There is a variety of ways in which information can be collected for monitoring and evaluation purposes. Some techniques, such as focus groups and key informant interviews, offer rich, qualitative information about the social and cultural context of an intervention and the problem it is designed to address. Other strategies, including the use of surveys and direct measurements, provide more quantitative data on the implementation and effects of the project. Each method offers certain advantages as well as disadvantages.

**Qualitative vs. Quantitative Data Collection Methods**

There is an ongoing debate among those responsible for monitoring and evaluating development projects as to whether collecting quantitative data is worth the effort, given the time and expense involved, the problems with standardized methods and inaccurate measurement, and the frequently ambiguous results. Skeptics of quantitative data collection often suggest that well-executed qualitative data can provide reliable information at a fraction of the cost.

Qualitative data can indeed provide many insights into project appropriateness, that is, the degree to which the project is perceived by beneficiaries and staff to be addressing priority needs in optimal fashion. In addition, qualitative methods can enable the evaluator to understand better what is actually happening in a project, by exploring the reasons for particular behaviors and responses. Accordingly, qualitative data, though subjective, is likely to shed important light on processes at work in a project. When responses by a sizable number of project participants are consistent with project outputs and results, such responses may qualify as reasonably valid evaluation measures. Replicable results, based on a representative sample of participants, provide firmer conclusions than do isolated impressions.

At the same time, because qualitative methods are, by their nature, subjective, particular efforts must be made to increase the likelihood of reli-
ability. One way to reduce the subjectivity of qualitative information is to provide rigorous training in the data gathering techniques, to ensure high inter-observer consistency.

Accurate assessment of project impact requires quantitative information; e.g., numbers of beneficiaries reached; proportions of the target population with improved outcomes; increments in height-for-age or birth weight. Note, though, that quantitative information may in some instances, be collected using qualitative instruments. For example, in one project the result might be the increase in the proportion of mothers who believe breast milk is the best food for infants. Beliefs might be measured in a qualitatively-oriented questionnaire which seeks the opinions of mothers through open-ended questions, but the measure (proportion of mothers) is quantitative.

Most large scale projects require some quantitative assessment of change attributable to project activities, while qualitative data provides context and a basis for interpretation.

The purpose of this section is to discuss the most common qualitative and quantitative data collection techniques and to describe when and how each method is generally used for the monitoring and evaluation of field-based nutrition projects. In addition, there is a brief discussion on when to use open-ended and closed-ended questions for data collection and how bias can be minimized through particular data collection strategies.

For the task manager, the choice of data collection strategies will have implications for the nature of M&E information collected and, in turn, the types of personnel needed.

The methods most frequently used to collect data for monitoring and evaluation include:
• observations;
• key informant interviews and focus groups;
• surveys; and
• direct measurements.

Observations

Much useful information can be procured when a trained observer visits a community and collects project-relevant information on community conditions and household/individual activities. Observations are commonly used in project M&E to assess time-use patterns or behaviors that are relevant to achieving desired outcomes and impacts. How much time is spent preparing complementary foods? Are families using iodized salt in their homes? Are women eating more during pregnancy? Observation can also be used for classification purposes. Proxy measures for socioeconomic status, for example, are often derived from observing the type of house in which a family lives, the material used for roofing, or the number of large and small livestock owned.

Observations offer valuable insights into the social and physical context of a problem, but they also introduce opportunities for bias. Most often, observations are conducted by trained specialists outside the project, who are considered to be more objective than project staff. However, outsiders can also bias observations through the selection of non-representative sites, subjects, and seasons. It is helpful if observers can structure their observations using checklists of specific behaviors or environmental characteristics, as a way of making observations more objective. Subjects introduce their own source of error if they change their behavior when in the presence of the observer. It is, therefore, often wise to let beneficiaries know that observations will be taking place, but not let them know when they will occur or exactly what will be observed.
Key informant interviews and focus groups

Interviews and focus groups with beneficiaries or local staff are among the fastest and least expensive of data collection tools. If informants and focus group participants are chosen carefully to represent the entire range of stakeholders, and if the interviews are careful to be both open-minded and neutral, these methods can yield clear and candid insights. Key informant interviews and focus groups are useful when one needs to learn more about knowledge, attitudes and practices, of staff, participants or important community members. These techniques are particularly effective for projects that attempt to change behaviors, such as nutrition communication campaigns, and can be used for project planning, material development, and the pre-testing of instruments as well as for M&E.

Key informant interviews involve a face-to-face meeting between a trained interviewer and a person selected to represent a certain group whose knowledge, attitudes or practices are being monitored or evaluated (e.g. project staff, mothers, school children, or mothers-in-law).²⁵

Focus groups are small group discussions led by a trained moderator who introduces a topic and facilitates participation by all members of the group. Participants are encouraged to talk among themselves, expressing opinions, relating experience, and providing constructive feedback on the topic, while an observer takes detailed notes on the discussion. The group dynamic allows participants to respond to one another’s per-

²⁵. These key informant interviews differ from but may overlap with advocacy efforts designed to gain the support of local political and religious leaders often necessary for project acceptance and success. The same leaders may offer valuable insights about attitudes and constraints inhibiting attitude and behavioral change and, subsequently, about public perceptions of the project.
ceptions, generating new ideas and highlighting conflicting attitudes that would otherwise be inaccessible to an outsider.

Creating the right environment for group interaction requires special attention to the design of the focus groups. Settings, group composition, and the moderator's skill at guiding conversation all influence the participants' willingness to divulge conflicting opinions and discuss sensitive topics with candor. Focus groups generally should be comprised of similar individuals, e.g., mothers of small children; fathers; or parents of teenagers. Focus groups cannot be conducted in the presence of staff or administrators of the program being evaluated as this often will bias or limit the responses.

Either of these techniques can be used to generate information on such topics as the level of motivation, workplace satisfaction, and knowledge among community nutrition workers; mothers' constraints to improving child care practices; cultural beliefs about diet and food preparation; and the attitudes of community leaders regarding the usefulness and appropriateness of the project.

Though key informant interviews and focus groups can provide important contextual information, certain difficulties should be anticipated. These difficulties relate in part to open-ended questions which are used for these purposes. Such questions can provide important insights on perceptions, sometimes reveal project-related issues not originally considered, and may provide the basis for subsequent close-ended questions. At the same time, open-ended questions themselves are often difficult to code and analyze. Because there are no standard response categories, in such open-ended questions, it is usually not possible to compare the information statistically within or between projects (although qualitative comparisons can be made, for example regarding perceived effectiveness and likely sustainability; and one project's experience may shed light on another's). Interviews and focus groups require experienced staff
capable of probing, with follow-up questions, for answers and eliciting and recording adequately detailed information.

Surveys

Structured surveys in nutrition projects, usually use closed-ended questionnaires to capture information on inputs, outputs, outcomes and impacts. Surveys are useful because (a) information can be generated on a wide range of factors (e.g., service delivery, attitudes, knowledge, and practices), (b) closed-ended questions can be easily analyzed and compared, (c) findings from surveys can be generalized to the population of interest if the sample is representative, and (d) large numbers of people can be interviewed.

As a general rule, questionnaires need to be administered by thoroughly trained interviewers. While surveys conducted in industrialized countries can be delivered through the mail and self-administered or conducted by phone, these are generally not feasible options for field-based nutrition projects in developing countries.

Some disadvantages of surveys are that (1) they can result in oversimplified information, particularly when closed-ended questions are used; (2) interview bias is often introduced; and (3) instrument development and sampling are complicated procedures.

The first of these disadvantages can be largely overcome by careful preparation of the questionnaire. Closed ended questions must always be based on sound and complete background information about what the response categories should be. Many closed-ended questionnaires include a few open ended questions, or include the response category “other”, to permit respondents to give additional or unanticipated information. The second disadvantage, interviewer bias is not unique to formal surveys; any technique in which the data collector interacts with respondents is subject to some degree of bias, which can be overcome
Open or Closed: When to Use Which Type of Question

There are two basic kinds of questions that evaluators use in interviews, focus groups and surveys: *open-ended* and *closed-ended*. Respondents answer open-ended questions in their own words, and the interviewer is expected to record the answer just as it is given. Closed questions, on the other hand, require specific replies, or include a set of possible answers from which the respondent is asked to choose. Because each type of question has certain advantages and disadvantages, M&E staff must find an appropriate balance based on the purposes of the information gathering.

<table>
<thead>
<tr>
<th>Open-Ended Questions</th>
<th>Closed-Ended Questions</th>
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<tbody>
<tr>
<td>Advantages</td>
<td></td>
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<tr>
<td>• promote spontaneity.</td>
<td>• allow for comparisons within and between programs.</td>
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<tr>
<td>• encourage people to answer using their own words and concepts.</td>
<td>• are easy to ask and record and do not require highly skilled interviewers.</td>
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<tr>
<td>• help generate additional information and insightful details that would be missed by asking closed questions.</td>
<td>• can help people recall information.</td>
</tr>
<tr>
<td>• elicit more accurate information about sensitive or taboo behavior.</td>
<td>• are often easier for people to answer.</td>
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<tr>
<td>Disadvantages</td>
<td></td>
</tr>
<tr>
<td>• are difficult and more costly to code therefore, it is impractical to have a large sample.</td>
<td>• have simpler, less error-prone coding, particularly if the format is well designed.</td>
</tr>
<tr>
<td>• are prone to bias because answers can be interpreted in different ways.</td>
<td>• hinder spontaneity by forcing people to choose among offered response categories instead of answering in their own words.</td>
</tr>
<tr>
<td>• take more time for respondents to understand, process, and answer.</td>
<td>• do not give people enough time to reflect and remember.</td>
</tr>
<tr>
<td>• require highly skilled and disciplined interviewers who will take word-for-word notes and probe for details.</td>
<td>• may result in oversimplification.</td>
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<td></td>
<td>• may limit the range of responses.</td>
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</table>

As a rule of thumb, one should rely primarily on closed questions with *well written, comprehensive* response options and use open-ended questions primarily when:

• conducting focus group sessions and key informant interviews;
• there isn’t enough information to write appropriate response categories;
• trying to answer questions of “why” and “how”;
• promoting awareness of and participation in the program is one objective of the data collection effort.

*Response categories should be exhaustive, that is, cover all possible answers. To accommodate unforeseen responses, an open-ended other category may be used. If only one response is permitted, categories should be mutually exclusive, that is, categories should not overlap. In many cases, though, respondents may be allowed to give more than one response. For example, “what difficulties do you have in attending the clinics?” might permit both “distance” and “hours of operation” as responses.
to some extent (though never perfectly) by careful training. The third disadvantage, complex procedures, can be decreased through utilization of guidelines such as those included in Section 8 and, in the case of sampling, assistance from specialists outside the project.

**Direct measurement**

Direct measurements are usually necessary to ascertain changes in nutrition status resulting from a project. The specific methods employed most often for nutrition projects include the use of anthropometry through height-for-age, weight-for-age, weight-for-height, and body mass index measurements; analysis of blood, urine, and breast milk; the assessment of clinical signs of micronutrient deficiencies such as goiter and night blindness. Other direct measurements include weighing of food served to household members (often before and after meals, to capture the amount left over), but this method of measuring food consumption is extremely time consuming and intrusive, and therefore tends to alter the behavior being measured. Food consumption for most purposes is better measured by recall methods.

While many direct measurements are not technically complex, all require precision and practice. They also require familiarity with the local context. In Astonia for example, errors in head circumference measurements were traced to the practice of including braids rather than measuring under them. Errors also occur when measuring tools are not properly calibrated and when data collectors are not well trained to use them. Data collectors should be trained to a specified standard of accuracy (so that, for example, repeated measures are accurate within a specific range). If the data collection period is lengthy (several months) periodic retraining is wise.

Challenging problems of direct measurement are likely to arise in collecting particular types of evaluation data in a control area. One such case is the collection of control group pregnancy weight gain data. Another is control group birth weight data. Neither lends itself to the normal proce-
dure in a programmatic evaluation of collecting specified control group data at single points in time. Yet both are likely to be important in projects seeking to improve pregnancy outcomes and wishing to ascribe improvement to project interventions.

In these cases, there may be no alternative to locating evaluation team personnel in a control area for the lengthier periods of time necessary to collect monthly pregnancy weights (over, say, a three month period) on a subset of pregnant women at varying stages of pregnancy. During that same time period, the evaluation team, necessarily relying heavily on the cooperation of local midwives or clinic personnel, would collect birth weight data on all births taking place until sample size requirements were met.

**Maximizing the Coordination of Data**

Information needs for project M&E are often extensive. As a result, it is advisable to maximize the efficiency of data collection by:

- maintaining and compiling information from project records, and
- using already existing information (i.e. secondary data sources) when appropriate.

**Maintaining and compiling information from project records**

Monitoring and evaluation should, to the extent possible, use information that is already being collected for program purposes. In addition to management-related information, such as data on actual costs and deliveries and quality checks on inputs, many projects collect considerable pre-project data on communities and individuals. Anthropometric data, information on the incidence and severity of micronutrient deficiencies, and project participation rates are all examples of information that often is collected routinely for nutrition projects and often form part of the ongoing monitoring system. Such information, however, should be checked periodically for quality.
Secondary data

What can be done in a mid-project evaluation in cases where no baseline information was collected and/or no control group was established? As indicated in Section 4, one answer is to seek secondary sources of data. Secondary data consist of statistics and other information that were originally collected for purposes other than the project. The most useful types of secondary data for nutrition projects include national or regional surveys of nutritional status, dietary intake surveys, micronutrient deficiency prevalence surveys, and consumer expenditure and consumption surveys. Such information will usually come from government offices, donor agencies, NGOs, or research institutions.

While using secondary data can be a fast, inexpensive, and convenient way to obtain information, it requires a detailed inspection of the original collection process, keeping in mind that the validity and reliability of the present findings will rest upon the quality of another's collection methods.

Controlling for Bias through Data Collection Methods

There are various types of bias, or systematic error, which can affect the results of an evaluation and lead to erroneous conclusions. While some types of bias can be controlled through sampling or data analysis techniques, much can be done to minimize such errors by using proper data collection methods.

While it usually is impossible to eliminate bias altogether, bias can be reduced when information is collected in exactly the same way for participants and controls, both before and after project activity. To do so, data collectors must assure that the administration of the data collection instrument is well thought out and implemented. The following table summarizes specific measures that can be taken to decrease the likelihood of bias.
### Table 7.1 Minimizing Bias through Data Collection Methods

<table>
<thead>
<tr>
<th>Type of Bias</th>
<th>Description of Bias</th>
<th>How to Minimize Bias through Data Collection Procedures</th>
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<tbody>
<tr>
<td>Interviewer bias</td>
<td>Baseline and post-project data or information about participants and controls is collected by interviewers in different ways. Observed differences are thus due to differential measurement and recording and not to project effects.</td>
<td>• Train interviewers thoroughly.</td>
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<td></td>
<td>• Standardize the interview protocol.</td>
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<td>• Use highly objective, closed-ended questions.</td>
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<td></td>
<td></td>
<td>• If there is more than one data collector (or team of data collectors), each collector or team should gather information from different areas, both in the baseline and in the subsequent evaluation surveys, to minimize the effects of individual differences in skill or method. If possible, the same data collectors should conduct both pre- and post-surveys.*</td>
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<td></td>
<td>• For longitudinal surveys, the same data collector (or team) should collect information for the same individuals throughout the duration of the evaluation. If this is not possible, carefully train replacements to continue data collection in an identical manner.</td>
</tr>
<tr>
<td>Instrument or measurement bias</td>
<td>Measurement errors are due to instruments that are not identical for participants and controls; thus differences are due to differing measurement and not to project effects.</td>
<td>• Standardize measurement instruments and procedures.</td>
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<td>• Calibrate instruments (such as weighing scales) frequently.</td>
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<tr>
<td>Recall bias</td>
<td>The participants and controls remember and report information in different ways due to their different exposures either to the intervention or to a particular results.</td>
<td>• Train interviewers thoroughly on how to probe for information and how to help respondents remember past events.</td>
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<td></td>
<td></td>
<td>• Use specific and meaningful reference/recall period.</td>
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<tr>
<td>Time or seasonal bias</td>
<td>Data on participants and controls are collected at different times of the day or different seasons of the year; thus differences are due to time or seasonal effects rather than the project activities.</td>
<td>• Standardize the time of day or season of data collection so information on treatment groups and controls is collected during the same time period.</td>
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</tbody>
</table>

*This has been particularly problematic in several large World Bank-assisted projects in which separate contracts to different contractors were awarded for baseline data collection (in one case two separate contracts for successive baseline surveys as new areas were brought under project coverage) and for subsequent midterm and end-point evaluations. Beyond problems of inconsistent data collection, evaluators find themselves in a near impossible situation of seeking to develop evaluation instruments which will be consistent and comparable with differently designed baseline and midterm survey instruments. A single contract for ongoing external evaluation, discussed in section 1, is one way to avoid such problems.*