

Reliability, Representativeness and Rigour in HEA

HEA and Rapid Rural Appraisal Methods

1. Reliability

Rapid appraisal methods and sample surveys have different strengths, based on certain key features. The key features of rapid appraisal are that information and analysis are generated relatively quickly, and that the approach is open-ended and semi-structured. Rapid appraisal typically involves interviews with groups of people, selected because they are thought either to have specialist knowledge or to be in some way representative of a defined group. Sample surveys are generally valued for their precision and representativeness. Most sample surveys focus on the household level, collecting data using a standardised questionnaire from a carefully selected and (usually) large sample.

The reasons why HEA is usually carried out using rapid appraisal rather than a sample survey are twofold.

First, there are the practical reasons of resources and timeliness. HEA aims to provide decision makers with the information they require, in the time frame they need it, with enough rigour and validity to inspire action. Information and analysis that feed into humanitarian decision making are nearly always needed quickly and with limited resources, and rapid appraisal has proved to be a fast and relatively inexpensive way of gathering reliable data on livelihoods. Rapid appraisals tend to be less costly than sample surveys, in which the larger sample size tends to push up both the transport and staff costs.

Second, HEA data tends to be collected through rapid appraisal because RA methods allow quality control measures, linked largely to the opportunity to clarify, discuss, cross-check and triangulate at multiple stages of the process from the interview to data entry to data analysis. For instance, even during each interview, the investigator can cross-check reported information (such as access to food against minimum food needs; income against expenditure) and is trained to delve deeper when parts of the account contradict each other, until a logical and internally consistent picture is constructed of how people survive through the year. The advantages of an iterative, semi-structured method are key considerations for a system-based approach like HEA that seeks to construct a picture of 'how things work' rather than to compile a set of statistics.

Typically, a choice has to be made between a high volume of lower quality data and a small volume of higher quality data. It is difficult to argue that one approach is **consistently** better than another because both types of assessment can be well or badly done. However, given the type of, and use, of quality control measures in HEA, rapid appraisal methods are usually a better fit.

In HEA, data triangulation and cross-checking are continuous processes undertaken throughout the field work.

The advantages of an iterative, semi-structured method in a system-based approach like HEA is that it enables analysts to construct a picture of 'how things work'.

2. Representativeness and Questions of Sampling

The next question to ask is how representative is the information of the group or population as a whole?

Some form of sampling is required in every survey which will provide a result that is representative of the population and not biased in any way, for example towards villages that are nearer to a road. In *random or probability sampling*, every sample unit such as the household or village has a known chance of being selected and a sample size can be calculated on the basis of a known sampling error. Such methods include two-stage cluster sampling, stratified sampling or simple random sampling, and are commonly used in household sample surveys. They give the best chance of obtaining a sample that is truly representative, provided that accurate data is available on both sample locations and populations. **If this information is not available or is incomplete or inaccurate or out-of-date (as is often the case), then the representativeness of the sample is adversely affected.**

In an HEA assessment, representativeness is ensured through the *purposive sampling* of areas considered to be relatively homogeneous in terms of livelihood. People are grouped together who share common livelihood patterns, firstly through the delineation of livelihood zones (areas within which people share similar options for obtaining food and income) and secondly through disaggregation into wealth groups. In consultation with key informants, villages that are considered typical of the livelihood zone are selected. In addition, within these villages, men and women from households typical of particular wealth groups are selected. Techniques for minimising bias in these selection processes are built into HEA's quality control approach.

In sample surveys, as in rapid appraisal, most food security data are reported, not counted or measured, and so are open to a degree of subjective judgement. Survey data is as susceptible to inaccurate reporting by interviewees as any other; the difference is that the sample enables a statistical analysis of the precision of the data collected. In rapid appraisal, with appropriate selection of informants and proper cross-checking, semi-structured surveys can also be used to generate rigorous quantitative as well as numerical data. The way to minimise the errors arising from the subjectivity of responses or the ambiguity of questions is described in the section below.

HEA is not restricted to a single data collection method.

Individual HEA uses the sample survey method. Standard HEA uses the rapid rural appraisal (RRA) method.

Individual HEA has been carried out in Sri Lanka, Indonesia and Lebanon to measure project impacts on beneficiary households. The assessments used a randomised control design based on 2-stage sampling and using the probability proportional to size technique.

Standard HEA using the RRA method has been carried out over the last two decades in almost 70 countries. RRA has been the preferred approach because it has arguably offered the best value for money, especially in early warning contexts.

3. Rigour, Verification and Bias

One of the advantages of sample survey methodology is that standard statistical analyses can be used to estimate how precise the data is, that is, to estimate whether the same result would be obtained if the survey were repeated, and to make statistically valid comparisons between the results from different population groups. Precision is not, however, the same thing as accuracy. Suppose that household interviewees consistently under-estimate their crop production by 10%-30%, so that the average result obtained in repeated surveys is 8 sacks per household rather than 10, the true or accurate figure. In this case, the result (8 sacks) is inaccurate (because the true figure is 10 sacks) but it is precise (because the same result would be obtained in a repeat survey).

It is very difficult to determine accuracy with respect to data on food security, but there are two important and related advantages to HEA in this respect. The first is that in the kinds of rural economy in which HEA inquiries are usually made, there is a fairly limited range of possible items to record: few types of staple food, few sources of food, few places of purchase; few kinds of cash expenditure, and few kinds of income beyond the farm. Tied to this, the second advantage is that there is a simple arithmetical test of whether the information is making sense: it actually has to *add up*. For instance, there is a minimum food energy below which year-on-year survival is impossible and thus if people have not starved, however disadvantaged they may be in many ways, they must have obtained a survival minimum. If their food energy sources add up to a sum below the survival threshold, then more questions need to be asked and clarification obtained. The same principle applies to information on income, which can be cross-checked with stated expenditure and with the observed standard of living. Cross-checking of information within interviews and between informants is extremely important in HEA and is a key aspect of information gathering in the field.

Despite one's best efforts, bias can never be eliminated from reported information, whether gained by questionnaire surveys or from rapid rural appraisal methods. The best one can do is to be aware of and manage potential bias by being sensitive to whom you are talking, being clear about the geographical area to which they are referring (spatial bias), including a seasonal perspective (seasonal bias) and making sure that the poor and women are well represented, at least as subjects of the enquiry (wealth, influence and male bias).

Standard statistical analyses can be used to estimate how precise the data is. Precision is not, however, the same thing as accuracy.

In rural HEA, when food energy obtained adds up to the survival minimum; or when income adds up to expenditure; or when land productivity increases with wealth; or when casual labour income earned by the poor matches the labour expenses of the better-off: these measures all provide a non-statistical 'test of confidence'.

Strict adherence to statistical procedures is essential in many fields of inquiry, but in the field of food security, minimising bias, checking for internal consistency, and providing complete information that is logical and useful to decision-makers is arguably more important.

Table 1: Cross-checks carried out on HEA information to ensure quality control

<p>Within an interview</p>	<ul style="list-style-type: none"> ▪ Are households consuming close to 2100kcal per person? ▪ Do income and expenditure match? ▪ Is the response consistent when the same question is asked in different ways (How much did you harvest? How long did it last? How much was eaten every month during that time?) ▪ Does the timing of activities make sense: can crop production and income-generating activities be done with the time & labour available? ▪ Has the timing of food and income flows been checked against the seasonal calendar and are we accounting for all times of the year?
<p>Between interviews</p>	<ul style="list-style-type: none"> ▪ Are wealth groups and key informants giving the same picture? ▪ Are the same wealth groups giving the same picture? ▪ Data such as rainfall, yields, prices and wage rates should not vary very much within the same zone and time period.
<p>Between primary and secondary data</p>	<p>Check primary field data against any secondary data including rainfall, production and price data from government offices:</p> <ul style="list-style-type: none"> ▪ Is rainfall data similar to village reports about their seasons and the timing of rain-based activities? ▪ Are bad years/good years consistent with long-term rainfall data, crop production data, price data, and livestock disease data?
<p>Between reported and observed information</p>	<ul style="list-style-type: none"> ▪ Observe crops in fields, grain stores, livestock condition, physical condition of people, etc. ▪ Observe what food people are preparing. ▪ See what is being sold in the market and check prices/seasonality of staple goods. Compare this information to what villagers are reporting.
<p>Triangulation</p>	<p>Look at things from different perspectives:</p> <ul style="list-style-type: none"> ▪ Team composition (gender, multi-disciplinary, knowledge of area) ▪ Units of observation (age, gender, status, wealth, ethnicity, professions/ activities) ▪ Tools and techniques
<p>Common Pitfalls</p>	<ul style="list-style-type: none"> ▪ Clarify year and wealth group under discussion ▪ Check units of measurement being used ▪ Check methods of storage/ consumption: (milled/ threshed, etc.) ▪ Check method of consumption (“green” crops) ▪ Verify how food that is produced is used. Don’t assume it is all consumed

Table 2: Choosing between Rapid Appraisal and Sample Surveys

Issue	Commentary
Timeliness	In a rapid appraisal, data collection and analysis are continuous processes, and a field team is usually able to present its main findings shortly after completing the field work. For a sample survey, field data is compiled centrally; cleaning and processing of data may take considerable time; and sample survey results are rarely available until at least a month (and often much longer) after the completion of the field work.
Cost	Differences in cost between the two approaches are a function of two things: a) sample size and b) staff costs. Sample size (both the number of sites visited, and the number of interviews undertaken) is typically larger in a sample survey, which pushes up both transport and staff costs. Fewer people are involved in a rapid appraisal but their unit cost tends to be higher because this type of assessment requires a higher calibre of staff.
Survey instruments	Sample surveys always make use of standardised questionnaires. These require careful design and rigorous pre-testing. For a rapid appraisal, the semi-structured interview is the main survey instrument as this format encourages discussion and cross-checking.
Personnel, training requirements and ownership of the output	A rapid appraisal requires a higher calibre of personnel than a sample survey because field teams are expected to participate in the analysis. Nobody is simply a form-filler. This means that more time is required for training than for a sample survey (although training is also a key factor in ensuring the success of a sample survey).
The Output – qualitative vs quantitative, objective vs subjective.	The basic output from a sample survey is a set of <i>quantitative</i> statistics (e.g. x% of households who have visited a health post within the last month, etc.). What is often missing is the more <i>qualitative</i> or descriptive aspects of the analysis, i.e. the story behind the statistics. Rapid appraisal can be used to generate both <i>qualitative</i> and <i>numerical</i> data. The numerical data is not the measured or <i>objective</i> kind (i.e. actual sacks of harvested grain are not counted). But this is also the case with most food security sample surveys (where variables are <i>reported</i> , not counted) ¹ . The main difference is that data is collected with individual households in a sample survey vs village focus groups or key informants but both approaches are open to a degree of <i>subjective</i> judgement.
Representativeness, precision and accuracy	Sample surveys typically make use of random samples, while rapid appraisals generally rely upon purposive sampling. Random sampling is considered to be a strength of sample surveys. However, truly representative sampling requires two things: a complete list of locations to sample (e.g. villages for a rural survey) and accurate data on the population of each unit sampled. If this information is not available or is incomplete or inaccurate or out-of-date (as is often the case), then the representativeness of the sample is adversely affected. With regards accuracy, an advantage of a sample survey is that standard statistical analyses can be used to estimate how precise the data is, and to make statistically valid comparisons between different population groups. However, precision is not the same thing as accuracy. Both a rapid appraisal and a food security sample survey rely on <i>reported</i> not measured data but in a rapid appraisal, these reported opinions have to be internally consistent and logical which is a strength.

¹ Notably, nutritional status can only be determined by direct measurement and is therefore objective.