for Development Programmes
- How to Plan an Evaluation
- How to plan and undertake a Self-evaluation

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- Characteristics of Participatory and Rapid Qualitative Methods
- How to choose Rapid or Participatory Methods or a combination of both
- The Rapid-Participatory Methods Continuum and how It can be applied to M&E Tasks for Operations

- **Qualitative Methods: Individual Interviews versus Group Interviews**
  - Introduction
  - What are the Main Interviewing Techniques used in Individual and Group Interviews or Discussions
  - Examples of when a Group Discussion is more appropriate than Individual Interviews
- **Qualitative Methods: Tools for Stimulating Dialogue and Participation**
  - Introduction
  - Why are Participatory Communication Tools used
  - What are some of the Participatory Communication Tools and how can They be used
  - Examples of using Participatory Communication Tools
- **What is Direct Observation and when should It be used?**
  - Introduction
  - What is Direct Observation?
  - When and how to use Direct Observation
  - Examples of the use of Direct Observation Techniques when applying Qualitative and Quantitative Methods

What are the Sources and Uses of Primary and Secondary Data

Introduction. This section describes 2 broad categories of data – primary and secondary – and the appropriate use of each in providing information for use in the M&E of WFP operations.

What are the Differences between Primary and Secondary Data

Data sources are listed in the third column of the logical framework matrix under the heading "means of verification". While the indicator articulates what information will be collected, the means of verification identifies where that information will come from.

Primary Data

Primary data is data that is collected through the use of surveys, meetings, focus group discussions, interviews or other methods that involve direct contact with the respondents – women, men, boys and girls.

Secondary Data

By contrast, secondary data is existing data that has been, or will be, collected by WFP or others for another purpose. Secondary data may include WFP Vulnerability Analysis and Mapping (VAM) data, data from the mid-term or final evaluation of a previous phase of WFP operations, data collected by other organisations or the government of the country concerned, or data gathered by research organisations. Routine data collected by institutions participating in an activity (e.g. schools, health centres) are exceptionally good sources of secondary data which could not be replicated by primary data collection without prohibitive expense.

Distinction between Primary and Secondary Data

The critical distinction between the 2 types of data is that primary data is collected by WFP or someone who WFP has hired specifically for the purpose for which the data are required. Secondary data have been, or will be, collected for another primary purpose (e.g. all secondary data were or are primary data for another study), but may be used for "secondary" purposes related to M&E in WFP operations. Note that both primary and secondary data sources can yield quantitative or qualitative data.

Appropriate Uses of Primary and Secondary Data

The collection of M&E data, both primary and secondary, must focus almost exclusively on the indicators and assumptions identified at each level in the logical framework for the operation.

Secondary Data

The use of secondary data represents tremendous cost and time savings to the country office, and every effort should be made to establish what secondary data exist and to assess whether or not they may be used for the M&E of WFP operations. Primary data is often collected unnecessarily and at great expense simply because monitors or evaluators had not been aware that the data were already available. It is critical to invest the initial time and resources to investigate what data exist, what data collection exercises are planned for the future, and how relevant the existing data are for the M&E of WFP operations.

Primary Data

However, primary data collection is sometimes warranted. Although a review of secondary data sources should precede any primary data collection, existing data do not always provide the appropriate indicators or the appropriate disaggregation of indicators needed to monitor and evaluate WFP operations effectively. Even secondary data that provides the appropriate indicators and disaggregation of indicators may not be useful if the data is out of date and the situation is likely to have changed since they were collected. This varies greatly according to the indicator for which the data is being collected and its volatility. For example, school enrolment data that is 1 year old may suffice for establishing baseline conditions prior to a school feeding programme, but acute nutritional data (wasting) that is only a month old may no longer represent an accurate estimate of current conditions for that indicator.

Importance of Documenting Data Collection Methods

Clear documentation of the methods to be used to collect primary and secondary data must be developed during the planning stage of an operation. As data is collected, any variations from the planned data collection methods must also be documented. This ensures that data is collected in the same way at different points in time and by different people. This is critical for ensuring that the data is comparable, and improves the accuracy of assessing the changes over time associated with a WFP operation.

An Example of using Secondary Data in Development

The most common practice is to use a combination of primary and secondary data to complement each other. School feeding programmes will draw extensively on school records to meet M&E data needs. Although teachers keep records of attendance and enrolment primarily for purposes other than reporting to WFP, this information fits well with the data needed by WFP in order to assess the outcomes and impacts of a school feeding operation, and is therefore an ideal secondary data source.

An Example of a Secondary Data Source for Emergency Operations (EMOPs)

During the early stages of an emergency, the data gathered by the emergency food needs assessment (EFNA) should satisfy most of the immediate criteria for baseline data. Efforts should focus on ensuring that the data is reliable and representative. This exemplifies how data collected for 1 purpose can be used to serve another in a cost-effective way. This is especially true in the case of using assessment data for M&E purposes during EMOPs and PRROs.

An Error to avoid

A common error when using secondary data sources or collecting primary data is to collect too many data. This results from data collectors' tendency to collect all the data that is related to their own topics of interest rather than focusing on the specific data that is required for M&E. This often leads to a reduced amount of time available for data analysis and, ultimately, dilutes the value of the information produced.

How to assess the Secondary Data to be used

Introduction. This section describes the procedure to follow for assessing the availability, relevance, appropriateness, reliability and replicability of secondary data.

Steps to follow to assess Secondary Data for use in Operations

An operation's logical framework articulates the specific indicators selected at the activity, output, outcome and impact levels used to monitor and evaluate the operation's implementation and results performance. Assumptions, at each level of the logical framework, are also tracked using indicators. A cost-effective means of obtaining the required data related to the selected indicators is through the use of secondary data.

The following table provides 4 steps to identify and assess potential secondary data and its sources.

Step	Procedure
Step 1	
Identify and assess the relevancy of secondary data and secondary sources.	Identify what secondary data is available and relevant to the specific indicators listed in the operation's logical framework or M&E Plan. Review existing WFP data (such as VAM data and M&E data from a previous phase) and data that has been collected for other uses. Also review existing data from governments and implementing partners as well as organisations that operate in the same geographic area as the WFP-assisted operation but that are not WFP's implementing partners.
Step 2:	
Assess the appropriateness of relevant secondary data.	Assess whether or not the existing data relevant to your indicators is appropriate. ● Does the secondary data cover the same geographic area and units of study that you desire? If no, is the geographic area larger than your study area or smaller and how might this affect the estimates for your indicators of interest (does it make the data unusable)? ● When was the data collected, does the data sufficiently represent the point or period in time required, and how might the situation be different now? (For volatile indicators, such as acute nutritional status, data that is more than 3 months old is unlikely to be suitable.)
Step 3:	

Step	Procedure
Check the reliability of the secondary data and data source.	Once secondary data has been deemed available, relevant and appropriate (Steps 1&2), the reliability of the data must also be assessed. Be wary of data for which sampling and methodologies used are not described. ● How reputable is the organisation, agency, or government department that collected the data? Are their results generally accepted by others in the country and are their results (from this and other surveys) consistent with the findings of others? ● What quantitative and qualitative methods were used to collect the data? ● Is there a description of measures used during the study to supervise the quality of the data collected as well as validation tools (triangulation, supervision of fieldwork, data cleaning)? ● Is the questionnaire available to assist in reviewing the data and are clear definitions provided for terms with variable meanings (e.g. households, family size, etc.) ● How large was the sample and how was it chosen? ● To what larger population does the sample purport to represent (what is the sampling frame)? ● How was the analysis conducted (statistical methods, other analytic methods)? ● Is the raw data (pre-analysis data) available, and if so is the analysis reproducible with the same or similar result (assess by testing a few variables/indicators)? ● Are the questions or topics in the questionnaire/discussion checklist consistent with the variables presented in the analysis?
Step 4:	
Check the replicability of secondary data for follow-up study and monitoring.	If you decide to use the data, then the ease with which it may be replicated through monitoring or a follow-up evaluation study must also be assessed. ● Will the persons responsible for collecting the data originally (e.g. the primary data collectors) conduct a subsequent study for the same indicators at some time in the future or was it a 1 time, cross-sectional study? If there will be a follow-up, when will the follow-up be conducted in relation to WFP's operation timeline/cycle? Can it be used to assess mid-term or final results of WFP's operation? ● If no follow-up is planned, are the methods and techniques used sufficiently described and replicable by WFP such that the secondary data can be comparable to primary data subsequently collected by WFP?

Categories of Primary Data Collection Methods

Introduction. This section describes the characteristics, strengths, weaknesses and possible uses of each of the 2 broad categories of data collection methods - quantitative and qualitative.

Characteristics of Quantitative and Qualitative Methods

There are 2 broad categories of data collection methods: quantitative and qualitative. The difference in the 2 categories lies in the approach and the types of questions they seek to answer. There is the erroneous perception that quantitative methods are more objective and that qualitative methods are more subjective. Today's researchers recognise that both methods have subjective and objective qualities.

Quantitative Methods

Quantitative research uses methods adopted from the physical sciences that are designed to ensure objectivity, reliability and the ability to generalise. They seek to exert maximum control over the questions and potential answers and most often incorporate probability sampling methods to allow for statistical inference to the larger study population. The researcher is considered external to the actual research, and results are expected to be replicable no matter who conducts the research.

Quantitative methods help to answer questions such as who, how much, and how many. Where probability sampling is used, statistical analysis will provide precise estimates for study variables, such as frequencies, averages, ranges, means, and percentages, at a known and quantifiable degree of confidence.

The intent is to gather data to test a pre-determined hypothesis and only answers to those questions/variables included in the questionnaire are collected. Questions are not open-ended and respondents are expected to provide short 'answers'. This eases analysis, but limits the degree to which respondents participate and are able to provide explanations that they perceive (causes, rationale). Rather, explanations are sought by comparing associations and potentially causal relationships between variables (e.g. diarrhoea prevalence is lower among children whose primary drinking water source is a borehole; the lower prevalence, therefore, is explained by the source of water).

Strengths

Precise estimates, backed by statistical theory, are often invaluable for decision-making and advocacy because they are robust and objectively verifiable if the data is collected and analysed correctly.

Weaknesses

The greatest weakness of the quantitative approach is that it can take human behaviour out of context in a way that removes the event from its real world setting. Factors or variables left out of the data collection instrument are simply not considered in analysis.

Qualitative Methods

Qualitative research methods are designed to provide the researcher with the perspective of target audience members through immersion in their culture or situation and through direct interaction with them. These methods help to answer questions such as how and why. The focus

is on presenting perceptions, judgments, and opinions and on explaining meanings, processes and reasons.

Qualitative interviews differ from traditional structured interviews, in which formal questionnaires are used, by not being limited to a set of predetermined questions to be asked in sequence. Instead, the interviewer uses a checklist of topics to guide the interview, pursuing avenues that open along the way. When applying qualitative methods, the researcher becomes the instrument of data collection and results may vary greatly depending upon the researcher. Hypotheses and additional 'follow-up' questions are generated during data collection and analysis, and measurement tends to be subjective. Therefore, by their very nature, the methods are often not objectively verifiable.

Strengths

The strengths of using qualitative methods are that they generate rich, detailed data that leave the participants' perspectives intact and provide a context for their behaviour. Respondents provide their own explanations in a participatory exchange with interviewers.

Weaknesses

The weaknesses of using qualitative methods are that data collection and analysis may be labour intensive and time-consuming. As a result the number of respondents to which the method is applied is usually far fewer than for quantitative methods. Another disadvantage is that qualitative methods are often not objectively verifiable.

When to use Quantitative or Qualitative Methods

It is often appropriate to employ both quantitative and qualitative methods as they complement each other's strengths and weaknesses. Qualitative methods might be used to explore issues during the early stages of a longer study, enabling the researchers to understand better what closed-ended and focused questions need to be asked as part of a quantitative study. Conversely, quantitative methods might highlight particular issues, which could then be studied in more depth through the use of qualitative methods and open-ended discussions. Also remember that quantitative data can result from qualitative methods and qualitative data can result from quantitative methods, such that the distinction between the 2 is often blurred.

It is critical to note that the indicator does not necessarily pre-determine the data collection method. More often than not available resources and staff expertise will drive the decision to choose one data collection method over another. Also the type of data needed (quantitative versus qualitative) does not necessarily pre-determine the type of method to be used (quantitative versus qualitative).

Quantitative Methods are useful in the following Situations:

- When 'accurate' and 'precise' data are required.
- When sample estimates will be used to infer something about the larger population with the support of statistical theory.
- To test whether there is a statistical relationship between variables.
- To produce evidence to prove that a particular problem exists, or to justify a particular strategy.
- To identify the characteristics of a population (for example, during a baseline survey).

Application in WFP Operations

The most commonly used quantitative methods for M&E purposes in operations are: sample surveys, questionnaires; visual observation and physical measures, commonly used in monitoring food commodities.

Qualitative Methods are useful when:

- A broader understanding and explanation is required on a particular topic for which quantitative data alone is not sufficient.
- Information is needed on what people think about a particular situation, and what are their priorities.
- Seeking to understand why people behave in a certain way.
- There is a need to confirm or explain quantitative findings from a previous survey, or from secondary data.
- Resources and time are in short supply.

Application in WFP Operations

Qualitative methods commonly used for M&E in operations include in-depth interviews, focus group discussions and key informant interviews.

An Example of collecting and analysing average Yearly Income Data using Quantitative and Qualitative Methods

Indicators

Average Yearly Income among households in Somaliland Primary Source of Income

Method 1: Quantitative Method yielding Quantitative Data

Household Sample Survey using Probability Sampling – Application of a household survey to a sample of 210 households, randomly selected using a 2-stage cluster sampling method (villages selected during the first stage and households within selected villages selected at the second stage).

Results: mean yearly income of $232 USD equivalent +/- 34 USD at 95% confidence (95% confidence interval = $198 to $266). For 80% of households livestock was the primary source of income.

Method 2: Qualitative Method yielding Quantitative Data

Focus Group Discussion with wealth groups – 10 focus group discussions were held in 5 randomly chosen villages in Somaliland. In each village a focus group discussion was held with household heads classified as middle to high wealth group and another discussion was held with household heads classified as low to very low wealth groups as determined during a wealth ranking exercise. In each group, participants were asked to describe the sources of income and amount of income from each source for an average household in their area.

Results: The mean income determined by the average from all 10 focus group discussions was $320 USD equivalent. The 2 lowest income estimates were $120 and $140, both from low to very low income discussion groups. The 2 highest income estimates were $450 and $500, both from middle to high-income discussion groups. In addition it was determined that most households, except for a very small minority, have livestock as their primary source of income.

Furthermore respondents indicated that this is due to the fact that people in this area consider themselves ‘livestock people’ and do not consider planting crops a dignified livelihood.

Examples of how Qualitative and Quantitative Methods can be used to complement One Another

1. Qualitative methods contribute to the development of quantitative instruments, such as the use of focus groups in questionnaire construction.
2. Quantitative methods can use qualitative results to help interpret or explain the quantitative findings.
3. Quantitative results help interpret predominantly qualitative findings, such as when focus group participants are asked to fill out survey questionnaires at the session.
4. The 2 methodologies are used equally and in parallel to cross-validate and build upon each other's results.

Sampling

Introduction. This section explains what sampling is and describes when to choose probability and non-probability sampling. Choosing the appropriate sampling methods is based on: i) the data collection method being used in primary data collection; and ii) the degree of statistical rigour needed for extrapolating the sample estimate to the larger study population.

What is Sampling

Sampling occurs when a subset of the population (or other unit) under study is selected from the larger group (the entire population under study). By studying the findings from that sample (denoted as "n") it is hoped that valid conclusions can be drawn about the larger population (denoted as "N") from which the sample was taken. Sampling is commonly employed in order to avoid the expense and time associated with total enumeration of the population, as is done during a census.

Sampling is used to select respondents from among the larger population. Sampling makes it possible to analyse the impact of a WFP operation. Whether 2 focus group discussions are held to analyse the impact of a WFP operation in a geographic region or 1,500 households, in the same region, are selected at random, visited and asked questions from a questionnaire, sampling is used.

What distinguishes Probability Sampling from Non-probability Sampling

Sampling methods can be divided into 2 broad categories: probability sampling and non-probability sampling. Within each of these a variety of subcategories exist and a number of ways of selecting the sample can be used. Both probability and non-probability sampling methods seek to gather data that provide a fair representation of the larger population, although the definition of "representative" varies between the 2 methods.

Probability sampling methods rely on statistical theory as a basis for extrapolating findings from the sample population (n) to the larger study population (N). By contrast, non-probability sampling does not utilise statistical theory to support inference from a sample population (n) to the study population (N), but rather relies on a more subjective determination of the degree to which a sample "represents" the larger study population. The choice of which method to follow depends on the intended use of the information and the importance placed on objective (probability sampling) versus subjective (non-probability sampling) determination of how representative the sample is.

Probability Sampling

Probability sampling allows for statistical inference. Statistical inference makes use of information from a sample to draw conclusions (inferences) about the population from which the sample was taken. The estimates are representative of a larger population, from which the sample population is taken, at a known and quantifiable level of confidence or probability. Estimates are given in ranges, called confidence intervals, although they are often expressed as a point estimate +/- a number of percentage points. Probability sampling is almost exclusively used with quantitative data collection methods.

The essence of probability sampling is that each unit of study (e.g. household, individual, child) in the study population for which the estimate is desired must have an approximately equal probability for selection and inclusion in the sample. In order to ensure that this critical criterion

is met, an exhaustive sampling frame must exist or be created for the unit under study (households, individuals, children). A sampling frame is a complete list of all the potential units of study (e.g. households, individuals or children) in the population from which the sample will be taken.

In many countries, it is impossible to find an existing sampling frame at the unit of study level and it is too costly to construct one. In these cases, cluster sampling is used. Cluster sampling aggregates the unit of study into groups or clusters for which a complete or nearly complete list is available. Although cluster sampling is very commonly used, it is rarely employed appropriately. Expert guidance should be sought in applying cluster sampling and determining the appropriate number and proportional weighting of clusters.

Determining the appropriate sample size is based on a set of parameters concerning the degree of confidence desired in the estimate, the design effect of the sample, the degree of tolerable error and the proportion or mean estimates for the variable of interest. The sample size calculation includes an additional parameter when the desire is to measure change over time. Expert guidance should be sought in determining the appropriate sample size needed if probability sampling is being used.

Non-probability Sampling

Non-probability sampling also seeks to draw conclusions about the larger population under study through using a selected sample or subset of that population. However, in non-probability sampling the basis for doing so is not supported by the statistical theory of inference, as it is in probability sampling. Non-probability sampling is almost always used for qualitative data collection methods and can be used for quantitative methods for which statistical inference is not desired.

Because there is no effort to draw statistical inferences from a non-probability sample (either because the conclusions apply to the sample population only or because the inference to a larger population is not supported by statistical theory), there is no sample size calculation formula, as there is in probability sampling. It is also common to select and consult groups (case studies, focus groups) that are made up of a number of units of study; for example, when 5 focus groups of 10 respondents each are consulted, the total sample is 50 units of study or respondents.

Despite this more free-flowing approach to sampling, the desire to draw conclusions about the larger population does influence the sample size and the way in which the sample is chosen. The intent is to get a sample that is fairly representative of the geographic area and other important differentiating characteristics of the population under study (e.g. wealth groups, sex, age, livelihood). Choosing characteristics on which to stratify the sample requires thinking through which factors influence the variable(s) of interest in the study and ensuring that each important subgroup of the larger population is included in the sample population.

While the guidelines for sample size are less strict for non-probability sampling, a balance must be struck between the ideal number of interviews or discussions to hold and the resources available for doing so. This is particularly important in the use of time-intensive qualitative studies in which a single discussion may take several hours to conduct. The most common types of non-probability sampling methods used for M&E in operations are:

- Purposive sampling (choosing respondents based on the fact that they are likely to give the best picture of the phenomena you wish to inquire about).
- Random sampling (using a random method to select respondents).
- Opportunistic sampling (simply choosing respondents based on their availability to participate at the moment you arrive to collect data).

In general, purposive and random sampling will yield better data than opportunistic sampling.

Because of the in-depth nature of qualitative methods, the sample size (sites or study units) will necessarily be limited. However, the ability to draw conclusions about the larger population from

the sample population is enhanced as the sample size increases. Seek guidance from experts concerning sample size for the particular data collection method being used. The aim should be to maximize the sample size within the constraints of available resources and while maintaining the highest level of data quality possible.

Examples of Non-probability and Probability Sampling for a Baseline Survey

The aim of the baseline survey is to determine the average number of weeks of food shortage suffered by households in the region during the dry season. The following examples illustrate the application of a probability sample and a non-probability sample during a baseline survey to establish pre-operation conditions for this indicator.

Non-probability Sampling

A non-probability sample of respondents is chosen to participate in a focus group discussion concerning food shortage during the dry season. 5 villages are randomly chosen for inclusion and, within each of those villages, 10 women and 10 men are chosen to participate in gender-separate discussion groups.

Probability Sampling

It is determined that 210 households will need to be chosen at random from among all the households in the target area to participate in a household survey concerning food shortage during the dry season. Because no list of all the potential households is available, a 2-stage cluster sampling design is used.

In the first stage, 30 villages (clusters) are chosen from the 239 potential sample villages, which are weighted in proportion to their estimated size (big villages are weighted more than small villages so that all households have an approximately equal chance of being included in the survey).

Within each of the 30 villages selected from among all the potential villages (clusters), the United Nations Children's Fund (UNICEF) pencil spin method is used to select 7 households for inclusion in the survey. A pencil is spun at the village's mid-point and every other household is interviewed in a line in the direction in which the pencil is pointing until 7 households have been selected. If the end of the village is reached before 7 households have been selected, the pencil is spun again and a new direction is chosen. Again, every other household is selected for inclusion in the survey.

An Example of an Estimate from a Probability Sample

A probability sample of 210 mothers with children under 5 years of age is taken, and each mother included in the sample is asked whether or not each of her children under 5 has had diarrhoea in the last 2 weeks. Because some mothers have more than 1 child under 5, the total number of children referenced in the sample is 332. Of these, 154 have had diarrhoea in the last 2 weeks. Therefore, the diarrhoea prevalence point estimate for the sample population is 46 percent and the confidence interval surrounding the estimate is 40 to 52 percent, meaning that, at 95 percent confidence (the confidence level used to determine the sample size), the true population prevalence lies between 40 and 52 percent (e.g. 95 out of 100 samples in this range will contain the true population prevalence for diarrhoea).

Characteristics, Strengths and Weaknesses of Sample Surveys

Introduction. This section defines 2 broad categories of sample surveys, and analyses their strengths and weaknesses in order to help determine their appropriateness for a specific operation.

What is a Sample Survey

A sample survey is a quantitative data collection method that can be used to collect information on any number of topics. Common techniques used in sample surveys include measurement techniques such as anthropometric (nutritional measures of children) surveys and interviewing techniques (e.g, asking the respondent how many meals he or she has eaten in the last week, and what foods he or she ate). Surveys employing interviewing techniques most often utilise closed-ended questions listed in questionnaires that are uniformly applied to each respondent.

The intent is to gather data to test a pre-determined hypothesis and only answers to those questions/variables included in the questionnaire are collected. This eases analysis, but limits the degree to which respondents participate and are able to provide explanations on what they perceive (causes, rationale). Rather, explanations are sought by comparing associations and potentially causal relationships between variables (e.g. diarrhoea prevalence is lower among children whose primary drinking water source is a borehole, therefore the lower prevalence is explained by the source of water).

The results of quantitative sample surveys are easily analysed and expressed as numbers, percentages, averages (means), scales or other numeric presentations. Sample surveys may include some questions or methods that are open-ended (e.g. respondents are not probed with or given the options of potential answers). In analysis these answers are most often categorised and summarised in a quantitative way (e.g. the varying reasons given for crop failure are categorised into 5 possibilities to yield a categorical variable, including an ‘other’ category for infrequent responses).

2 Categories of Sample Surveys: Probability Sample Surveys and Non-probability Sample Surveys

Sample surveys fall into 2 broad categories: probability sample surveys and non-probability sample surveys.

Probability Sample Surveys

Probability sampling during a survey draws on statistical theory to allow for inference of the experience of the sample population to the larger population of interest (individuals, households, or other units of interest) at a known level of confidence and precision. How the sample size is determined and how the sample population is selected determine the statistical validity of the estimates. The ability to draw statistical conclusions about a population, based on a sample from that population, requires certain technical expertise in sample determination and selection, as well as analysis. A large sample size also usually requires that data collection teams (e.g. non-staff) be hired and trained.

Non-probability Sample Surveys

Non-probability sample surveys attempt to achieve some level of representative sample, though it is not supported by statistical theory. They share the characteristics of closed- ended questions and numerically represented responses with probability sample surveys.

Analysing the Strengths and Weaknesses of Sample Surveys prior to planning for Them in an Operation

Choosing whether or not to use probability or non-probability sample surveys in an operation will depend on time, resources and the need for statistically supported estimates. The added complexity of sample surveys requires external assistance in the form of technical guidance and additional people for data collection. As a result, Country Offices rarely undertake probability sample surveys without the support of WFP's internal expertise or external consultants.

In order to determine if a sample survey should be planned for baseline, monitoring or evaluation purposes within an operation, the strengths and weaknesses need to be considered by decision-makers. The table below lists the strengths and weaknesses that apply specifically to probability sample surveys and that are largely shared by non-probability sample surveys.

Strengths	Weaknesses
● Surveys provide precise, statistical answers to carefully defined questions. ● The accuracy of results can be verified by checking the methods and statistics that were used. ● The use of a random sample means that people or households will be contacted from several different locations. ● Methods of analysis are clear and can be relatively quick, especially when carried out in the field using portable computers. ● The findings can give support to an argument or hypothesis by demonstrating the size and severity of a problem. ● Surveys allow comparisons to be made between different groups within the survey, or with other surveys which used similar methods (e.g. a baseline and follow-up study).	● Considerable resources are often needed – personnel, vehicles, fuel, computers, etc., making surveys expensive to carry out. ● Surveys may take several weeks or even months to carry out. ● Data collection can be intrusive and inconvenient to the people interviewed. Non-cooperation can be a problem and could lead to unreliable results. ● Surveys are often planned, and data analysed, far from the survey sites, with little or no involvement of people from the community. ● Working with structured questionnaires can hinder relaxed discussion. ● Surveys look at pre-defined variables and often allow a limited range of responses. If poorly designed, the survey may ignore important avenues of inquiry or unexpected answers that could be crucial to the findings of the study. ● The analysis of large amounts of numerical data is time-consuming and requires expertise. There is a danger that much of the data gathered might not be analysed or used effectively. ● When data collection and analysis tools are used incorrectly, the results may be invalid. ● Surveys are designed to prove or disprove what the designers believe, so it is important to look at methods and conclusions critically.
Source: Toolkits: A Practical Guide to Assessment, Monitoring, Review and Evaluation', Save the Children Fund, 1995	

An Example of Questions asked in Quantitative Sample Surveys

Questions included in quantitative sample surveys are closed-ended. The responses are often numeric, yes/no, or categorical (e.g. answer is one or more of up to 5 possible responses).

Q1: How many female children under the age of 15 live in this household?

A1: 2

Q2: What quantity of wheat flour did you receive during the last food aid distribution?

A2: 5 kilograms

Q3: How many times per day do you collect water?

A3: 3

Q4: What is the most common cause of crop failure during the last 3 years?

A4: Insects, lack of water, poor seed quality

Insects = 1 Lack of water = 2 Poor seed quality = 3

What are the Key Techniques used in Qualitative Methods?

Introduction. This section illustrates the key techniques used in qualitative methods. An example is given that shows the value of mixing techniques, involving the community and using triangulation.

6 Key Techniques used in Qualitative Methods

The following gives the characteristics of 6 key techniques that are employed interdependently when using qualitative methods.

- **Triangulation** - This refers to the process of crosschecking information. Triangulation uses multi-disciplinary teams that include different skills, experience and viewpoints; a range of tools and techniques for data collection and analysis; and different sources of information about the same problem. In this way, the reliability and bias of findings can be assessed, and if necessary addressed.
- **Multi-disciplinary approach** - People with different skills, experience and viewpoints will look for different views, perspectives and analysis of a given topic, and the team as a whole will obtain new and deeper insights when these different perspectives are shared. Women and men should always be included on the team, as should members of the community or group in question.
- **Mixing techniques** - Using different techniques gives greater depth to the information collected. Typically the team would aim to use a mixture of interview and discussion techniques, diagrams and mapping, and direct observation.
- **Community Involvement** - Most activities are performed jointly with the community or by the community on its own.
- **Flexibility and on-the-spot analysis** - Plans and methods are semi-structured, and discussed and modified as fieldwork proceeds. The team constantly reviews and analyses its findings to decide how to continue. As understanding increases, emerging issues and unexpected findings come more clearly into focus, and plans, topics and methods can be revised.
- **Offsetting bias** - The team should constantly seek to identify possible sources of error and bias, and see how they influence findings. Views should be obtained from a cross-section of the community or group, including women and children and other vulnerable groups. This may require advance training in skills such as gender awareness, communicating with children, etc.

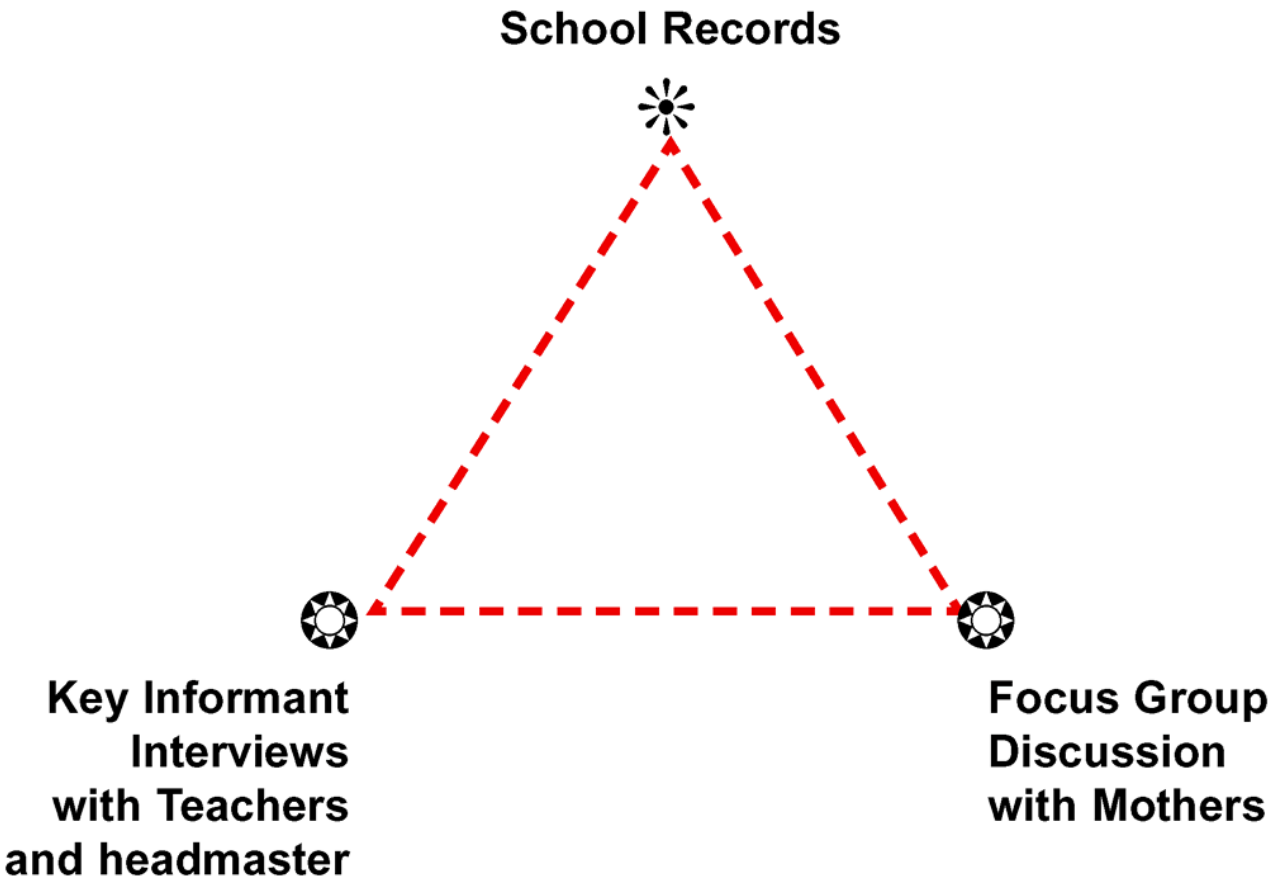
An Example of mixing Techniques, Community Involvement and Triangulation of School Attendance Data

A monitoring visit is undertaken to examine whether or not the food commodities being given as part of a school feeding activity in Malawi are providing an adequate incentive for parents to send their female children to school on a regular basis. An understanding of disincentives to attendance is also desired.

1. School records show that attendance is normally quite high, but that for the last month or so it has dramatically decreased and disaggregated data indicates that the low attendance is particularly high for girls (secondary quantitative data).
2. The male monitors first meet with the headmaster and a number of both male and female teachers in the school and interview them separately (key informants). Teachers and the headmaster indicate that the reason parents do not send their children to school right now

is that the school facilities are inadequate, including no water or toilets for the children to use when they are in school. Some teachers also mentioned that children, and girls in particular, are used as on-farm labour during the harvest season, which is going on right now, and that this likely explains poor attendance along with the lack of water and toilets.

3. Finally a group discussion is held with mothers in the surrounding villages who do not send their children to school regularly. Female monitors are used to create a comfortable and open discussion among the women. The mothers acknowledge that the school water and toilet facilities are sub-par, but do not see this as an impediment to school attendance. Rather they point out that the single biggest impediment is the need to use children, girls in particular, for labour during the harvest. They suggest that if the school schedule could be adjusted during this period, higher levels of attendance would be maintained for both boys and girls. The issue of attendance of both boys and girls was therefore triangulated using 3 information sources. The **first source** is a descriptive, quantitative indication of a drop in attendance for both boys and girls, with the drop more pronounced for girls, exhibited in the school records. The **second source** is key informant interviews with the headmaster and male and female teachers. The **third** is a focus group discussion held with mothers who do not send their children to school regularly. This brings in 3 sources of information to analyse the problem of attendance and provides both a sound quantitative description of the situation as well as a qualitative explanation of why attendance has dropped in recent weeks and why girls are disproportionately affected.



Rapid versus Participatory Qualitative Methods: What are They and when should They be used?

Introduction. This section describes the characteristics of rapid and participatory qualitative methods and demonstrates how to select and combine the methods in the context of WFP operations.

Characteristics of Participatory and Rapid Qualitative Methods

Participatory methods aim not only at a more in depth understanding of a situation, but also at increasing knowledge, skills, and thus self-reliance among beneficiaries. Rapid appraisals are similar to participatory appraisals in many ways, but are less in depth and are normally used to gather data in a one-time study. They are less participatory and offer quick, low-cost ways of generating qualitative data. Each of these methods is particularly well suited to the nuances of different information needs and data collection situations. Each method represents, to varying degrees, a balance between the level of participation of beneficiaries and communities and the quickness of data collection and analysis.

Participatory Methods

Participation is defined as a people centred approach which has the highest probability of success because it offers the potential to strengthen the voice of the most vulnerable. At a minimum, participatory appraisals imply consultation, knowledge exchange and equitable arrangements for sharing of benefits. Participatory appraisal is the term used to describe a process and a set of techniques for the collection and analysis of qualitative data.

The key feature of participatory methods is their emphasis on participatory decision-making, enabling beneficiaries and stakeholders to analyse their own situation, rather than have it analysed by outsiders. This does not imply the exclusion or sidelining of outsiders, rather it recognises that outsiders need to learn about situations from the insiders, and that insiders can analyse their own problems. Participatory methods draw on techniques developed within fields such as applied anthropology, and provide a means of looking at the complex and inter-linked relationships and activities that exist within communities and groups.

Participatory methods may involve an extended process that can last for months or years as communities develop their own skills needed to address issues, analyse options, and carry out activities. The emphasis is often not so much on the information as it is on the process, and on seeking ways to involve the community in planning and decision-making.

Rapid Methods

Rapid methods seek to establish ‘best’ estimates, trends and directions as carefully as possible but within broader degrees of tolerance than more conventional methods such as probability and non-probability sample surveys. While they incorporate participation and open-ended questions to some degree, they do not allow for the depth of discussion, exploration, and self-analysis afforded by participatory methods. Rapid appraisal methods are most often employed as discrete, one-time studies.

How to choose Rapid or Participatory Methods or a combination of both

The difference between the 2 categories is not clear cut and is best viewed as a methodological continuum. Some methods are very participatory and require significant time invest per site that

prevents them from being classified as 'rapid'. Other methods sacrifice the level of participation due to the need for quick and low-cost data collection and analysis. Still other methods fall somewhere in between allowing for significant participation while being performed rather rapidly suggesting that the decision is not either rapid or participatory, but rather how rapid and how participatory. In this way there is some trade off between rapidity and participation.

Although the right method or set of methods will need to be considered on a case-by-case basis, in general:

- EMOPs will rely to a large extent on rapid methods in the early stages of an operation.
- Country Programmes will rely to a large extent on more participatory methods.
- In the later stages of an EMOP or during a PRRO an effort should be made, where possible, to shift along this methodological continuum away from rapid methods toward more in-depth participatory methods.

The Rapid-Participatory Methods Continuum and how It can be applied to M&E Tasks for Operations

The following table outlines some examples of the balance struck between rapidity and participation appropriate for various hypothetical M&E data collection exercises. Note that this balance will vary depending on the data needs and working environment of each operation and that the table is intended to be an example not a strict guideline.

	Rapid		Continuum				Participatory	
EMOP								
Monitoring of use of food in the first few weeks of a sudden-onset emergency								
Evaluating the overall efficacy and impact of an EMOP once the situation has stabilized and the operation is being phased out								
PRRO								
Establishing baseline measurements for indicators in the first phase of a PRRO								
Monitoring implementation of the PRRO activities								
Evaluating the overall efficacy and impact of a PRRO and whether or not a shift to development operation is appropriate								
Development Operation								
Establishing baseline measurements for indicators of development activities								
Ongoing implementation monitoring of progress toward outcome acheivement (leading indicators)								

Qualitative Methods: Individual Interviews versus Group Interviews

Introduction. This section describes the main types of interviews - individual and group - used in qualitative methods. Within these main types it further distinguishes among different interviewing techniques, highlighting the role of the interviewer in each. Some guidance is given on choosing methods to apply for M&E purposes in operations.

What are the Main Interviewing Techniques used in Individual and Group Interviews or Discussions

A description of individual and group interviews or discussions given below can serve as a guideline for choosing which to employ in a given situation. Within each of these methods several interviewing techniques are described. When choosing the appropriate qualitative method, consideration must be given to whether it will be more appropriate to meet with individuals or groups. Often a combination of individual interviews and group discussions serves to triangulate the findings of each.

Interviewing Individuals

Individual interviews are particularly useful for gaining insight into the experience of individuals and households. Because they are qualitative in nature, individuals are encouraged to expand upon their answers to specific questions by providing explanations, rationale, and additional context and related issues. The interviewer may use a checklist of topics to guide the interview or the interview may simply be an informal conversation. Individual respondents can be chosen randomly, opportunistically (whoever comes along), or purposively (chosen because they have special insight into the topic of interest, often called 'key informant' interviews). In the context of M&E for WFP operations, interviews with individuals can be time consuming and a large number may be needed to gain a representative picture for the operation as a whole. For some topics respondents may be reluctant to speak truthfully if they fear their views might be unwelcome by the interviewer.

- **Informal Interviews** - These aim to elicit information via conversations between an interviewer and a respondent. They explore, broadly, the views, experiences and values of the respondent by giving the interviewer freedom to pursue issues as they arise. In view of the interview's informal nature few notes are taken during the interview.
- **Topic-focused Interviews** - In these interviews an interview guide is used to direct the interviewer through the main topics to be covered. From this the interviewer develops his/her questions and format to fit the individual respondent. There is no time limit on the response to each topic or sub-topic and pursuit on topics of particular interest is permitted.
- **Semi-structured, open-ended Interviews** - These interviews use open-ended questionnaires with lists of questions to be asked. However they differ from traditional structured interviews by having open-ended questions, which allow for expansion on the points raised; a flexible sequence of questions which allow for interviewer discretion; and leave room for additional questions to be asked.

Group Interviews/Discussions

For group interviews or discussions the intent is to stimulate discussion between the participants, rather than between the facilitator (interviewer) and the participants. This interaction is often the most fruitful time for gaining insight into how people view various phenomena in their communities and the degree of homogeneity or heterogeneity in thought, explanations, and rationale. The agreements and disagreements and how they are handled by the group are often

as enlightening as the content of the discussion.

Group discussions are best for gaining insight into the ‘average’ experience in the village or what ‘normal’ households do. Group discussions often encourage participants to talk about the more general experience among ‘people like them’ and in this way participants help make the data more representative (though who is participating in the group greatly influences perceptions of ‘people like them’). Participants are often more willing to discuss sensitive issues when talking about ‘people like them’ rather than in individual interviews where the respondent is more apt to answer conservatively when talking about herself or himself.

Although it is advisable to plan meetings ahead of time, even if participants will be chosen on the day of the discussion, ad-hoc meetings are useful in providing spontaneous additional data and are an additional check on the validity of data provided by individuals and pre-selected groups.

2 important group techniques are community interviews and focus group discussions.

Community Interviews - These interviews may involve all members of a community or village. When carefully planned, community interviews have great potential for providing insights into how members of the community view operation activities and how they see the operation affecting their lives. When planning and conducting community interviews, facilitators (interviewers) should:

- Use structured interview guides.
- Select a few representative communities.
- Schedule meetings at times when the majority of people within the community can attend; the evening is often the most convenient.
- Use a team of interviewers as conducting a meeting with many people and taking extensive notes is beyond the capacity of most people.
- Plan the process among team members to ensure that participants have a fair say and that the interviewers don’t take over.
- Ensure participation by a balanced representation of those attending. Prominent individuals should not dominate.
- Aim to be able to aggregate and summarise some of the data bearing in mind that extreme caution should be taken in attempting to quantify the data.
- Plan for additional sessions in addition to the main meetings for those who felt inhibited among the large group of people to discuss their thoughts.

Focus Group Interviews or **Discussions** - These interviews use a more rigorous technique than community interviewing and as such require both more extensive planning (e.g. careful selection of the participants according to determined criteria, even greater attention to development of topic guides, more systematic analysis of results) and specialised skills. The basic principle of the technique is using the skill of a 'neutral' moderator to stimulate exchange of ideas among a small (ideally 6-10 persons) group of selected participants. Information is thus obtained through carefully listening to the interaction among participants. The role of the moderator is to guide the discussion to cover the intended topics; he/she should not participate in the discussion as such, should not 'correct' erroneous ideas expressed, and should essentially be a neutral observer. Clearly, the success of the technique depends largely on the skill of the moderator.

Members of the group should be from similar social and economic strata to ease discussion and eliminate status barriers. Therefore separate discussions are often held with different wealth groups identified during a wealth ranking exercise. It is often also advisable to have separate male and female discussion groups to encourage full participation and gain valuable insight into the differing experiences of men and women.

Examples of when a Group Discussion is more appropriate than Individual Interviews

The Emergency Officer handling the PRRO operation in Somalia is interested in describing and analysing how food is redistributed among the community because it appears to be diluting the impact of food distribution to targeted households.

Saves Time and Resources - It is decided that talking with groups of women will provide the best information since the number of Field Monitors are limited and talking with a sufficient number of women individually would take too much time.

Sensitive Subjects - Also it is thought that some of the issues related to redistribution are sensitive in nature and respondents in individual interviews may not be willing to talk openly about them. The group setting, in which they are asked ‘what families like them do’ and ‘why they do it’ is likely to allow for a more open discussion of issues related to food commodity redistribution.

Qualitative Methods: Tools for Stimulating Dialogue and Participation

Introduction. This section describes some of the communication tools that are used to stimulate dialogue and enhance participation during qualitative interviews and discussions.

Why are Participatory Communication Tools used

A variety of participatory communication tools have been developed that enhance and contribute to semi-structured or structured interviews. They aim to stimulate interactions and make interviews more participatory and fruitful. The intent is to move away from the traditional interviewer and respondent relationship, where the Field Monitor sits with a pencil and paper recording the 'answers' given, to a more interactive and inclusive discussion. Participatory communication tools also provide a deeper understanding of gender relationships by using the tools separately with groups of men and women and sharing and comparing them later.

What are some of the Participatory Communication Tools and how can They be used

A brief description of a few of the participatory communication tools is provided below. The full descriptions of each and more guidance of how to use them, as well as many more participatory tools, can be found in WFP, A Guide to Deepen Understanding: Participatory Techniques and Tools. Some tools are more appropriately suited to participatory methods rather than to rapid methods due to the time and resources needed to employ them. However, simple tools, such as proportional piling, can be used in either. Some tools are exclusively for use with groups or individuals. Many tools can be applied to both individual or group interviews/discussions, such as matrix ranking and scoring exercises.

Proportional Piling allows people to express their perspective of quantity by piling "counters" such as stones or beans that can then be put into percentages.

Matrix Ranking and Scoring is a way to structure the perceptions and opinions of informants so that individual or group qualities can be ranked in order of importance and the reasons for this ranking is discussed.

Stakeholder Identification and Analysis gives a comprehensive picture of all persons, groups or institutions that: i) have an interest in the operation's success or failure; ii) may hinder its smooth implementation; iii) contribute to or are affected by the objectives of the operation, positively or negatively; or iv) can influence the situation.

The **Venn Diagram** is a popular and effective tool for encouraging participation. A set of circles, each representing a group or institution, is selected or drawn and then arranged to show the relationships between these institutions or groups.

Social Network Mapping shows the economic, social and cultural ties and relationships that people have within a community or that exist between people from different communities. Maps of social networks can indicate ways in which different social groups benefit from these linkages.

Wealth or Well-being Ranking is used to get an understanding of local perceptions of the different wealth groups within a community and place every household in 1 of these groups.

Examples of using Participatory Communication Tools

The Emergency Officer handling the PRRO in Somalia is interested in describing and analysing how food is redistributed among the community because it appears to be diluting the impact of food distribution to targeted households.

- A **social network mapping** exercise is used to stimulate discussion among men and women in separate groups concerning food redistribution as it relates to kinship ties and religious obligations.
- **Wealth and well-being** ranking exercises are used prior to meeting with women in order to identify different socio-economic groups among the women and to allow for separate group discussions with each.

What is Direct Observation and when should It be used?

Introduction. This section describes direct observation and when and how it can be applied as a data collection technique.

What is Direct Observation?

Direct observation refers to using your eyes to observe people and their environment, situations, interactions or phenomena and recording what you see as data. Everyone collects direct observation data knowingly or unknowingly; using the technique simply requires recording and, in the case of qualitative methods, consciously using what we see to help shape our understanding of situations or phenomena.

When and how to use Direct Observation

When to use Direct Observation

- Direct observation bigins even before an interview or discussion. Often things seen on the drive into the area or upon entering the village on foot provide valuable contextual data.
- Direct observation techniques are particularly applicable to interactive discussions, such as focus group discussions, where the physical response and reactions tell of underlying disagreement or agreement between participants in the discussion.

How to use Direct Observation

- Direct observation is most often attached to a data collection exercise that also involves verbal interaction with beneficiaries using quantitative or qualitative methods.
- Direct observations can be formally included in the data collection exercise, and noted on the data collection instrument, or they can be informally used to enhance the context or a verbal response, description, or explanation given by beneficiaries.
- Every data collection instrument (e.g. questionnaire, interview checklist) should make a provision and space for direct observation comments and notes as they can add context to the data. Similarly, data collectors must be advised that their observations are valued and should be recorded, making sure to separate out their observations from the respondents' comments or responses.
- Direct observation is used as a means of 'on-the-spot' triangulation for the responses, discussion, and explanations given by beneficiaries.
- When using qualitative methods, direct observation information can be used to form the next topic for discussion or to frame a question about inconsistency between what the interviewer observes and what the respondents are saying.
- When using quantitative methods, the interviewer should note down his or her observation, but also write down the respondent's response. Interviewers need to ensure that they do not substitute their direct observation for the respondent's answer or explanation to a question or interview topic.

Examples of the use of Direct Observation Techniques when applying Qualitative and Quantitative Methods

Quantitative:

Upon entering the homestead, Field Monitors are to observe the general tidiness of the cooking area and record their rating on a scale of 1 to 5 (with 1 being unclean/unsanitary and 5 being the most clean and sanitary).

The male head of household tells the Programme Officer that the household owns no goats, yet over 20 goats were observed in the area surrounding the homestead and the man's daughter was tending them. The Programme Officer notes both the response of the head of household and her own observation on the questionnaire.

Qualitative:

The women's group explained that it takes over 2 hours to reach the nearest water source. The Advisor conducting the interview noted the existence of a borehole just outside the village on the drive in and inquires about this apparent inconsistency. The women explain that the borehole is run by a management committee that charges 10 Kenyan shillings per 20-litre jerry can and that only the middle and rich wealth groups can afford it. The Advisor notes both her observation and the women's explanation on the interview checklist.

Module Summary

What has been covered in this module?

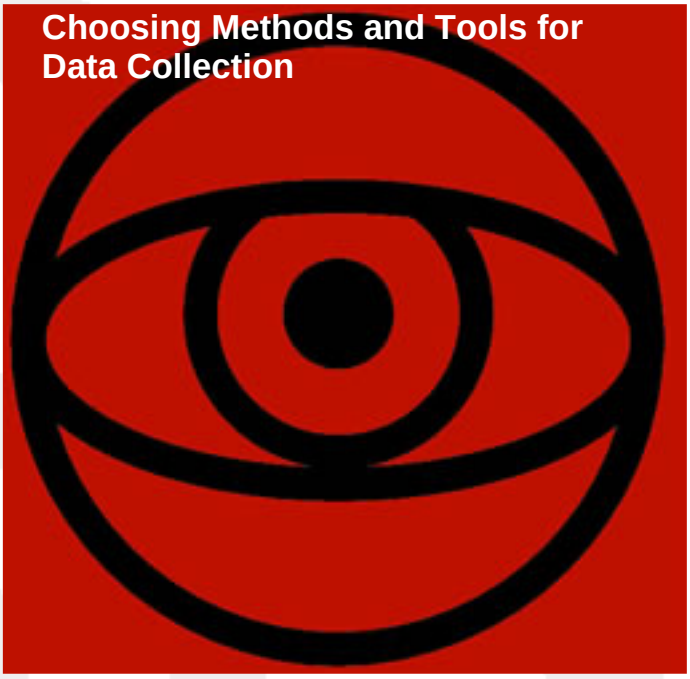
This module provided an overview of quantitative and qualitative data collection tools and methods, describing their strengths and weaknesses, as well as when it is appropriate to use each of them. The difference between probability and non-probability sampling was explained, and guidance on the appropriate use of both was provided. The module also described a number of qualitative data collection techniques, such as key informant interviews, focus group discussions and observation. In addition, participatory and rapid rural data collection methods were introduced, and the usefulness of these methods vis-à-vis different kinds of WFP operations was outlined.

What additional resources are available?

For further information the following modules and resources might be useful:

- Going to the Field to collect Monitoring and Evaluation Data
- How to consolidate, process and analyse Qualitative and Quantitative Data
- Reporting on M&E Data and Information for EMOPs and PRROs
- Reporting on M&E Data and Information for Development Programmes
- WFP Participation Toolkit
- WFP's Food and Nutrition Handbook

Choosing Methods and Tools for Data Collection



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