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# Developing Regional Poverty Profiles

## *Based on Local Perceptions*

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# Contents

# Preface

This manual has its origins in fieldwork carried out in Tanzania between 1989 and 1991. In attempting to stratify rural populations in that country, I felt uneasy about applying criteria imposed from outside the local communities. Barbara Grandin's technique for ranking households according to their level of "well-being" provided an alternative. I was encouraged to see how easily local people provided a comprehensive measure of well-being, based on their own perceptions.

The downside of such rankings is their apparent location specificity. In subsequent research I tried to overcome this limitation by determining ways to identify, extrapolate, quantify, and combine indicators identified through rankings of well-being so to obtain regional profiles that were consistent with local assessments of poverty.

The method described here is a product of that research so far. The work was conducted in Tanzania (1989-1991), Zimbabwe (1993-1994), Colombia (1994-1996), and Honduras and Nicaragua (1997-1998).

Many people have contributed to this work: numerous villagers in the countries just mentioned and who provided valuable insights into local concepts of well-being and poverty; Jannik Boesen, Centre for Development Research in Copenhagen, Denmark, who helped develop the scoring system for translating qualitative indicators into quantifiable variables and for combining these into a well-being index; and Ron Knapp, Gregoire Leclerc, and Paloma Urbano, CIAT, who made valuable contributions to our discussions on poverty measurement and sampling strategies.

I thank all these people for contributing so much to the manual, but I take the responsibility for those errors or ambiguities that still remain.

*Helle Munk Ravnborg*

# Introduction

Alleviating poverty is an important objective of many development programs, projects, and policies. To design or evaluate an activity meant to alleviate poverty, the participants involved must:

Understand what it means to be poor,

Appreciate how the conditions of the poor differ from those of the not-so-poor, and

Be able to assess the number of poor people in different parts of a targeted area.

Yet, on a disturbingly frequent basis, too little is known of these aspects. Often, available information is general only, obtained by using, for example, the so-called "head-count ratio". This ratio describes the proportion of a population, whether of people or of households, in a targeted area, for example, a department[1] that has an income or expenditure rate estimated to be below a certain level. Usually, this level, known as the "poverty line", is that which is considered necessary to meet minimal nutritional requirements.

## Why Measuring Poverty Matters

This and other conventional measures for estimating poverty levels are important, because, first, they significantly influence our understanding of poverty. But they do not describe the source of income for the poor and not-so-poor, nor how they spend it. Neither do they reveal income differences existing within a targeted area. As a result, they are increasingly being criticized as "reductionist" and as "static". For example, Chambers (1988) says:

> *... poverty [has] come to be seen as what is measured and shown in statistics. ... poverty [is] then defined, not by the changing and varied wants and needs of the poor, but by the more static and standardized wants and needs of professionals. Analysts' needs for numbers narrow their perceptions. Conceptually, professionals are caught in their own poverty trap.*

Poverty, as various authors have pointed out, resists measurement because it is a multifaceted predicament, compounded by the number (in millions around the world) of people suffering from it. Poverty thus cannot be adequately captured by one-dimensional measures based on income or expenditure (Chambers 1988; Jazairy et al. 1992; UNDP 1990).

Second, poverty measures are significant in that they play an important role in identifying and designing interventions intended to alleviate poverty. They frequently encourage the creation of designs in which the impact of a given intervention can be measured and recognized (e.g., in terms of increase in the proportion of a population having an annual income above a certain "poverty line"), while other, unmeasured, dimensions (e.g., seasonal variation in income) are neglected. Such imperfect poverty measures therefore tend to lead to poorly designed interventions.

Finally, poverty measures comprise the tool for determining how many poor people live in a specific region and how this number changes over time. We can therefore evaluate which of several situations is the most poverty-stricken, for example, before or after a given intervention, or of countries that have pursued different policies, or of countries competing as

1. Department = an administrative district in certain Latin American countries.

candidates for donor support. Such analyses, based on the use of the head-count ratio, form the basis for the World Bank's strategy for alleviating poverty (World Bank 1990; 1992).

Poverty measures should therefore be chosen with care, to avoid misclassifying people and households, that is, that poor people are not classified as "not poor" and vice versa. Recent studies indicate that conventional poverty measures may have a high rate of misclassification (McGee 1997; Rajaratnam et al. 1992).

In response to criticism of conventional poverty measures, the United Nations Development Programme (UNDP) developed a multidimensional measure of poverty: the *human development index*. It combines data on life expectancy at birth, adult literacy rate, and adjusted real gross domestic product (GDP) per capita. But this approach also has shortcomings. As with conventional measures, the UNDP's human development index is static: it describes poverty as a state of deprivation, and does not take into account the processes that lead to or intensify poverty. None of these static measures reflects the relationships that exist between the poor and not-so-poor (Jazairy et al. 1992; Rahman and Hossain 1992; Ravnborg and Sano 1994).

The World Bank recently recognized the need to consider dimensions other than income and expenditures to define poverty for the profiles that the Bank is attempting to create for different countries. This receptivity toward incorporating the so-called "participatory poverty assessments" (PPAs) into poverty profiles (Norton and Stephens 1995; Robb 1997; Salmen 1995), however, has been limited to presenting the PPAs already made as appendices to the poverty profiles (World Bank 1995; 1996a; 1996b). A probable reason for this reaction may be the inability so far shown of developing, through the PPAs, measures of poverty that adequately reflect, for a given site, both local concepts of poverty and the conditions of poverty so that these can be compared with other sites (Baulch 1996).

## About This Manual

The method of measuring poverty described in this manual seeks to resolve the difficulty just described by identifying, extrapolating, and quantifying local perceptions of poverty and thus develop a regional measure of poverty. This profile helps determine, not only the regional level of poverty (as when using conventional measures), but also identify and characterize the poor and not-so-poor. That is, the manual shows how to develop a more comprehensive poverty measure that reflects both the multidimensional nature of poverty, and the processes that either create or maintain it.

The heart of our methodology is inquiry into local perceptions of poverty (or well-being, its antithesis). Local concepts, not external perspectives, thus form the basis for developing poverty profiles on a wider level. Because of the nature of the technique used to identify local perceptions of poverty (based on the local informants' ability to rank their neighbors in terms of poverty or well-being status), its application is restricted to areas where people are likely to be knowledgeable about the poverty or well-being level of their neighbors. In practical terms, this often means rural areas where small-scale agriculture predominates.

Another advantage of the poverty measure we present is that it requires data that are relatively easy to obtain. In contrast, the income and/or expenditure data needed for conventional poverty measures are notoriously difficult to obtain, and are of dubious quality when obtained. For example, a six-hour interview per household was average for the World Bank's SDA[2] integrated household survey of national poverty levels (Delaine et al. 1992). In contrast, for our methodology, an interview would average between 15 and 30 minutes.

The manual is intended for professionals who are involved in designing, planning, and evaluating research and/or development activities, as well as in setting priorities for such activities. To be fully implemented, the methodology requires computer facilities and at least some familiarity with the use of spreadsheet programs (such as Excel or Lotus) and basic statistical procedures such as the *Statistical Package for Social Sciences* (SPSS).

2. SDA = social dimensions of adjustment.

The manual describes the methodology in nine steps:

1. Selecting sites.
2. Ranking levels of "well-being" in the community.
3. Grouping households into "average well-being categories".
4. Extrapolating "well-being rankings" from sampled communities to the entire study area.
5. Developing indicators of "well-being".
6. Constructing a "well-being index" for the entire study area.
7. Checking the internal and external logic of the "well-being index".
8. Defining "well-being categories" according to the "well-being index".
9. Creating and using a regional poverty profile.

Sections "Step 1" to "Step 4" show how to (1) select sites and identify the local perceptions of poverty within those sites by using a technique that enables local informants of each community to rank the levels of well-being of the households in their respective communities, and (2) determine the extent to which these perceptions can be extrapolated to the entire study area. The technique of ranking levels of well-being was first developed by Silverman (1966) to study prestige in an Italian community. It was later modified and described by Barbara Grandin (1988) in her field manual *Wealth Ranking in Smallholder Communities*. If you are not already familiar with the well-being ranking technique, you may find it useful to read "Step 2" first, then go back to "Step 1".

Sections "Step 5" to "Step 9" show how to translate descriptions of well-being into several quantifiable *well-being indicators* and combine these into a *well-being index*. We suggest you obtain data on these well-being indicators by administering a questionnaire to a representative sample of households in the study area. By using the well-being index, you can develop a well-being or *poverty profile* for your entire study area, thus describing the prevalence of poverty within the area's population and the conditions under which the poor and not-so-poor live.

Throughout the manual we illustrate how the method worked for a case study conducted in 1997-1998 in the Departments of Atlántida, El Paraíso, and Yoro in Honduras (Figure 1).

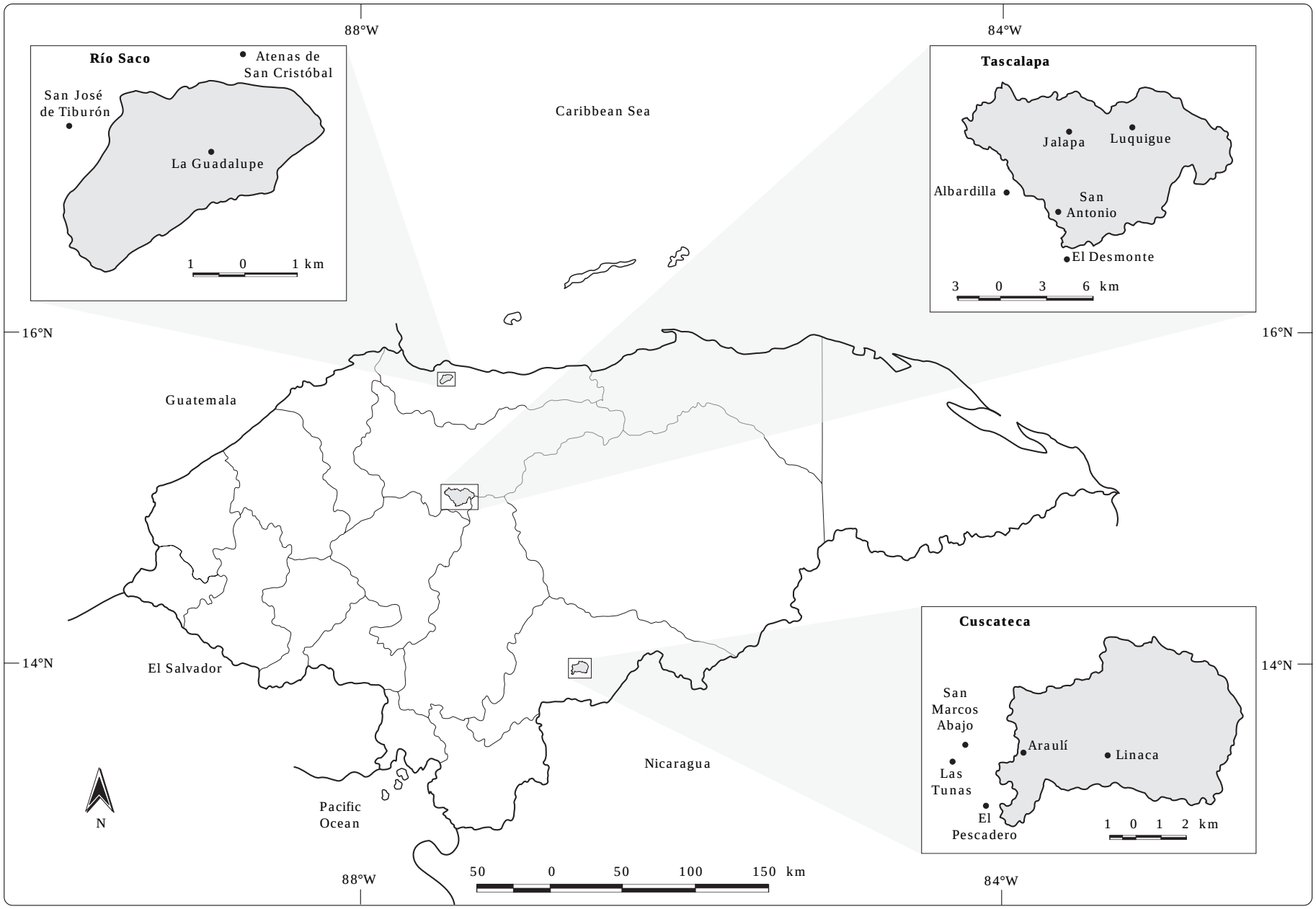



Figure 1. Location of three watersheds in the Honduran Departments of Atlántida, El Paraíso, and Yoro, which formed the basis on which a regional poverty profile was created.

# STEP 1

# Selecting Sites

Entities involved in poverty alleviation include international research programs, governmental agencies, and nongovernmental organizations (NGOs). Some of these work in one or a few communities, while others have a mandate to cover much bigger areas, regions, or even entire countries.

If you work in an organization that operates in only a few, already identified communities, you can jump directly to "Step 2" and carry it out, together with "Step 3", to establish separate poverty profiles for each community.

If, however, you work for an organization that has a mandated area so large that poverty profiles cannot realistically be established for each community, or if your organization needs to compare communities to identify where, in a region, poverty is most acute or widespread, you will need to establish a regional poverty profile. That is, you must select a smaller number of communities or sites within your mandated area in which to inquire about local perceptions of poverty. Once you have identified ("Step 2") and analyzed ("Step 3") the perceptions of well-being at these selected sites, you must then determine the extent to which they apply throughout the entire area ("Step 4").

First, however, you must select your sites.

## Local Perceptions

To select sites or communities, you need to (1) identify local perceptions (which will later enable you to develop local indicators of well-being), and (2) select those sites that will let you identify as many different perceptions of well-being as possible. That is, you must avoid identifying an "average" perception of well-being. The range of perceptions you can identify will form the basis on which you can later justify or validate a possible extrapolation of perceptions found in selected sites to a larger area. The logic behind this activity is as follows: if you do not find differences in perceptions of well-being among sites, then these perceptions can be extrapolated to the entire study area. In other words, you will need to select sites by using a maximum variation sampling strategy.

As explained in "Step 2", to identify local perceptions of well-being you will need to select sites that have populations with fewer than 100 households, but preferably more than 30.

## Sampling Factors

To determine *which* sites and *how many* to choose, you must first make assumptions about the factors that account for different perceptions of well-being, that is, those factors that may explain the variation in your study area. Such factors are called sampling factors. Examples of factors that could influence the existence of different perceptions of well-being are land distribution; agroecological conditions; presence of institutions such as credit institutions, schools, health, and NGOs; ethnic composition; population density (which indicates overall pressure on resources); composition of population by gender; physical accessibility; and local opportunities for nonaglicultural employrnent.

Data on all such factors are often only collected or available for areas larger than communities, such as municipalities. The availability of data also varies from factor to factor, for instance, detailed data on population density are often available from population

censuses, whereas data on land distribution are usually scarce. Some information is usually available for factors such as broadly defined agroecological conditions (e.g., altitude, annual rainfall, and soil types); topography; ease of physical access (e.g., by road); and ethnic composition. You will therefore need to adjust your choice of sampling factors according to the availability of data.

If you find that either data at the community level are difficult to obtain or the study area encompasses an overly large number of communities, then you can sample in two stages:

*First,* use existing data to describe the study area according to the sampling factors, but use a "population" larger than the community, such as the municipality or district. Use the maximum variation sampling strategy to select a number of (for example) municipalities equal to the number of communities you want to include in the final sample.

*Second,* take advantage of key informants to continue describing the communities within each selected municipality for each sampling factor. Then select the community that most represents the municipality as a whole according to the sampling factors.

In our study of the three Honduran departments, mentioned in fue "Introduction", we sometimes had to sample in two stages. We already had developed sampling factors at the village (or *aldea*) level. Honduran villages are composed of hamlets (or *caseríos).* Therefore, when a village was too large for a well-being ranking, that is, it had more than 100 households, we first selected the village according to the given sampling factors, thus deriving a description, then we selected those hamlets that most resembled the village's original description.

When selecting your site, you must consider not only the influence that each sampling factor has in its own right, but also the influence it may exert through *interaction* with other factors. For example, high population density with easy access may lead to perceptions of well-being that differ from those for high population density but with difficult access.

For our study of the three Honduran departments, we chose six sampling factors, with the help of a geographic information system (GIS) developed for Honduras:

*Agroecological conditions*. We took altitude as representing agroecological conditions and distinguished between sites in "low" zones (less than 500 m above sea level), "middle" zones (500-1000 masl), and "high" zones (above 1000 masl). This sampling factor was included because different altitudes permit the growth of different crops, which, in their turn, influence people's livelihoods and thus possibly their perceptions of well-being.

*Ease of access*. We again used the GIS for Honduras to calculate an accessibility index according to distances, slopes, road quality, and location of urban centers with more than 2000 inhabitants. The accessibility index distinguishes between villages with easy access (i.e., less than 2 h from an urban center with more than 2000 inhabitants), villages with regular access (between 2 and 6 h) and villages with difficult access (more than 6 h). Access influences the degree of contact with the surrounding society. It was therefore assumed that people living in villages with difficult access may preserve a unique identity, including a unique concept of well-being.

*Basic services*. The presence of educational facilities may influence people's concepts of well-being by introducing new values, including the value of literacy in itself, and by opening up new horizons. To calculate the sampling factor for basic services, we chose to consider only education and water and sanitation facilities. Unfortunately, we had no information on schools, so, to reflect educational facilities, we calculated an index based on information on "the percentage of illiterate population" and "the percentage of population who attended school for 5 years or fewer". We also developed a water and sanitation index from the percentage of houses that

do not have water supply or have a water supply at a distance of 100 m or more from the house and the percentage of houses that have different types of sanitation. The two indexes were combined to obtain the basic services index.

*Population density*. Based on information from the 1988 population census, villages were grouped into three categories: those with more than 54 persons/km$^2$, those with 21 to 54 persons/km$^2$, and those with fewer than 21 persons/km$^2$. Population density was taken as proxy for overall pressure on resources, particularly land. We assumed that, as land becomes scarce, land ownership would feature more prominently in local perceptions of well-being.

*Ethnic composition*. Different ethnic groups may have different value systems that, among other things, could influence their perceptions of well-being and poverty. The ethnicity factor was computed on the basis of a map that indicated areas with indigenous populations (Atlas Geográfico de Honduras 1994-95). We later found this method to overestimate the number of communities having a predominantly ethnic population. We then tried the 1988 population census data on the autochthonous languages spoken. But, because many, if not most, ethnic groups in Honduras today speak Spanish, this method grossly underestimated the presence of ethnic groups. Thus, between these two alternatives, we chose the excessive estimated derived from the Atlas. Four ethnic groups were identified: *ladinos* (i.e., mestizos), Garífunas, the Indians of El Paraiso, and Xicaques.

*Gender composition*. Gender composition was taken as proxy for the economic opportunities offered in the area. An excess of males was taken to indicate male immigration due to employment opportunities provided by, for example, plantations, whereas an excess of females was taken to indicate male emigration and thus a lack of employment opportunities. The ocurrence of migration for employment may influence local concepts of well-being, for instance, by making values of family unity more explicit. The gender composition factor was computed according to data from the 1988 population census. Three categories of villages were established: those with between 48% and 52% men, *and* women; those with more than 52% men, and those with more than 52% women.

Box 1 summarizes the six sampling factors and their options. Thus, for one sampling factor (ethnic composition), four options existed, whereas only three options existed for each of the other five, giving a set of 972 theoretically possible combinations.

In reality, however, including sites representing each theoretically possible combination of sampling factors is not always possible. Either some combinations simply may not exist or the costs of including sites

*Box 1*

**Six sampling factors (shaded areas) used to develop a regional poverty profile for three departments in Honduras**

| Altitude (m) | Access (to urban center with >2000 inhabitants) | Basic services (education and water) |
|---|---|---|
| <500 | Easy (<2 h) | Acceptable |
| 500-1000 | Regular (2-6 h) | Regular |
| >1000 | Difficult (>6 h) | Poor |
| **Ethnicity** | **Gender composition** | **Population density** |
| *Ladino* (not indigenous) | 48%-52% men and women | High (>54 persons/km$^2$) |
| Indians of El Paraíso | >52% men | Medium (21-54 persons/km$^2$) |
| Garífunas | >52% women | Low (<21 persons/km$^2$) |
| Xicaques | | |

Table 1. An example of characterizing communities according to six sampling factors (columns D to I), from a case study in Honduras.

| | A | B | C | D | E | F | G | H | I | J | K |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Village | Municipality | Village code | Basic services | Altitude (m) | Population density | Access | Gender | Ethnic group | Population | Combination[a] |
| 2 | Las Américas | ESPARTA | 10316 | Acceptable | <500 | High | Easy | More men | *Ladino* | 207 | 2 |
| 3 | La Cumbre | LA MASICA | 10510 | Acceptable | <500 | High | Easy | More men | *Ladino* | 738 | 2 |
| 4 | El Coco | ARIZONA | 10807 | Acceptable | <500 | High | Easy | More men | *Ladino* | 755 | 2 |
| 5 | El Porvenir | EL PORVENIR | 10201 | Acceptable | <500 | High | Easy | Equal | *Ladino* | 657 | 3 |
| 6 | El Desvío | LA MASICA | 10506 | Acceptable | <500 | High | Easy | Equal | *Ladino* | 460 | 3 |
| 7 | Santa Ana | SAN FRANCISCO | 10610 | Acceptable | <500 | High | Easy | Equal | *Ladino* | 782 | 3 |
| 8 | El Zapote | TELA | 10730 | Acceptable | <500 | High | Easy | Equal | *Ladino* | 299 | 3 |
| 9 | San Alejandro | TELA | 10764 | Acceptable | <500 | High | Easy | Equal | *Ladino* | 648 | 3 |
| 10 | Buenos Aires | ESPARTA | 10304 | Acceptable | <500 | Low | Easy | More men | *Ladino* | 104 | 4 |
| 11 | Las Metas | TELA | 10742 | Acceptable | <500 | Low | Easy | More men | *Ladino* | 383 | 4 |
| 12 | Mezapita | ARIZONA | 10819 | Acceptable | <500 | Low | Easy | More men | *Ladino* | 1395 | 4 |
| 13 | Santa María | ARIZONA | 10825 | Acceptable | <500 | Low | Easy | More men | *Ladino* | 317 | 4 |

a. Combination = number of combinations of sampling factors found at a given site.

Table 2. Description of 15 pairs of villages that contrasted according to sampling factors (columns D to I), Department of Atlántida, Honduras.

| | A | B | C | D | E | F | G | H | I | J | K |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Village | Municipality | Village code | Basic services | Altitude (m) | Population density | Access | Gender | Ethnic group | Pair of contrasting villages[a] | Combination[a] |
| 2 | Santa María | ARIZONA | 10825 | Acceptable | <500 | Low | Easy | More men | *Ladino* | 1 | 4 |
| 3 | Paris de Lean | ESPARTA | 10325 | Regular | <500 | High | Regular | More women | Garífuna | | 66 |
| 4 | Nueva Esparta | ESPARTA | 10323 | Bad | <500 | Low | Regular | Equal | Garífuna | 2 | 17 |
| 5 | La Fortuna | TELA | 10735 | Regular | <500 | Medium | Regular | More men | *Ladino* | | 61 |
| 6 | Río Marí | LA CEIBA | 10115 | Regular | <500 | Medium | Easy | More men | Garífuna | 3 | 32 |
| 7 | San Ramo | JUTIAPA | 10428 | Bad | 500-1000 | Low | Regular | Equal | *Ladino* | | 85 |
| 8 | Micelly | SAN FRANCISCO | 10606 | Bad | <500 | Medium | Regular | Equal | Garífuna | 4 | 16 |
| 9 | El Bonitillo | LA CEIBA | 10103 | Regular | <500 | High | Easy | More men | *Ladino* | | 33 |
| 10 | El Desvío | LA MASICA | 10506 | Acceptable | <500 | High | Easy | Equal | *Ladino* | 5 | 3 |
| 11 | Quebrada | JUTIAPA | 10424 | Bad | <500 | Low | Regular | More men | Garífuna | | 68 |
| 12 | Saladito | SAN FRANCISCO | 10609 | Acceptable | <500 | Low | Easy | Equal | Garífuna | 6 | 20 |
| 13 | Sonaguera | JUTIAPA | 10429 | Bad | <500 | Medium | Regular | More men | *Ladino* | | 41 |
| 14 | La Frutera | SAN FRANCISCO | 10603 | Regular | <500 | High | Easy | Equal | Garífuna | 7 | 64 |
| 15 | Los Cerritos | TELA | 10746 | Bad | <500 | Low | Low | More men | *Ladino* | | 360 |
| 16 | El Jute | TELA | 10725 | Regular | <500 | Medium | Easy | More men | *Ladino* | 8 | 9 |
| 17 | Las Marías | JUTIAPA | 10419 | Bad | <500 | High | Regular | Equal | Garífuna | | 81 |
| 18 | Brisas | TELA | 10705 | Bad | <500 | Low | Regular | More men | *Ladino* | 9 | 18 |
| 19 | Caracas | EL PORVENIR | 10205 | Acceptable | <500 | High | Easy | More women | Garífuna | | 22 |
| 20 | Monte | LA MASICA | 10511 | Regular | <500 | High | Easy | Equal | *Ladino* | 10 | 46 |
| 21 | El Jazmín | ESPARTA | 10319 | Acceptable | <500 | Medium | Regular | More men | Garífuna | | 70 |
| 22 | La Ruidosa | EL PORVENIR | 10209 | Regular | <500 | Low | Easy | More women | Garífuna | 11 | 73 |
| 23 | Creek Martínez | TELA | 10715 | Bad | <500 | High | Regular | More men | *Ladino* | | 26 |
| 24 | El Pino | EL PORVENIR | 10208 | Acceptable | <500 | Low | Easy | Equal | Garífuna | 12 | 20 |
| 25 | Tornabe | TELA | 10774 | Regular | <500 | Medium | Regular | More women | *Ladino* | | 21 |
| 26 | Mezapa | ARIZONA | 10818 | Acceptable | <500 | Medium | Easy | Equal | *Ladino* | 13 | 12 |
| 27 | El Urraco | JUTIAPA | 10412 | Bad | <500 | Low | Regular | More men | Garífuna | | 68 |
| 28 | San Francisco | ARIZONA | 10822 | Regular | <500 | Medium | Easy | Equal | Garífuna | 14 | 57 |
| 29 | Montesión | TELA | 10751 | Bad | 500-1000 | Low | Regular | More men | *Ladino* | | 77 |
| 30 | Nueva Armenia | JUTIAPA | 10421 | Bad | <500 | High | Easy | Equal | *Ladino* | 15 | 35 |
| 31 | Buenos Aires | ESPARTA | 10304 | Acceptable | <500 | Medium | Regular | More men | Garífuna | | 70 |

a. Combination = number of combinations of sampling factors found at a given site.

from all the theoretically possible combinations may be too high. In the latter case, you will need to select communities that represent some of the theoretically possible combinations.

## Selecting Sites according to Sampling Factors

On an *a priori* basis, any sampling factor cannot be excluded as being less influential than others in determining the existence of different perceptions of well-being. Hence, your guiding principle should be to select the combinations that *contrast* as much as possible, considering all sampling factors simultaneously. Once having selected a number of combinations equivalent to the number of sites you can afford to include in your study, you should then choose one site from each combination selected.

Using the GIS, all villages in the three Honduran departments were characterized according to the above six sampling factors. Tables 1 and 2 show how such a characterization was stored in a spreadsheet program (Excel). They also show that, of the 972 theoretically possible combinations of sampling factors, only 193 were actually present in the three departments (Table 3).

Table 3. Number of villages (*aldeas*) and combinations of sampling factors, Departments of Atlántida, El Paraíso, and Yoro, Honduras.

| Department | Villages (no.) | Number of combinations of sampling factors (NC) | NC as proportion of number of communities |
|---|---|---|---|
| Atlántida (A) | 223 | 67 | 0.30 |
| El Paraíso (EP) | 231 | 114 | 0.49 |
| Yoro (Y) | 208 | 67 | 0.32 |
| A, EP, and Y, combined | 662 | 193 | 0.29 |
| Sample | 90 | 79 | 0.88 |

Consequently, to take these combinations into account, we should have selected 193 sites. Given our available resources, this, however, was not possible. Instead, we decided to draw a sample of 90 villages, 30 in each department, from the total of 662 villages for the three departments. As discussed above, this was done, using a maximum variation sampling strategy to include as many and as different combinations of sampling factors as possible:

> *First,* 15 villages (from hereon called "communities") were selected from each department, based on criteria of geographical spread (a minimum of one community from each municipality) and their representativeness of different combinations of sampling factors (but not necessarily contrasting on all sampling factors).
>
> *Second,* for each selected community, another was selected as its contrast, to the maximum possible, for all sampling factors.[3]

For each department, this procedure resulted in 15 pairs of contrasting communities (Table 2). The use of a maximum variation sampling strategy results in a much higher representation of different combinations of sampling factors in the sample (calculated as the ratio between the number of combinations of sampling factors and the number of communities) than in the three departments as a whole (Table 3). That is, although the 90 communities sampled comprised only 14% of the total number of communities in the three departments, they comprised almost 41 % of the combinations of sampling factors.

3. This can be done in a spreadsheet prograrn by searching according to a user-defined filter in the list of villages (corresponding to Table 1). In Excel, the filter function is found under "Data", "Filter", "Autofilter", and "Custom".

## STEP 2

# Ranking Levels of "Well-Being" in the Community

Ranking levels of well-being (or conducting "well-being rankings"[4]) is a technique for understanding the socioeconomic differentiation within a community and the indicators that local people use to describe different levels of well-being. Various authors (Grandin 1988; IIED 1992; Scoones 1988) have suggested different ways of conducting well-being rankings. Two frequently used methods are:

> *Card sorting by community members*. Certain community members are selected as informants, who then work either individually or in small groups. They sort out cards that represent, for example, households within the community into piles that, in their turn, represent the different well-being levels found within the community. These levels are then characterized and ranked from least poor to poorest. (This activity is described in more detail in a later section.)
>
> *Group discussions on criteria of well-being.* Groups can comprise community members who were selected according to specific characteristics, such as gender or cattle ownership. Discussions can be combined with card sorting or with social mapping.

We recommend "card sorting" as probably the easier method. It demands less from the researcher in terms of skills in group discussion facilitation; data are easier to report; and the information given by informants is likely to be more reliable. (Information on well-being is bound to be sensitive, and group pressures are much more likely to influence the way individual informants provide information.) Finally, the reliability of information obtained can be more easily checked.

4. Grandin (1988) uses the expression "wealth rankings". However, the term "wealth" may not always be ideal because it implies a materialistic focus. In contrast, "well-being" associates more with the broader notion of *quality of life* and thus relates more directly to poverty.

### Before Carrying Out a "Well-Being Ranking"

You must:

1. *Define the community*. You must ensure that you have a well-defined community or neighborhood. It should be small enough for people to know about each other's level of well-being but large enough to encompass differences. In most rural settings, such a community would have between 30 and 100 *units* (usually households).

2. *Define the units to be ranked.* In most cases, you will probably want to rank *households*. However, you can choose other units of analysis, depending on your study's purpose, such as individuals, adult women, or entire neighborhoods. Whatever the selected unit, you should carefully define it. For instance, make clear whether two families living in the same house or compound are ranked as two separate households or together as one household. Try to use local concepts to help define your unit.

3. *List all units within the community and make cards.* Once you have defined your unit (e.g., household), make an exhaustive list of all households in the community. Each household should be given the most convenient label within the local context, for example, the household head's name,

or the names of the husband and wife. Make this list in a notebook, as shown in Figure 2A. You must leave space on the righthand side so that you may later take notes on how each household is classified by the informants! Each label is then transferred to a card so that there will be as many cards as there are households. Make sure to write in large letters! Each card should be numbered for ease of reference, as in Figure 2B.

4. *Find reliable informants.* Often, the most practical way of doing this is to ask community leaders to identify, for example, 3 to 5 informants who would be willing to participate in the ranking exercise. The criteria to use for selecting these informants are that (1) they have been living in the community for sufficient time to know the level of well-being of other households; (2) the informants represent, as far as possible, a wide cross-section of the community in such characteristics as gender, ethnicity, status, and neighborhood. The last two criteria are important because people tend to be more knowledgeable and make finer discriminations among households who are closer to their own position (Silverman 1966). Choosing different informants will therefore help detect possible variations in perceptions of well-being within the community.

Normally, you will find that three to five rankings of well-being are enough, because individual informants tend to agree on how they rank households and on the type of indicators they use to describe different well-being categories. However, if informants differ widely, then you will need to conduct more rankings and, consequently, find more informants.

If several individual informants from one community decide to perform a ranking together (group sorting), then count their ranking as one.

Lugar: Arenales, Trojes, El Paraíso. Código: 71902

| Hogar no. | El jefe del hogar | La jefe del hogar | Informante | | | | |
|---|---|---|---|---|---|---|---|
| | | | I | II | III | IV | V |
| 1 | Oscar Ardón (el nuevo pastor) | Carmen Odalí Palma | | | | | |
| 2 | Alfredo Flores | Odilia Espinoza | | | | | |
| 3 | – | Teresa Suárez (sola) | | | | | |
| 4 | Tino Flores ("Chele") | Yolanda Ramos | | | | | |
| 5 | Nelson González | – | | | | | |
| Etc. | | | | | | | |

Figure 2A. An extract from a list of community members' names written in a notebook for recording how informants' rank the relative levels of well-being of these members' households in the community.

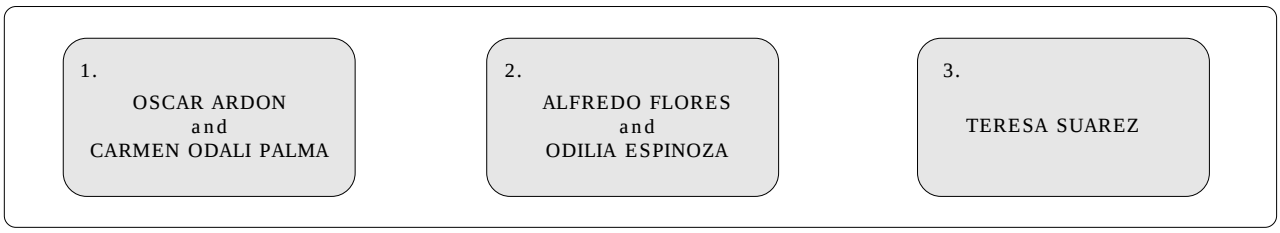



Figure 2B. Examples of cards used in card sorting to help informants rank the levels of well-being of households (or other units) in their community. The information on the cards was transferred from the list in the notebook (see Figure 2A).

5. *Find local terms for "well-being" and explain "well-being ranking".* A crucial stage in well-being ranking is to translate accurately the term "well-being" into the local language. "Well-being" is a neutral concept, that is, it does not contain components or elements that give the concept a specific bias. Thus, when you translate or explain "well-being", you must be careful to preserve this neutrality. To explain the concept, use general phrases like "how people live" or "the way to live". You must carefully avoid giving specific examples of what *could* define the level of well-being, such as owning a lot of cattle, having a good house, or enjoying good health.

   When you explain the purpose of well-being ranking, you must stress that you want to obtain information about the categories of well-being that households can be grouped into; that you do *not* want to know the details that determine the level of well-being of *each* household (e.g., what it has and what it does).

   You must also be careful to explain as openly and as detailed as possible the overall purpose of conducting well-being rankings as it applies within the specific context. For example, households living at different levels of well-being tend to face different kinds of problems and have different opportunities and strategies for solving these problems. Therefore they would probably benefit from different types of research programs, projects, etc. If such activities are to be successful, professionals need to understand the different conditions which households experience and thus their different levels of well-being.

## Performing the "Well-Being Ranking"

### *Card sorting*

Make sure that card sorting takes place in a quiet, undisturbed place where the informant will not feel pressured to rank specific households in specific ways.

Once you have introduced the overall purpose of well-being ranking, you must describe, briefly, how it is done. If you use the household as the unit of analysis, be sure that the informant will consider and rank the household as such, rather than just the persons whose names appear on the cards. Use phrases like "how the people of this household, that is, the children, woman, and man, live" to emphasize that everyone in the household is to be considered and not merely the person or persons mentioned on the card.

Let the informant read each card, or, if necessary, you read aloud the names on each card. Ask him or her to make at least three piles, each representing those households whose well-being levels most resemble each other. Ask your informant to take a card, consider the level of well-being of the household represented by the card, and then place it on the corresponding pile. Do not ask the informant to explain his or her decision. You should also remind the informant from time to time of the categories already constructed by reading aloud some of the cards already classified. If you see the informant hesitating to rank a particular household, encourage him or her to set that card aside. That way no false rankings will be made.

When the informant feels satisfied with the piles, ask him or her to order them from the highest to the lowest level of well-being.

### *Describing the characteristics of households according to pile*

Now ask the informant to describe how the households, represented by a given pile, resemble each other and how they differ from the households represented by the other piles. Encourage the informant to check through all the cards within the pile being described to ensure that the description does not apply just to the card, that is, to the household, on top of the pile, but to all the households in that pile. Be sure to urge or question the informant so to obtain as much information as possible about each group of households. You can ask, for example, "What else can you tell me about these households?" Or, "In what other way do these households differ from those in the other piles?"

You must carefully note (or tape record) the informant's descriptions as literally as possible. Remember that they constitute primary information. Wait until after the informant has described *all* the piles before you ask for additional or clarifying information. That way you can distinguish between descriptions spontaneously given by the informant and those directly or indirectly elicited by you.

Box 2 contains descriptions given by four different informants from the community of Nueva Esperanza, Department of Atlántida.

### *Recording the rankings*

To assess how informants agree on a given household's level of well-being, write down in your notebook (Figure 2A) the rank given to each household. But be open, and write the rank down in front of the informant. That way you can assure informants about which data are being taken "out of the community". You also create the opportunity of clarifying, with the respective informant, a specific situation or characteristic of those households on which the informants did not agree.

Organize the piles in descending order of levels of well-being, then number the piles from 1 to P, where P is the total number of piles made by the informant. Pile 1 should represent households that live at the highest level of well-being and pile P, those that live at the lowest level of well-being. Write this number in the column of the corresponding informant in your notebook (Box 3).

Figure 3 shows how, in our Honduras study, each of the four informants distributed the households of Nueva Esperanza, assigning them to different categories of well-being, as represented by the piles of cards.

*Box 2*

**Ranking households according to well-being levels[a], Nueva Esperanza, Municipality of Esparta, Department of Atlántida, Honduras[b]**

**Village code no.: 10323** **Date: March 10, 1997**
**Interviewer: Rosa**

| Informant | | | |
|---|---|---|---|
| I | II | III | IV |
| Name:<br>Pedro González | Jorge Rodríguez | María Martínez | Ernesta Escobar |
| Sex:<br>Male | Male | Female | Female |
| Age:<br>35 | 55 | 27 | 36 |
| Occupation:<br>Farmer | Day laborer | Housewife | Housewife |
| Ethnic group:<br>*Ladino* | *Ladino* | *Ladino* | *Ladino* |
| **Well-Being Level 1:**<br>They have more than enough on which to live: cattle; cacao farms, and when they harvest the cacao, they sell it; the land is theirs. They live well, not lacking anything: three meals a day, clothes, sustenance for the children. They have money reserves, which they can use or take out for emergencies. | **Well-Being Level 1:**<br>They have more facilities to produce, which is why they harvest more grain. They also have more cattle and assets. They have other animals such as pigs and cows [*sic*]. They have enough at hand whenever a problem turns up. They have more ways of making money. | **Well-Being Level 1:**<br>The people of this group are the village rich, having cattle and their own lands for planting. They plant cacao, cassava, maize, beans, and plantains.<br><br>*Sometimes they sell. They have more than the rest of the community. They get money from more sources. Their houses are* | **Well-Being Level 1:**<br>They have more than enough, more ways of making money, whether from the land and harvests, cattle, leasing land and houses; they are dedicated to business and some have grocery stores.<br><br>*They don't have so many necessities. They don't go hungry or get sick. They live* |

(Continued)

Box 2. (Continued.)

| Informant | | | |
|---|---|---|---|
| I | II | III | IV |
| *They own good houses, have money, the houses are made of concrete blocks, with zinc roofing, and are spacious. They don't work directly with the land, but send young fellows to work them. They save money in the bank. They are traders, work hard, but, as they work, so do they drink and spend on vicious habits.*<br><br>**Well-Being Level 2:**<br>They don't live badly, but don't have the capacity of the first group. They live regular lives, in timber houses, own one or two cows, pigs, and chickens. They cultivate their own lands: rice, maize, cassava, beans; the land area that they plant is smaller than that of the previous group.<br><br>*They must directly work* [on the land]*, they can't pay young fellows. They don't do day labor. They would like to have a better house, they don't have money in the bank. The products they harvest are for the family; sometimes the harvests are good enough to sell, but usually they don't. Many have vices.*<br><br>**Well-Being Level 3:**<br>They don't have a secure job, often day-laboring to live and half maintain their family. They don't own lands and many don't like to work, being true loafers; many have vices, especially bowling.<br><br>*They have their own house, although made of earth and looking as if it's going to fall. They work for the people in Group 1; sometimes they work for themselves, growing maize, but as they don't have land to plant, they have to rent. They have some chickens and pigs.* | *They market what they produce, whether it be grain or some type of animal, the same with milk. They have more money and own more than others in the community. Their lands are planted with pastures, and they also dedicate them to grazing. They give work to those who need it. Their houses are of materials such as brick or cement blocks, with zinc roofing.*<br><br>**Well-Being Level 2:**<br>These people dedicate themselves above all to cacao production and marketing, as they have few cows, less than do the people of Group 1.<br><br>*The lands that they cultivate are their own, with one part dedicated to cacao and the other parts to maize and beans. They have chickens and pigs, but live mostly from the crops. They contract young fellows, but fewer than does the previous group and less often. They have their own house, constructed from "manaca"* [palm leaves]*. Some have grocery stores, a business that gives them a source of extra income.*<br><br>**Well-Being Level 3:**<br>These are poorer than in the previous groups, having less land, but they have enough with which to feed their families. They don't do day labor, working for themselves. They have one or two cows, and chickens; they don't have pigs. Their houses are of "manaca". When the harvests are regular they leave part of them for family use and market the other part.<br><br>**Well-Being Level 4:**<br>They are very poor, they don't have animals. They are day laborers. They | *of better quality than those of other people: they're made of plaster, concrete blocks, or concrete, with zinc roofing. They have many children.*<br><br>**Well-Being Level 2:**<br>They have some cows, use their own land to cultivate maize, beans, or cassava. They also sell, but in smaller quantities than do the previous group.<br><br>*They own their own houses, which are usually of timber and plaster. Sometimes they contract people to work for them, but not so much as does Group 1.*<br><br>**Well-Being Level 3:**<br>They have their own lands to work, they also plant cassava, plantains, beans, and maize. Rarely do they manage to sell; usually they plant for their own consumption or use.<br><br>*The people of this group are obliged to do day labor when they don't have enough resources to plant or for any other reason they can't work for themselves. They do day labor in the community for those belonging to the first two groups. They have their own house, which is usually of plaster.*<br><br>**Well-Being Level 4:**<br>They are the poorest; all have their own house, even if it's of plaster. They don't have the means to work for themselves; they clear land, contract to clean maize fields and other jobs that turn up; they work for the first two groups.<br><br>*Although some have their little house gardens, others receive support from their parents who proportion* | *well. They give work to others in the community. They have money. They also have chickens and pigs.*<br><br>**Well-Being Level 2:**<br>They have enough, they work their own land.<br><br>*They have few cattle, own fewer resources than those in Group 1. Many have land but no cattle, or they have cattle but no land. It's rare that they have the two things. They have their own houses.*<br><br>**Well-Being Level 3:**<br>They are the poorest; sometimes they have nowhere to live, or they live in borrowed or rented houses, or shacked up with other families. They struggle hard to find food.<br><br>*They don't have they own land to work; when they plant, it's to feed their families. Usually they don't sell, and when they do, it's from land that they've rented or borrowed from those of Group 1 or 2. More than anything, they live by day labor, whether in the village or in neighboring villages such as Guachipilín, Las Delicias. Some have their small animals, but only a few: pigs and chickens.* |

(Continued)

Box 2. (Continued.)

| Informant | | | |
|---|---|---|---|
| I | II | III | IV |
| **Well-Being Level 4:**<br>The people of this group never work for themselves; they only do day labor. They bowl all the time. They rarely plant maize, because they don't like to work for themselves. They're never hungry. They have their own house and land, and also have chickens and pigs. | don't own land, even for feeding themselves, but many rent or borrow to plant food for their families. When they do day labor, they work for Group 1 or 2; many leave the village and work in neighboring villages such as Guachipilín and Sarraloza. They also know how to work for Groups 1 and 2. They have their own houses of "manaca". They don't have animals, perhaps at the most a couple of chickens. | *them land on which to make their house. They plant their own maize fields, but have to either rent or borrow land. They have fewer things and of less quality than do the other groups.* | |

a. Households were identified by their heads' names; these names were written down on cards, which the informants then sorted into piles to represent different levels of well-being, that is, level 1 (least poor) = pile 1 ... to level 4 (poorest) = pile 4.
b. Italicized text indicates information supplied in answer to questions prepared by the researchers.

*Box 3*

**Extract from field notes[a] on households according to their level of well-being, Nueva Esperanza, Municipality of Esparta, Department of Atlántida, Honduras**

| Household no. | Family head (male)[b] | Family head (female)[b] | Well-being level assigned according to informant[c] | | | |
|---|---|---|---|---|---|---|
| | | | I (4) | II (4) | III (4) | IV (3) |
| 1 | Name | Name | — | 2 | 2 | 2 |
| 2 | | | 3 | — | 4 | 2 |
| 3 | | | 3 | 4 | 4 | 3 |
| 4 | | | 2 | 3 | 3 | 3 |
| 5 | | | 2 | 4 | 4 | 3 |
| 6 | | | 2 | 3 | — | 3 |
| 7 | | | 2 | 2 | 1 | 1 |
| 8 | | | 4 | 4 | 4 | — |
| 9 | | | 1 | 1 | 1 | 1 |
| 10 | | | 2 | 1 | 1 | 1 |
| Etc. | | | | | | |

a. These notes continue from Figure 2A.
b. Names are omitted for reasons of confidentiality.
c. Numbers in parentheses refer to the number of piles, and thus the number of well-being levels, made by the respective informants.

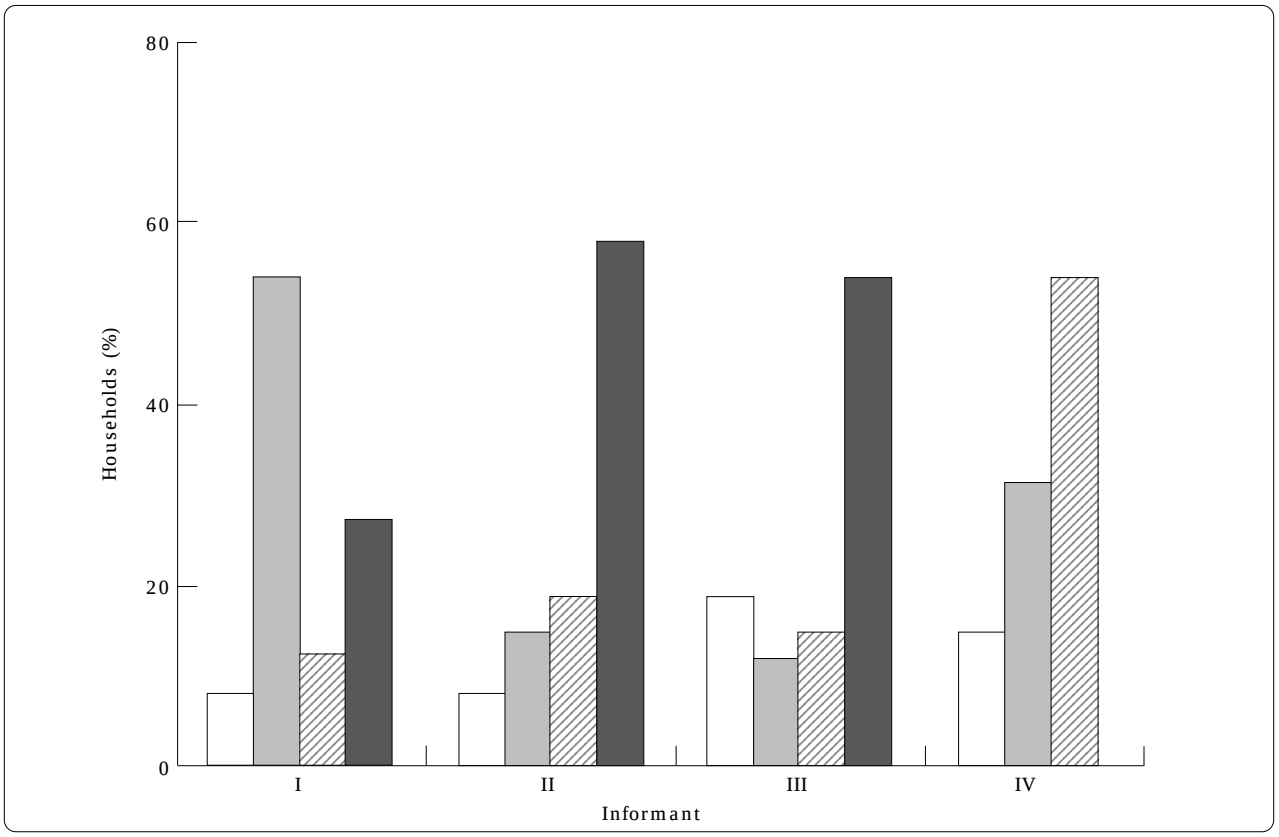



Figure 3. Distribution by percentage of households among piles of cards organized according to well-being level by informant, Nueva Esperanza, Municipality of Esparta, Department of Atlántida, Honduras. ( = pile 1 [level 1 or the highest]; = pile 2 [level 2]; = pile 3 [level 3]; = pile 4 [level 4 or the lowest])

# STEP 3

# Grouping Households into "Average Well-Being Categories"

So that you will not have to operate with three or more individual rankings for each community, you can construct an average ranking per community. First, calculate an *average well-being score*, based on the individual informants' rankings. Then, check the *level of agreement* (or disagreement) on these scores between the individual rankings. Only when the level of agreement between rankings is significant can you proceed to group households into *average well-being categories*.

## Computing the "Average Well-Being Score"

When you explained the well-being ranking technique to your informants, you asked them to make at least three piles of cards. You didn't (or shouldn't have), however, put any upper limit on the number of piles to be made. Some of your informants, therefore, may have made three piles, while others may have chosen to make five or six piles. This means, for instance, that households ranked by most informants as having the lowest level of well-being may have received the rank of 3 from one informant but 5 or 6 from other informants. Simply averaging these ranks will therefore not be meaningful. Instead, you will need to equalize the different rank numbers to a common scale. This is why you calculate a well-being score for each ranking.

### *Quantifying well-being levels*

Box 3 shows an example of four rankings of households in Nueva Esperanza in northern Honduras. Each household (rows) was assessed by four informants (columns), who made 4, 4, 4, and 3 piles, respectively. To quantify the well-being levels, we transferred these piles to a common scale of well-being.

Imagine a well-being scale with scores from 0 to 100 points (Figure 4). The lefthand end of the scale (0 points) is chosen to represent the highest level of well-being (i.e., with least poverty) and the righthand end (100 points), the lowest level of well-being (i.e., with most

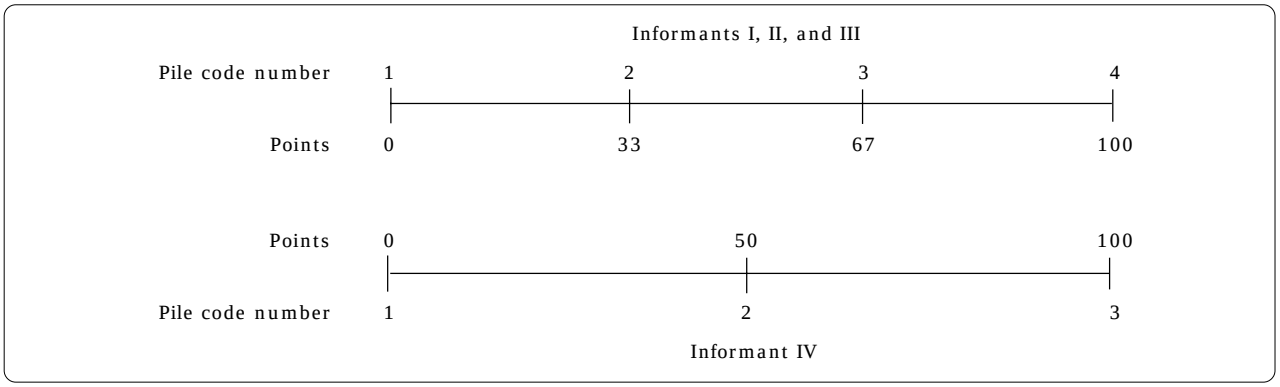



Figure 4. Quantifying well-being rankings, as represented by piles made by various informants, by transferring them to a common quantitative scale of well-being based on the percentage. The levels of well-being selected (1, 2, 3, 4 established by informants I, II and III; and 1, 2, 3 established by informant IV) thus become quantified as percentages and are easy to compare. These gradations are called "well-being scores".

poverty). Then we develop an equation by which we can quantify the qualitative rankings (made by the informants) that indicate well-being levels. This equation depends on each well-being level being represented by a pile, which then is assigned a number. The equation is:

$$S = (p-1)/(P-1) * 100 \qquad [1]$$

where:

S = well-being score,

p = the number of the pile to which a given number of households were assigned as belonging to certain level of well-being, and

P = the total number of piles made by the informant.

You multiply by 100 simply to avoid operating with decimals.

### *Applying Equation [1] to obtain well-being scores*

Using the example from Nueva Esperanza mentioned above, Equation [1] can be applied as follows:

Informants I, II, and III distinguished between four levels of well-being, that is, they made four piles, which are represented as 1, 2, 3, and 4 in Figure 4. These levels are converted into points by Equation [1], that is:

Level 1 becomes "0 points", that is, $[(1-1)/(4-1)] * 100$;

Level 2 becomes "33 points", that is, $[(2-1)/(4-1)] * 100$;

Level 3 becomes "67 points", that is, $[(3-1)/(4-1)] * 100$; and

Level 4 becomes "100 points", that is, $[(4-1)/(4-1)] * 100$.

In contrast, informant IV distinguished between three levels of well-being (that is, he or she made three piles), which are indicated as "1", "2", and "3" in Figure 4. As for the other informants, these levels are also converted into points by using Equation [1], as follows:

Level 1 becomes "0 points", that is, $[(1-1)/(3-1)] * 100$;

Level 2 becomes "50 points", that is, $[(2-1)/(3-1)] * 100$; and

Level 3 becomes "100 points", that is $[(3-1)/(3-1)] * 100$.

Thus, by converting the well-being rankings made by all the informants to a single well-being scale, we achieve a scoring system whereby households ranked as having the highest level of well-being will always receive a score of 0 points and households ranked as having the lowest level of well-being will always receive a score of 100 points, regardless of the number of piles the informants made. Table 4 shows the well-being scores derived from the numbers assigned to the piles of well-being levels in which households listed in Box 3 were placed.

Table 4. Well-being scores are derived for each household according to informant by using Equation [1] as described in the text. These are then converted into average well-being scores for each household ($S_{1\rightarrow x}$) by averaging across all informants. Examples are taken from a survey of 27 households in Nueva Esperanza, Municipality of Esparta, Department of Atlántida, Honduras.

| Household no. | Well-being score[a] by informant (no. of piles made) | | | | $S_{1\rightarrow x}$ |
|---|---|---|---|---|---|
| | I (4) | II (4) | III (4) | IV (3) | |
| 1 | — | 33 | 33 | 50 | 38.89 |
| 2 | 67 | — | 100 | 50 | 72.22 |
| 3 | 67 | 100 | 100 | 100 | 91.67 |
| 4 | 33 | 67 | 67 | 100 | 66.67 |
| 5 | 33 | 100 | 100 | 100 | 83.33 |
| 6 | 33 | 67 | — | 100 | 66.67 |
| 7 | 33 | 33 | 0 | 0 | 16.67 |
| 8 | 100 | 100 | 100 | — | 100.00 |
| 9 | 0 | 0 | 0 | 0 | 0 |
| 10 | 33 | 0 | 0 | 0 | 8.25 |
| Etc. | | | | | |

a. — = The household was unknown to the informant, who therefore did not rank it.

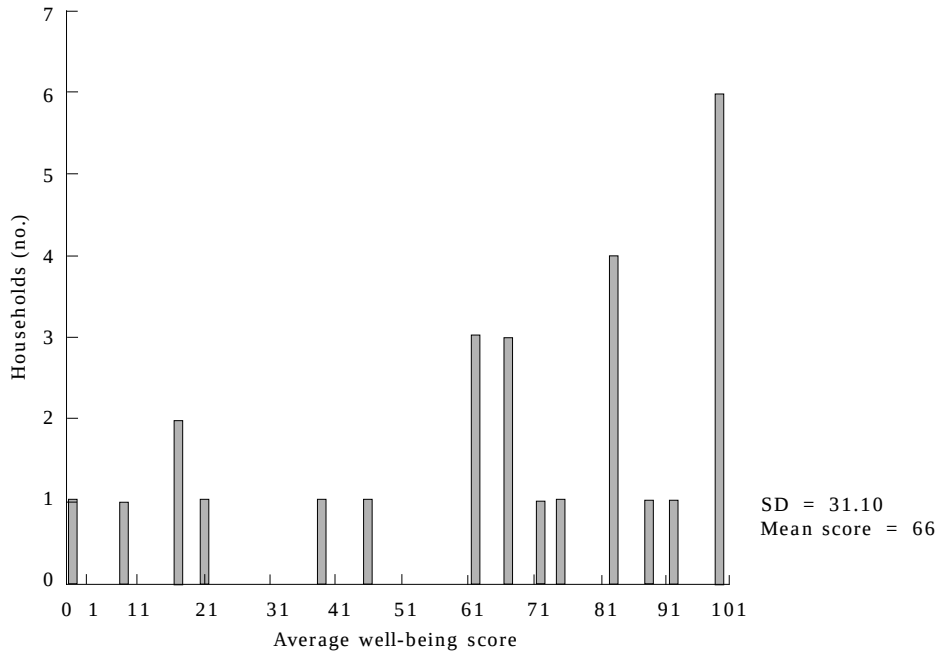
### *Obtaining the "average well-being score"*

Once you have calculated the well-being score for each individual ranking conducted in a given community, you can calculate the *average well-being score* for each household. You do this by averaging the well-being scores calculated for a given household. This score is represented as $S_{1\rightarrow x}$, where x is the total of well-being rankings conducted in the community concerned. Using the example of household 2 (illustrated in Table 4), which was evaluated by three of the four informants, the following well-being scores were obtained: 67, 100, and 50. The average well-being score for this household thus becomes 72.

Table 4 shows the average well-being scores calculated from the data on households listed in Box 3 ("Step 2"), and Figure 5 shows the distribution of households according to their average well-being scores.

## Checking the Level of Agreement between Individual Rankings

To check the level of agreement (or disagreement) between individual informants' rankings, compare the rankings in pairwise fashion, that is, compare the rankings of informant I with those of informants II, III, and IV; and those of informant II with those of informants III and IV, and so forth. For this comparison, use the well-being scores and the Spearman's rank order correlation test (Spearman's Rho). The test will check whether the order into which a set of objects (in this case, households) is classified in one ranking correlates significantly with the order in which the same set of objects is classified in another ranking. Table 5 summarizes the comparisons we made of the rankings made by four informants in Nueva Esperanza, which were all significant.




| Score | 0 | 8 | 17 | 21 | 39 | 46 | 63 | 67 | 72 | 75 | 83 | 88 | 92 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Frequency | 1 | 1 | 2 | 1 | 1 | 1 | 3 | 3 | 1 | 1 | 4 | 1 | 1 | 6 |
| Percentage | 3.7 | 3.7 | 7.4 | 3.7 | 3.7 | 3.7 | 11.1 | 11.1 | 3.7 | 3.7 | 14.8 | 3.7 | 3.7 | 22.2 |

= 27 households

Figure 5. Frequency of households distributed according to their average well-being scores ($S_{1\rightarrow x}$), based on an equation constructed from a well-being scale (see text), Nueva Esperanza, Municipality of Esparta, Department of Atlántida, Honduras.

Table 5. Level of agreement between rankings made by four informants (Inf) in Nueva Esperanza, Municipality of Esparta, Department of Atlántida, Honduras. Pairwise comparisons were based on the average well-being scores obtained for 27 households (see Table 4).

| Pairs of ranking | Spearman's Rho | Average of Spearman's Rho |
|---|---|---|
| Inf I x Inf II | .59** | .65 |
| Inf I x Inf III | .64*** | |
| Inf I x Inf IV | .45* | |
| Inf II x Inf III | .85**** | |
| Inf II x Inf IV | .70**** | |
| Inf III x Inf IV | .69**** | |

* = significant, where $P = 0.05$
** = significant, where $P = 0.01$
*** = significant, where $P = 0.001$
**** = significant, where $P = 0.0001$

Of the 89[5] communities of the three Honduran departments where the rankings were conducted, significant correlations were found among the rankings of 87 communities. This shows that the informants of these communities gave consistent rankings. The other two communities were excluded from the study.

## Constructing "Average Well-Being Categories" for Each Community

Using individual informants' rankings of well-being and the average well-being score that you have just obtained, you can now construct the "average well-being categories" for each community.

### *Determining the number of categories*

Determine the number of categories to be made, then establish where on the well-being axis (Figure 5) you put the limits of the categories. Usually, the number of categories should correspond to the average number of piles made by the informants. It should not be more than this number because that would convey a false impression of precision.

In the case of Nueva Esperanza, the four informants made an average of 3.75 piles [that is, (4 + 4 + 4 + 3)/4 = 3.75]. We therefore constructed three categories.

But if you conduct well-being rankings in more than one community for later comparison, you will find it useful to construct, as far as possible, the same number of average well-being categories for each community. Even so, the number of categories should not be more than the average number of piles made by the informants.

For our study of the three Honduran departments, the average number of piles made by the 316 informants was 3.3. Accordingly, we made three average well-being categories for each of the 87 sampled communities with whom we completed the study.

### *Delimiting the average well-being categories*

Once you decide on the number of categories to be made, you next need to determine how to define the categories, that is, how to delimit them. Follow the rule of making the categories correspond as closely as possible to the informants' information with respect to (1) the *number of households in each well-being pile*—this number can be expressed as the percentage of households in each pile (e.g., pile 3 contains 40 households, which, of 90, = 44%); and (2) the *level of agreement between informants* on the rankings of individual households. We will show you how to make this correspondence with the example from Nueva Esperanza:

***Delimiting categories according to numerical distribution of households.*** First, check the number of households in each pile made by the informants, then establish the *average number* of households according to pile (i.e., to well-being level).

In Nueva Esperanza, a high level of agreement existed between the informants with respect to the number of households they put in each pile (Figure 3), especially between informants II, III, and IV. However, whereas informants I, II, and III chose to make four piles, informant IV made only three piles. Thus, to determine the average numerical distribution, only three categories could be considered. We therefore had to look at which

5. Of the 90 communities selected for the sample, only 89 performed the rankings, the members of one community having decided not to participate in the study.

categories could be combined for informants I to III, that is, we had to determine which categories most resembled the categories made by informant IV.

Based on the percentages of households per pile (Figure 3) and on the descriptions for each pile (or well-being level), we decided to combine, for informant I, categories 3 and 4 to form a new category 3. For informants II and III, we combined categories 2 and 3 to form a new category 2. Table 6 shows the three new "constructed" categories for each informant.

We then calculated the average distribution based on the new set of categories. According to this average distribution, the category that corresponded to the highest level of well-being (category 1 in Table 6) contained 12.5% of households [i.e., (8% + 8% + 19% + 15%)/4]. The second level of well-being contained 36.5% (i.e., [54% + (15% + 19%) + (12% + 15%) + 31%]/4). Finally, the category corresponding to the lowest level of well-being contained 51.25% of households (i.e., [(12% + 27%) + 58% + 54% + 54%]/4).

***Delimiting average well-being categories according to level of agreement.*** But such a distribution does not take into account the *disagreement* that probably existed among the informants on how they ranked individual households. Table 5 shows that, although the individual rankings were significantly correlated, some households were ranked differently by the four informants. Otherwise, there would have been a 100% correlation (Spearman's Rho = 1.00). This shows that you must take the level of agreement (or disagreement) into account when calculating the final average well-being categories. You therefore need to define a new set of categories, this time based on the level of agreement among informants.

First, define a category containing the households who, according to *all* informants, enjoy the highest level of well-being (i.e., had the lowest possible *average* score = 0). According to Table 4 and Figure 5, this category corresponded to 3.7% of households in Nueva Esperanza.

Next, define another category that contains those households who, according to *all* informants, had the lowest level of well-being (i.e., had the highest possible average score = 100). Because, in the case of Nueva Esperanza, we had merged informant I's piles 3 and 4, the average well-being score qualifying a household for this category was 91.75 or higher, that is, 67 or more was scored for informant I and 100 for each of the other informants, so the average was (67 + 100 + 100 + 100)/4 = 91.75 points. Accordingly, Table 4 and Figure 5 show that, in Nueva Esperanza, 25.9% of households belonged to this category.

Last, define a third and middle category consisting of those households about whose ranking the informants disagreed or whose ranking was classified by all informants as being in the middle category. Households in this category had an average well-being score between 1 and 91.74. Accordingly, Table 5 and Figure 5 show that, in Nueva Esperanza, 70.4% of households belonged to this category.

Once you have delimited the categories according to the level of agreement, you can determine the percentage of households belonging to each category by applying a frequency table to the average well-being scores (see table in Figure 5). Column [2], Table 7, shows the resulting distribution for Nueva Esperanza.

Table 6. The average numerical distribution of well-being as derived from individual informants' rankings of households by piles that represented well-being levels, Nueva Esperanza, Municipality of Esparta, Department of Atlántida, Honduras.

| Pile | Informant[a] | | | | Average numerical distribution | |
|---|---|---|---|---|---|---|
| | I | II | III | IV | Category[b] | Households (%) |
| 1 | 8 | 8 | 19 | 15 | 1 | 12.5 |
| 2 | 54 | 15 | 12 | 31 | 2 | 36.5 |
| 3 | 12 | 19 | 15 | 54 | 3 | 51.25 |
| 4 | 27 | 58 | 54 | — | | |

a. Values are percentages of households (see Figure 3).
b. Category = average well-being category.

Table 7. Average well-being categories, based on the average numerical distribution of households and on the distribution according to the level of agreement between informants. From a case study in Nueva Esperanza, Municipality of Esparta, Department of Atlántida, Honduras.

| Category | Average numerical distribution (from Table 6) [1] | Distribution based on the level of agreement between informants [2] | Final average distribution ([1] + [2])/2 [3] | Final distrib. (column [3]), adjusted to the concrete distrib. of the average well-being score [4] |
|---|---|---|---|---|
| 1 | 12.5 | 3.7 | 8.1 | 7.4 |
| 2 | 36.5 | 70.4 | 53.5 | 48.2 |
| 3 | 51.25 | 25.9 | 38.6 | 44.4 |

## Determining the Final Values of the "Average Well-Being Categories"

Now you can combine the numerical distribution with that according to level of agreement to construct the final average well-being categories, as follows: first, combine and take the simple average of the two distributions that you obtained. This procedure is illustrated in Table 7, where Column [1] (the numerical distribution) is added to Column [2] (distribution according to level of agreement) and the sum divided by 2 to get Column [3].

You will then have to adjust this new distribution according to the actual distribution of households according to the average well-being score, because a household cannot be divided up among categories. For example, in Nueva Esperanza, the 8.1% of households that we calculated as belonging to category 1 comprised 2.2 households. So that the calculated average distribution of well-being is adjusted to the true distribution (see Figure 5), category 1 has to contain 7.4% of all households. Likewise, for category 2, the original calculation was 53.5% of households, but after adjustment, this category comprised 48.2% of all households, corresponding to an average score between 8.34 and 75 (Figure 5). Finally, for category 3, the original calculation was 38.6%, which, after adjustment, became 44.4% of households, corresponding to an average score of greater than 75 (Figure 5). In our illustration in Table 7, the new distributions appear in Column [4].

Thus, we have obtained a ranking of households for what we call "average well-being categories", with which we can continue the analysis.

# STEP 4

# Extrapolating "Well-Being Rankings" from Sampled Communities to the Entire Study Area

What we have done so far is to describe well-being levels and distribute households according to average well-being categories, but with respect to only *one* community. Many researchers, planners, and development workers, however, are interested in extrapolating such descriptions to larger areas to compare the well-being level—or poverty—of one community or region with that of other communities or regions.

In "Step 4", we will show you how to assess the extent to which well-being descriptions of sample communities can be applied to the entire study area. This means you will need to compare well-being descriptions across selected communities. Instead of comparing entire descriptions, you may find it more practical to translate or reduce the descriptions of the different well-being levels into sets of indicators, and then compare these sets.

## Preliminary Activities

### *Establishing the number of well-being levels*

Have at least one other person (or more, if possible) also read the well-being descriptions to ensure the *reliability* of the translation or "reduction" of these descriptions to *indicators*. However, before you do this, you should ascertain the number of well-being levels. You will find it easier to operate with a fixed number of levels for all the selected communities. This number should be the same as for the average well-being categories, based on rankings, that you constructed in "Step 3". As already mentioned in "Step 3", we distinguished, for the Honduran case, three average well-being categories for all the communities.

### *Translate the descriptions to indicators*

To facilitate both translation of descriptions to indicators and comparison of the indicators used in the different communities, you may find it practical to use a matrix similar to that illustrated in Table 8. You can make it on a spreadsheet from the Excel or Lotus computer program.

The rows in the matrix represent indicators, and the columns, informants. Thus, the information noted in the matrix is the level of well-being that the indicators describe according to the informants. In some cases, the same informant used a specific indicator to describe more than one well-being level, for instance the highest and middle levels of well-being. Rather than noting both "1" (corresponding to the highest level of well-being) and "2" (corresponding to the middle level of well-being), it is more practical to use another single number such as "4", as a code to describe this situation.[6]

Listing and numbering the indicators under different headings or themes may also be practical. Based on our impressions from the well-being rankings, we decided, for the Honduras study, to consider 19 groups or themes for organizing the indicators. For example, we felt that several indicators dealt with ownership of work equipment like tractors and maize mills. This constituted one group or theme; hence, all indicators related to work equipment, found when reading the

6. For the Honduras case study, we used "4" to mean that an indicator was used to describe the highest and middle levels of well-being; "5", the middle and lowest levels of well-being; "6", the highest and lowest levels of well-being; and "7", all three levels of well-being.

Table 8. Translation of well-being descriptions to indicators. These descriptions (see Box 2) were given by informants from Nueva Esperanza (coded as "10323"), Municipality of Esparta, Department of Atlántida, Honduras.[a]

| | | | | | |
|---|---|---|---|---|---|
| Sampling factors at the community level | Code[b] | 10323 | | | |
| | Altitude (m) | <500 | | | |
| | Access | Regular | | | |
| | Pop. density | Low | | | |
| | Ethnic group | Garífuna | | | |
| | Gender ratio | Equal | | | |
| | Services | Bad | | | |
| Sampling factors at the informant level | Informant[b] | 10323.I | 10323.II | 10323.III | 10323.IV |
| | Sex | Male | Male | Female | Female |
| | Age (years) | 35 | 55 | 27 | 36 |
| | Ethnic group | *Ladino* | *Ladino* | *Ladino* | *Ladino* |
| | Occupation | Farmer | Day laborer | Housewife | Housewife |
| Indicator | | | | | |
| Group[c] | Description | Number[d] | | | |
| 216 | Lease land | | | | 1 |
| 219 | Many rent land | | 3 | | |
| 221 | Many work on borrowed land | | 3 | | |
| 225 | Doesn't own land | | 3 | | |
| 237 | Own land | 4 | | 7 | 4 |
| | | | | | |
| 301 | Some rent housing | | | | 3 |
| 307 | Lease housing | | | | 1 |
| 313 | House made of "manaca" [palm leaves], roof made of thatch, palm, or timber, and walls of earth or wattle and mud | 3 | 3 | 3 | |
| 316 | Own house | 3 | | 3 | |
| 319 | Have timber houses | 2 | | | |
| | | | | | |
| 414 | Don't have animals | | 3 | | |
| 417 | Don't have pigs | | 2 | | |
| 423 | Have a lot of cattle | | 1 | | |
| 428 | Have pigs | 5 | 1 | | |
| 429 | Have chickens | 5 | 2 | | |
| 430 | Have cattle | 1 | | 1 | 1 |
| 434 | Don't have many cattle | 2 | 2 | 2 | 2 |
| | | | | | |
| 521 | Don't like to work for themselves | 3 | | | |
| 556 | Have problems with vices | 3 | | | |
| 559 | Stay or shack up with others (parents or borrowed house) | | | | 3 |
| | | | | | |
| 601 | Sometimes have harvest surpluses for sale | | 2 | 3 | |
| 603 | Harvest for family consumption | | 5 | | |
| 606 | Obtain many harvests | | 1 | | 1 |
| | | | | | |
| 811 | Day labor around the village | | 3 | | |
| 812 | Day labor outside the village | | 3 | | |
| 824 | Not day laborers | | 2 | | |
| 835 | Not day laborers nor wage workers | 3 | 3 | 3 | |
| | | | | | |
| 935 | Few plant maize | 3 | | | |
| 936 | Plant rice | 2 | | | |
| 947 | Plant cacao | 1 | 2 | 1 | |
| 950 | Plant common bean | 2 | | 7 | |

(Continued)

Table 8. (Continued.)

| | | Informant[b] | | | |
|---|---|---|---|---|---|
| | | 10323.I | 10323.II | 10323.III | 10323.IV |
| Indicator | | | | | |
| Group[c] | Description | Number[d] | | | |
| 956 | Plant maize | 2 | | 7 | |
| 959 | Plant plantain in plantations | | | 6 | |
| 971 | Plant cassava | 2 | | 7 | |
| | | | | | |
| 1003 | No problems with food security | 6 | | | |
| 1006 | Problems with food security | | | | 3 |
| | | | | | |
| 1112 | Have savings in the bank | 1 | | | |
| | | | | | |
| 1309 | Buy and sell cacao | | 2 | | |
| 1334 | Have various forms of making money | | 1 | | 1 |
| 1335 | Have businesses | | | | 1 |
| 1340 | Sell cacao | 1 | | | |
| 1345 | Sell beans | | | 2 | |
| 1354 | Sell maize | | | 2 | |
| 1361 | Sell cassava | | | 2 | |
| | | | | | |
| 1643 | Don't have safe jobs for surviving on | 3 | | | |
| 1653 | Can meet obligations, face emergencies, answer necessities, and pay debts | 1 | 1 | | |
| 1702 | Wear good clothes | 1 | | | |

a. Translated from Spanish.
b. This information was coded in the matrix.
c. Group = indicators are listed and numbered according to theme. Hence, Group 2 includes indicators that refer to land ownership or tenancy, and "216, 219, etc." refer to specific aspects of that theme.
d. Refers to levels of well-being for which a given indicator is used: 1 = highest; 2 = middle; 3 = lowest; 4 = highest and middle; 5 = middle and lowest; 6 = highest and lowest; 7 = all three levels.

descriptions, were each given the number 100+, that is, 101, 102, 103, etc. (Table 9). Access and ownership to land was another pre-identified theme, and all indicators related to it were each assigned a 200+ number. In this way, even though the indicators were entered in the spreadsheet in the order they were encountered in the descriptions, they could easily be sorted according to theme.[7]

Table 8 shows how the translation and listing of indicators were done for the community Nueva Esperanza (i.e., the translation of the descriptions shown in Box 2), whereas Table 9 shows an extract of the matrix after entering information from all 316 informants.

7. You can use the "sort" or "sorting" function, usually found with computerized electronic spreadsheets.

## Use of Indicators

According to Table 9, indicators can be summarized in terms of well-being level, type of community, or type of informant.

### *Well-being level*

Let us start by summarizing indicators in terms of well-being levels, which is the simplest both to make and to interpret. Table 10 shows some of the most frequently used indicators, which are organized by theme and by the well-being level that they described. The shaded areas in the table indicate the predominance of use of each indicator. For example, the first indicator in the table (I209, *jornaleros* or day laborers) was primarily used to indicate the lowest level of well-being. Of the 256 times that it was mentioned, 217 indicated the lowest level of well-being, and only once was it mentioned to indicate the highest level of well-being.

Table 9. Extract from the matrix that "translated" into indicators 316 well-being descriptions obtained from three of the communities (coded as 10421, 10705, and 10511) that participated in the Honduras study.[a]

| | Code[b] | 10421 | | | | 10705 | | | 10511 |
|---|---|---|---|---|---|---|---|---|---|
| Sampling factors at the community level | Altitude (m) | <500 | | | | <500 | | | <500 |
| | Access | Easy | | | | Regular | | | Easy |
| | Pop. density | High | | | | Low | | | High |
| | Ethnic group | *Ladino* | | | | *Ladino* | | | *Ladino* |
| | Gender ratio | Equal | | | | Males | | | Equal |
| | Services | Bad | | | | Bad | | | Regular |
| | Informant[b] | 10421.I | 10421.II | 10421.III | 10421.IV | 10705.I | 10705.II | 10705.III | 10511.I |
| Sampling factors at the informant level | Sex | Female | Male | Male | Female | Male | Female | Female | Female |
| | Age | 42 | 56 | 42 | 33 | 59 | 47 | 27 | 25 |
| | Ethnic group | Garífuna | Garífuna | Garífuna | Garífuna | *Ladino* | *Ladino* | *Ladino* | *Ladino* |
| | Occupation | Craftswoman | Craftsman | Businessman | Housewife | Farmer | Housewife | Housewife | Businesswoman |
| Indicator | | | | | | | | | |
| Group[c] | Description | Number[d] | | | | | | | |
| 101 | Some have small milk-processing plants | | | | | | | | |
| 102 | Some have small sugar mills | | | | | | | | |
| 103 | Have milk-transport trucks | | | | | | | | |
| 104 | Have motorized canoes | 1 | 1 | | | | | | |
| 105 | Have canoes with sails | | 3 | | | | | | |
| 106 | Have agricultural equipment | | | | | | | | |
| 107 | Have maize mills | | | | | | | | |
| 108 | Have hay cutters | | | | | | | | |
| 109 | Have chilling tanks for milk | | | | | | | | |
| 110 | Have trucks | | | | | | | | |
| | | | | | | | | | |
| 201 | Sometimes rent land | | | | | | | | |
| 202 | Some rent land | | | | | 3 | 3 | | |
| 203 | Some have bought land | | | | | | | | |
| 204 | Some have inherited land | | | | | | | | |
| 205 | Some don't have land | | | | | | | | |
| 206 | Some plant in borrowed land | | | | | | | | |
| 207 | Some own a lot of land | | | | | | | | |
| 208 | Some own little land | | | | | | 2 | | |
| 209 | Some have enough land to work | | | | | | 2 | 2 | |
| 210 | Some own land | | | | | | | | |

a. Translated from Spanish.
b. The information on the sampling factors was coded in the matrix.
c. See explanation in footnote c of Table 8. *Note:* Most of the cells are empty because these indicators were used by informants other than those who appear in this extract.
d. See explanation in footnote d of Table 8.

Table 10. Most frequent indicators, by theme and well-being level, used in the Honduras study, and measured in terms of percentage of 87 communities where they were used and the number of times they were used to describe the highest, middle, and lowest levels of well-being. Italicized indicators, individually, have low frequencies but are included because they form part of a theme that is frequently mentioned.[a]

| Indicator code no. | Description of indicator | Percentage of villages where used | No. of times indicator was used to describe well-being levels[b] | | |
|---|---|---|---|---|---|
| | | | Highest | Middle | Lowest |
| *Day labor* | | | | | |
| I209 | Day laborers | 97 | 1 | 38 | 217 |
| I202 | Farmers | 53 | 47 | 51 | 4 |
| I196 | Don't day labor | 34 | 22 | 17 | 3 |
| I203 | Farmers and day laborers | 26 | 0 | 18 | 12 |
| I188 | Women work as domestics for other families | 21 | 0 | 3 | 24 |
| I187 | Women prepare and sell food | 20 | 1 | 5 | 15 |
| I439 | Uncertain employment | 56 | 1 | 13 | 61 |
| I441 | Certain and own employment | 43 | 34 | 19 | 1 |
| *Sources of income besides farming* | | | | | |
| I181 | Craftsmen | 41 | 25 | 35 | 12 |
| I183 | Professionals | 29 | 33 | 7 | 0 |
| I317 | More income sources | 25 | 32 | 0 | 0 |
| I204 | Businessmen | 69 | 87 | 39 | 7 |
| I207 | Middlemen for agricultural products | 36 | 40 | 6 | 2 |
| I175 | Some are businessmen | 28 | 17 | 16 | 2 |
| I330 | Some have shops, etc. | 28 | 17 | 16 | 2 |
| I110 | Children support the household | 38 | 13 | 16 | 21 |
| I297 | Some receive remittance from relatives | 28 | 22 | 13 | 6 |
| *Land ownership* | | | | | |
| I40 | Own land | 93 | 164 | 78 | 7 |
| I31 | Don't own land | 78 | 3 | 12 | 108 |
| I39 | Own little land | 54 | 1 | 61 | 11 |
| I36 | Own a lot of land | 47 | 55 | 4 | 1 |
| I9 | Some rent land (with I18) | 55 | 4 | 21 | 58 |
| I34 | Plant on borrowed land | 33 | 0 | 12 | 31 |
| I63 | Own only the house and house garden | 33 | 0 | 9 | 34 |
| I291 | Have pastures | 24 | 23 | 2 | 0 |
| *I23* | *Lease land* | *15* | *11* | *4* | *0* |
| *Cattle-raising* | | | | | |
| I206 | Cattle owner | 86 | 203 | 19 | 2 |
| I92 | Own cattle | 86 | 203 | 19 | 1 |
| I96 | Own few cattle | 43 | 7 | 41 | 2 |
| I83 | Don't own cattle | 32 | 1 | 25 | 9 |
| I360 | Produce and sell milk or derivatives | 33 | 38 | 8 | 3 |
| *Crops* | | | | | |
| I266 | Plant common beans | 77 | 95 | 83 | 21 |
| I282 | Plant few beans | 24 | 0 | 11 | 16 |
| I273 | Plant maize | 85 | 108 | 108 | 35 |
| I285 | Plant some maize | 34 | 0 | 13 | 28 |
| I264 | Plant coffee | 36 | 61 | 24 | 1 |
| *I252* | *Plant rice* | *17* | *14* | *14* | *4* |
| *I261* | *Plant sugarcane* | *15* | *11* | *5* | *0* |
| *I263* | *Plant cacao* | *13* | *14* | *9* | *0* |
| *I270* | *Plant vegetables* | *11* | *18* | *9* | *1* |
| *I288* | *Plant cassava* | *11* | *4* | *10* | *2* |

(Continued)

Table 10. (Continued.)

| Indicator code no. | Description of indicator | Percentage of villages where used | No. of times indicator was used to describe well-being levels[b] | | |
|---|---|---|---|---|---|
| | | | Highest | Middle | Lowest |
| *Resources in general* | | | | | |
| I315 | Have money | 75 | 99 | 7 | 0 |
| I304 | Don't have money | 22 | 1 | 2 | 19 |
| I474 | Lack resources | 25 | 0 | 6 | 17 |
| *I309* | *Have savings in the bank* | *16* | *15* | *1* | *0* |
| I428 | Some live on community charity | *13* | *0* | *0* | *13* |
| I431 | Help people with few resources | *13* | *10* | *5* | *0* |
| *Resources for farming* | | | | | |
| I404 | Lack resources to farm the land | 25 | 0 | 7 | 22 |
| I393 | Buy with difficulty some inputs | 20 | 1 | 5 | 18 |
| *I220* | *Some don't plant* | *13* | *0* | *4* | *8* |
| *Resources for health and education* | | | | | |
| I457 | Can't meet necessities | 21 | 0 | 3 | 19 |
| I471 | Can meet necessities | 22 | 14 | 8 | 0 |
| I169 | Problems in meeting health needs | 29 | 0 | 1 | 32 |
| *I464* | *Give primary education with difficulty* | *13* | *4* | *7* | *6* |
| *I461* | *Can't give primary education* | *9* | *0* | *1* | *7* |
| *I465* | *Give secondary education with difficulty* | *8* | *7* | *6* | *1* |
| *Transport and work equipment* | | | | | |
| I327 | Have a car | 37 | 52 | 3 | 0 |
| *I324* | *Some have a car* | *8* | *4* | *4* | *0* |
| *I325* | *Don't have a car* | *5* | *0* | *4* | *0* |
| *I362* | *Have transport for goods and/or passengers* | *8* | *9* | *0* | *0* |
| *Institutions* | | | | | |
| I216 | Work with institutions | 20 | 13 | 15 | 1 |
| I415 | Some have access to credit | 20 | 14 | 9 | 1 |
| *I423* | *Members of cooperatives and/or organizations* | *11* | *6* | *7* | *1* |
| *Food security* | | | | | |
| I296 | Have problems in getting enough food | 63 | 0 | 5 | 72 |
| I294 | Don't have problems in getting enough food | 43 | 31 | 23 | 3 |
| *Production of basic grains (maize and beans)* | | | | | |
| I443 | Have to buy basic grains | 52 | 1 | 16 | 63 |
| I154 | Harvest for home consumption | 56 | 24 | 54 | 12 |
| I162 | Have surpluses for sale (with I382) | 60 | 66 | 36 | 5 |
| *Housing* | | | | | |
| I57 | Own house | 71 | 50 | 52 | 30 |
| I52 | Don't own house | 53 | 0 | 5 | 73 |
| I46 | Some don't own house | 43 | 0 | 5 | 42 |
| I45 | Rent house | 33 | 2 | 0 | 39 |
| I59 | Have a good house (with I55) | 62 | 80 | 33 | 5 |
| I58 | Have a well-finished house | 24 | 25 | 2 | 0 |
| I54 | Have a poor-quality house (with I62) | 53 | 1 | 12 | 61 |

(Continued)

Table 10. (Continued.)

| Indicator code no. | Description of indicator | Percentage of villages where used | No. of times indicator was used to describe well-being levels[b] | | |
|---|---|---|---|---|---|
| | | | Highest | Middle | Lowest |
| *Household characteristics* | | | | | |
| I98 | Some are single parents | 56 | 0 | 8 | 68 |
| I140 | Single-person households | 26 | 0 | 0 | 27 |
| I148 | Have many children | 55 | 2 | 13 | 58 |
| I137 | Have old people | 28 | 2 | 3 | 27 |
| I102 | Young couples | 22 | 3 | 12 | 12 |
| I150 | Have problems with drunkenness, etc. | 22 | 0 | 0 | 24 |
| *Employment of day laborers* | | | | | |
| I435 | Contract day laborers | 56 | 57 | 12 | 0 |
| *I449* | *Don't contract day laborers* | *10* | *0* | *5* | *5* |
| *I425* | *Some contract day laborers* | *9* | *1* | *6* | *1* |
| *Animals* | | | | | |
| I91 | Own chickens | 40 | 24 | 19 | 6 |
| I90 | Own pigs | 36 | 27 | 15 | 4 |
| I87 | Own work animals | 38 | 37 | 9 | 0 |
| I85 | Own animals | 25 | 22 | 10 | 1 |
| I78 | Don't own animals | 22 | 0 | 8 | 14 |

a. Translated from Spanish.

b. Shadows with numbers indicate frequency of use of a given indicator to describe the different levels of well-being: ☐ = most frequently used; ▨ = less frequently used; ▩ = least frequently used.

Moreover, the table tells us that the indicator was mentioned at least once in 97% of the 87 communities. Overall, the table reveals considerable agreement among the informants with respect to the well-being level (or levels) according to the different indicators used to describe it (them).

However, should the informants not agree on the use of the indicators in terms of well-being, this does not necessarily mean that the whole analysis has to be dropped. It may simply reflect differences in the concept of the overall level of well-being among the communities involved in the analysis. That is, what, in one community, is considered as the lowest level of well-being corresponds to what, in another community, is considered as the middle or highest level of well-being.

### *Community type*

Let us now compare the use of indicators according to community type as defined by sampling factors. The idea is to assess the degree to which well-being descriptions and their indicators, already identified in the sampled communities, can be applied to the entire study area. Before beginning this analysis, you must remember that the communities were selected according to a *maximum variation sampling strategy*. That is, they were selected with respect to factors that were assumed to cause differences in local perceptions of well-being. You may therefore find one of four situations:

1. *Major similarities across communities.* The indicators obtained for different well-being levels show major similarities across communities, *despite* these communities being selected through a maximum variation sampling strategy. You can then assume that these indicators are *valid* for—and can be extrapolated to—the entire set of communities from which the sampled communities were selected.

2. *Major differences across groups of communities, but similarities within each group.* The indicators show major differences among groups of communities but are similar within these groups. For example, indicators are the same among communities that are easily accessible, but different to those among communities that are difficult to reach. In this case, the

indicators defined for one group of communities can be extrapolated to other communities only if they have similar characteristics (e.g., similar access).

3. *Generally versus specifically applicable indicators*. Some indicators can be generally used across the selected communities, whereas others are specific to only certain types of communities. In such a case, you will have to define a set of indicators, some of which are common to the entire study area, and others of which are alternative indicators, that is, despite having the same significance, they vary between groups of communities. You then extrapolate this set of indicators. Hypothetical examples of "alternative" indicators are "having cattle" and "having capital, vehicles, etc." Both indicators signify "access to resources", although in different material forms[8].

4. *Major differences from community to community*. The well-being indicators identified in the sampled communities are altogether different. In this case, you cannot extrapolate, and you may have to revise your choice of sampling factors for selecting sites ("Step 1").

### *Type of informant*

We will not analyze the indicators by type of informant because it is similar to that of community type. It differs only in that the sampling factors used for the analysis are those that identify the informant as such, for example, sex, age, occupation, and ethnic group.

## Analyzing Indicators

Table 10 shows, for the Honduras study, an example of several cases where many indicators within a theme are either similar or indicate different extremes of the same capacity or condition. An example of similar indicators is that of I204 (businessmen) and I175 (some are businessmen), whereas the indicators I39 (own little land) and I36 (own a lot of land) are examples of indicators describing different extremes of the same capacity of land ownership. Therefore, you would be wise to analyze the indicators by theme rather than one by one. The purpose of the analysis is therefore to determine whether, for a community type, any correlation exists between the use or non-use of a specific set, or theme, of indicators on the one hand and any specific sampling factor or combination of sampling factors on the other.

### *Analytical method*

When the number of communities involved in the analysis is relatively small, the use of indicators by community type can be analyzed "manually". However, when the number of communities is big and thus many types of communities are involved, as in the Honduras study, you should undertake the analysis on computer, using a statistical package like SPSS[9], which contains a type of non-parametric correlation analysis called non-linear canonical correlation analysis. This analysis allows the correlation of two or more sets of variables at different measurement levels, that is, of categorical or nominal variables such as "man/woman" or "farmer/day laborer/housewife", as well as ordinal variables such as altitude (>500 m/500-1000 m/>1000 m) and numerical variables.

To make a non-linear canonical correlation analysis of the data listed in the matrix (Tables 8 and 9) relevant to each community, you first need to aggregate the information obtained from each informant. Thus, in a given community, if a specific indicator is used by one or more informants, it is given the value "1" (i.e., "used"). But if it is not used by any informant for that community, the indicator is given the value "2" (i.e., "not used"). The data should then be reorganized ("transposed") so that the indicators are placed in columns as variables and communities in rows as cases. Finally, because the indicators are now

8. Sen (1984) distinguished between *commodities*, *characteristics*, and *capabilities*, using the example of the bicycle. The bicycle itself is a commodity. One of its several characteristics is transportation. Having a bike gives a person the ability to move about in a way that would have been impossible without it. The transportation *characteristic* of the bicycle (*commodity*) thus gives the person the *capability* to move or function in a certain way.

   In our case, the commodity is either cattle, a car, or capital in the bank, any of which has the characteristic of being an investment object that gives the owner the same capability, such as being able to cope with crises.

9. *Statistical Package for Social Sciences*.

Table 11. Data reorganized for non-linear canonical correlation analysis.[a]

| Community code no. | Sampling factors | | | | | | Total of informants | Indicator code no. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Services | Altitude | Pop. density | Gender | Ethnic group | Access | | I101 | I104 | I105 | I106 | I201 | I203 | I205 | I206 | I207 | I208 | I210 |
| 10421 | 1 | 1 | 3 | 1 | 1 | 3 | 4 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 10511 | 2 | 1 | 3 | 1 | 1 | 3 | 4 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 |
| 10705 | 1 | 1 | 1 | 2 | 1 | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 1 |

a. Because the purpose is to analyze the use of indicators by community, the informant sampling factors have been omitted.

Table 12. The use of the indicator *own land* (I40) (see Table 10) differs according to the gender composition of a community, as illustrated in this matrix. Values refer to numbers of communities.

| Use of indicator | Gender composition | | | Total |
|---|---|---|---|---|
| | Males = females | More males | More females | |
| Used | 35 | 39 | 7 | 81 |
| Did not use | 1 | 2 | 3 | 6 |
| Total | 36 | 41 | 10 | 87 |
| Pearson's chi-square: $P = 0.009$ | | | | |

variables, their code names have to be changed from numbers to text. To do this, add a letter in front of the number so that the indicator's number, for example, 104, becomes I104. Table 11 shows how the data presented in the extract (Table 9) has been reorganized.[10]

In the analysis, all indicators belonging to a theme were entered as one set of variables and the six sampling factors were entered as a second set of variables[11]. The result of the non-canonical correlation analysis is a series of plots in which the distance between the points, as well as from the center of the plot, tells how closely correlated these points or variables are. The closer the points and the further from the center of the plot they are, the more correlated they are.

### *Variables that can be extrapolated*

Figure 6 shows one of the plots resulting from the non-linear canonical correlation analysis between the indicators relating to land ownership and the sampling factors. It shows the points, which are called centroids[12], for all options or modalities of the variables included in the analysis. As can be seen, all points, that is, all options for the variables involved, except two, are situated very close to the center between the two dimensions. This indicates that no significant correlation exists between any of these variables, and thus no pattern is found with respect to the type of community in which the indicators involved are used or not used.

The two exceptions from this pattern are the point representing communities where the indicator *own land* (I40) is *not* used, and the point representing communities with populations where more than 52% of people are women. These two points are situated relatively close to each other and far from the center of the graph. They are possibly correlated, that is, the indicator *own land* tends not to be used in communities with more women. Looking at the correlation between the use/non-use of the indicator *own land* and the sampling factor *gender composition* (Table 12), three of the six communities where the indicator *own land* was not used had populations with more women. However, in seven of the 10 communities in the sample[13] with more women, the indicator *own land* was used. Therefore, indicators relating to land ownership can be extrapolated as valid well-being indicators for all the sample communities and thus for all the communities from which the sample was drawn.

### *Variables that cannot be extrapolated*

Figure 7 shows a somewhat different case, namely, that of indicators related to lack of resources for necessities, particularly health and education. This plot also shows a high concentration of points around the center between the two dimensions. However, the points representing the use of the indicators *give secondary education with difficulty* (I465),

10. As the goal is to analyze the use the community makes of the indicators, sampling factors are omitted.
11. Altitude, accessibility, services, and population density were entered as ordinal variables, whereas gender composition was entered as a multiple nominal variable. Because of the low number of communities that had large indigenous populations (two Garífuna and five Xicaque communities out of 87 communities), the ethnicity sampling factor was excluded from the analysis.
12. Centroids are the averages of all objects belonging to the same category.
13. In this and all other analyses made of the use of indicators, only 87 communities were included (see comments on page 21).

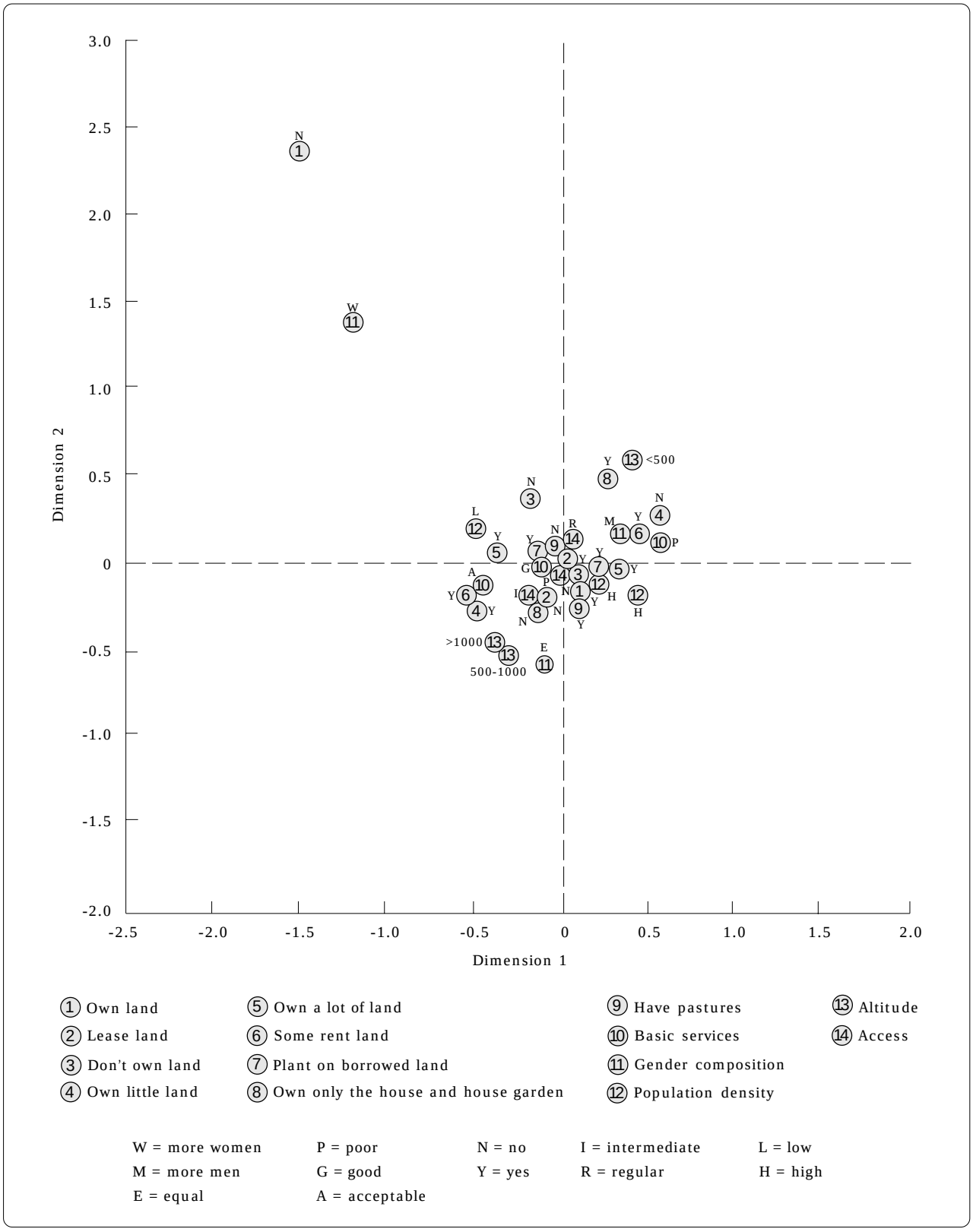



Figure 6. Use of land ownership indicators by sampling factors. A centroid-plot, non-linear, canonical correlation analysis was used.

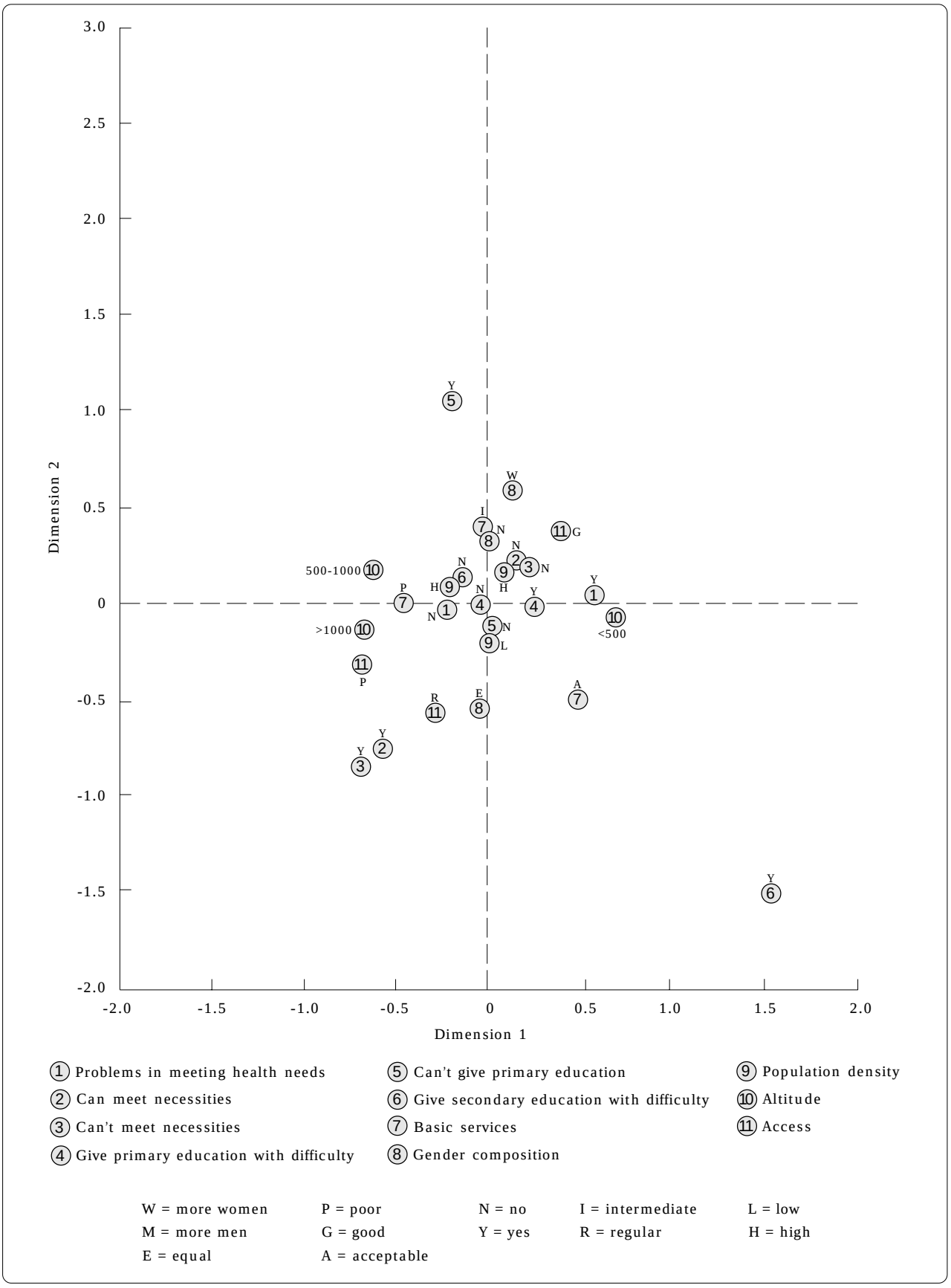



Figure 7. Use of indicators related to lack of resources for health and education by sampling factors. A centroid-plot, non-linear, canonical correlation analysis was used.

*cannot give primary education* (I461), and *can't meet necessities* (I457) are, to varying degrees, outliers, that is, situated far from all other points. Yet, none of these three points are situated close to any sampling factor. This indicates that the use of each of the three indicators is not correlated to any one sampling factor, but, rather, to a combination of sampling factors.

This hypothesis is supported by the fact that, in two-way cross-tabulation tables, none of the three indicators is significantly associated with any sampling factor. Moreover, the indicators I465 and I461, in particular, are used in only a very few communities (8% and 9%, respectively; Table 10). These indicators cannot therefore be considered as valid well-being indicators for all the sampled communities and hence cannot be extrapolated to the communities from which the sample was drawn.

This type of analysis has to be made for each set of indicators when deciding whether they can be taken as valid for the entire set of sample communities and thus can be extrapolated to the entire area from which the communities were selected.

## STEP 5

# Developing Indicators of "Well-Being"

When you followed the sections "Step 1" to "Step 4", you (1) used a maximum variation sampling strategy to select sites at which to carry out well-being rankings—this strategy was fundamental to the extrapolations you made in "Step 4"; (2) selected informants, identified local perceptions of well-being through well-being rankings, and quantified them; (3) translated the perceptions into sets of well-being indicators; and (4) assessed the extent to which these sets of indicators could be applied or extrapolated to the entire study area. Thus, you now have a set (or various sets) of indicators that will help you characterize the entire population according to its well-being.

Now, you must find a way to apply this set (or sets) of indicators to the entire study area—not just to the sampled communities—so that you can make an overall profile of well-being or poverty. Probably the most practical way of doing this is to design and administer a questionnaire to a representative sample of the population in your study area.

## Designing and Administering Questionnaires

When formulating the questionnaire, you must be aware of the well-founded criticism concerning the use of questionnaires. As described by Chambers (1997, p. 93), questions and categories tend to be thought up in some central place, far removed from the field. This often means that the questions and categories become meaningless or at least difficult to understand for those who are supposed to give answers to the questionnaires and perhaps also to those who are supposed to conduct the interviews.

Our case is, however, different. Instead of having to "invent" questions and categories, these can—and should—be taken directly from the well-being descriptions and indicators that the informants give us during the well-being rankings. By formulating the questions in a way that is as close as possible to the concepts and phrases used by the informants, the questionnaire becomes more meaningful and easier to respond to. This helps ensure the validity of the answers. So, avoid using abstract concepts; use local language!

Formulate the questions around each indicator so that their answers will give you only those details that you need to quantify the indicator as it was obtained from the informants. For example, ask members of a given household only those questions that will let you know *whether* that household "has problems in getting enough food", or "owns little land", or "has sufficient economic resources", but will not necessarily let you know *how much* food, land, resources, etc., that the household has.

## Determining a Representative Sample of the Targeted Population

To accurately determine the relative proportions of the entire study area's population living at the different levels of well-being, you must administer the questionnaire to a *representative* sample of that population. This means that you will need to sample at random, instead of using the maximum variation sampling strategy that you had used for selecting communities. The degree of detail or disaggregation with which you can later make the poverty profile will depend on how you decide to draw your sample.

Usually, for a given area, the more detailed your poverty profile (e.g., to show poverty distribution at the community level versus at the municipality level), the larger the sample you will need, and thus the more costly your survey will be. That is, the profile of poverty in a community is more detailed than the profile of poverty in a municipality.

For example, imagine your study area to be a department with 50,000 households. The department is divided into five municipalities, each with 10,000 households. If you want a poverty profile at the departmental level, then, according to Table 13, you must take a sample of 381 households. However, if you want to compare the poverty level of one municipality with that of another, you need to make independent profiles for each municipality, which means taking a sample of each municipality. In this case, you will need to take five samples of 370 households, that is, 1850 households.

Table 13. Size of the sample required for various population sizes at a 5% confidence interval.

| Population size | Sample size |
|---|---|
| 50 | 44 |
| 100 | 80 |
| 150 | 108 |
| 200 | 132 |
| 250 | 152 |
| 300 | 169 |
| 400 | 196 |
| 500 | 217 |
| 800 | 260 |
| 1,000 | 278 |
| 1,500 | 306 |
| 2,000 | 322 |
| 3,000 | 341 |
| 4,000 | 351 |
| 5,000 | 357 |
| 10,000 | 370 |
| 50,000 | 381 |
| 1,000,000 | 384 |

SOURCE: Krejcie and Morgan (1970), cited in Bernard (1994).

Thus, you need to determine the degree of detail according to your needs and your resources. Consult a textbook on sampling (e.g., Bernard 1994; Scott 1985) for advice on sampling procedures and sizes (Table 13).

## The Honduran Case Study

In the Honduran study, we decided to draw samples for the questionnaire from three watersheds of particular interest to CIAT: Río Saco in Atlántida, Cuscateca in El Paraíso, and Tascalapa in Yoro. The samples taken were 208, 270, and 290 households, respectively.

Now, you will first need to make the identified well-being indicators quantifiable. For example, for an indicator like "health problems", which we used in the Honduras study, we prepared a set of questions, a sample of which is illustrated in Box 4.

The answers to these and to questions on other indicators can then be combined into a single well-being index for the study area. "Step 6" shows how to make the index.

## Coding the Results of the Questionnaire

When you conduct the survey, remember to give a code for each respondent so that you can later identify those households who were included in both the survey and in the well-being rankings. Thus, you will be able to compare (see "Step 8") how these households ranked during the well-being rankings with how they ranked according to the well-being index ("Step 6"), and thus verify if the index was well constructed, that is, whether it truly reflected the well-being rankings made by the local informants.

*Box 4*

**Extract[a] from the questionnaire on well-being that was prepared for three departments of Honduras**

| XIV: Let's Talk about Health and Other Family Expenses | | |
|---|---|---|
| 14.1 | Did any of you become ill or have health problems last year?<br><br>**If you answer "NO", go to question 14.4!** | 1. Yes ☐<br>2. No ☐ |
| 14.2 | **If you answer "yes",**<br><br>What type of problem did you have? | 1. Diarrhea ☐<br>2. Respiratory problems ☐<br>3. Flu, colds, and chills ☐<br>4. Skin problems and diseases ☐<br>5. Accidents ☐<br>6. Dental problems ☐<br>7. Others: _____ ☐ |
| 14.3 | How did you resolve the problem? | 1. We took home remedies ☐<br>2. We went to the herbalist ☐<br>3. We went to the doctor, health post, clinic, or hospital with our own money or health insurance ☐<br>4. We had help from relatives ☐<br>5. We had to borrow money to go to the doctor, health post, or hospital ☐<br>6. We had to borrow to go to the herbalist ☐<br>7. We had to make a collection from the neighbors ☐<br>8. We couldn't do anything, we had no money ☐<br>9. We sold land and/or cattle ☐<br>10. Others: _____ ☐ |

a. Translated from Spanish.

# STEP 6

# Constructing a "Well-Being Index" for the Entire Study Area

Now you can construct a *well-being index*[14], that is, a single "measure" of well-being that combines the quantified well-being indicators. But your care is crucial in preserving the sense in which the informants used the indicators to describe the different well-being levels.

## Developing a Scoring System for the Indicators

You need to remember that indicators are not strict criteria, defined beforehand. Instead, they had emerged in retrospect after the piles of cards were constructed, and are based on such phrases as "most households in this group" and "some families". As a result, the indicators are used only as *partial* descriptions of the complex phenomenon of well-being, and not as absolute criteria. Indeed, in many cases, the criterion that determines a well-being level results from a combination of certain indicators rather than from one specific indicator.

Moreover, some indicators describe only one level of well-being, while others distinguish various levels of well-being (Table 10). Finally, for some indicators, what is important is the existence of certain threshold values related to a qualitative meaning (e.g., "have enough food"), and not just their numeric or quantitative meaning.

By taking these features into account, you can develop a scoring system for the indicators identified in "Step 4" and quantified in "Step 5". The system assigns a score to each household for each individual indicator. The household well-being index is thus defined as *the average of scores a household obtains for the indicators used to measure its well-being level.* The index has the advantage that different combinations of scores for individual indicators or variables may result in the same well-being index value.

## The Honduran Case Study

The scoring system developed for the three Honduran departments[15] operates with three levels of scoring, corresponding to the three levels of well-being: 33, 67, and 100 (i.e., high, intermediate, and low). But the actual values of these scores are arbitrary; what *is* important is that the number of levels of scores corresponds to the number of levels of well-being included in the analysis *and* that the intervals between the scores is uniform. Thus, instead of choosing 33, 67, and 100, we could have chosen something like 100, 200, and 300; or 6, 12, and 18.

Table 10 helps us assign scores for the individual indicators.

## Assigning Scores

Let us look at the example, taken from the Honduran case study, of cattle ownership: in most cases, indicators related to cattle raising were used in the sense of whether or not cattle was raised. *Own cattle* was used principally as an indicator of a high level of well-being. Consequently, the score assigned to this indicator should help us distinguish between a high level of well-being on the one hand, and intermediate and low levels of well-being on the other. Thus, households who had cattle received a score of 33, and those who had no

14. The procedure for constructing a well-being index was first developed by Boesen and Ravnborg (1993).

15. The index was developed so that it could be applied to the three departments, although based only on the survey of one watershed in each of these departments.

cattle received a score of 67. The indicator of cattle raising does not help us distinguish between households with an intermediate level of well-being and those with a low level.

Another example is the indicator related to problems of food shortages, which was used principally to describe households who suffered the lowest level of well-being. Accordingly, the households who had food shortages for more than a week in the last year and either had to borrow food or money, or reduce the number of meals were given a score of 100. Those households who had no food shortages (or had them for only a day or so) and who had no need to either borrow food or money, or reduce the number of meals were given a score of 67.

Box 5 shows how scores were assigned to each indicator that was selected to form part of the well-being index developed for the three Honduran departments.

## Calculating the Index

The well-being index is calculated for each household by averaging the scores that the respective households obtained for the 11 indicators. An example of five households from the Honduran case study is given in Box 6. Table 14 shows, in summary, the distribution of households according to the scores obtained for each index-constituting variable that made up the well-being index.

*Box 5*

**Scoring system for well-being indicators used as variables to develop a well-being index; from a case study in Honduras**

(italicized text refers to Spanish names of variables)

| Variable[a] | Score | Condition |
|---|---|---|
| *PTIERRA* | 33 | If the household owns 4 "manzanas" (1 "manzana" = 0.7 ha) or more, or has land under pasture, or leases land to other farmers. |
| | 67 | If the household owns land but less than 4 "manzanas", doesn't have land under pasture, nor leases land to other farmers. |
| | 100 | If the household doesn't own land or only owns the house and house garden. |
| *PJORNAL* | 33 | If nobody in the household day labors and the housewife does not work as a domestic for other families and neither does she prepare food for sale. |
| | 67 | If somebody in the household day labors but either does it for less than 3 months in the year or for more than 3 months in the year but only 3 times a week or fewer. |
| | 100 | If somebody in the household day labors for more than 3 months in the year and almost every day, or the housewife works as a domestic for other families, or the housewife prepares food for sale. |
| *PINGRESO* | 33 | If somebody in the household is a professional, or is a businessman, or is a middleman, or if children or relatives send remittances. |
| | 67 | If somebody in the household is a craftsman but nobody in the household is either a professional, businessman, or middleman, and the household does not receive remittances. |
| | 100 | If nobody in the household is a professional, businessman, middleman, or craftsman, and the household does not receive remittances. |
| *PGANADO* | 33 | If the household has cattle. |
| | 67 | If the household does not have cattle. |
| *PDINERO* | 33 | If the household has savings in a bank or other entity or lends to others. |
| | 67 | If the household does not have savings in a bank or other entity and does not lend to others. |
| *PSALUD* | 67 | If nobody in the household had health problems or if somebody had health problems but these were solved either with own money (including social security) or by selling cattle or land. |
| | 100 | If somebody in the household had health problems and these were solved by asking relatives for money, obtaining loans from neighbors, etc.; by going to the herbalist; or not solved because of lack of money. |

(Continued)

Box 5. (Continued.)

| Variable[a] | Score | Condition |
|---|---|---|
| *PAGRICUL* | 33 | If the household grows coffee or cacao or if the household grows its own basic grains and sells half or more of the produce. |
| | 67 | If the household doesn't grow coffee or cacao but buys basic grains and, at the same time, sells at least part of their basic grain production; or if the household doesn't buy basic grains and less than half of its basic grain production is for sale. |
| | 100 | If the household doesn't grow either coffee or cacao and buys basic grains while all it produces of basic grains is for home consumption. |
| *PALIMENT* | 67 | If the household has not experienced food shortages or has experienced food shortages for less than one week and solved them without having to ask others for food or money for food, and without having to reduce the number of meals, or having the wife or children day labor (more). |
| | 100 | If the household experienced food shortages that lasted for more than a week, or experienced them for less than one week and had to ask others for food or money for food, or had to reduce the number of meals, or the wife or children had to day labor (more). |
| *PCASA* | 33 | If the household owns its house and the house is of good quality (walls of cement, bricks, locally made bricks *[adobe]*; roof made of zinc, asbestos, or terracotta tiles; floor made of bricks, tiles, or concrete. |
| | 67 | If the household owns its house but either the walls, roof, or floors (but not all three) are made of poor materials. |
| | 100 | If the household owns its house but it's made of poor materials, that is, the walls are of wattle and mud, timber, mud, or cane; roof of timber, palm leaves, cane, tarred paper, or plastic; and floors are earthen. Or the household does not own its house. |
| *PANIMAL* | 33 | If the household owns horses, pigs, or oxen. |
| | 67 | If the household owns chickens but not horses, pigs, nor oxen. |
| | 100 | If the household does not own any animals. |
| *PUSOJORN* | 33 | If the household contracts day laborers for planting, weeding, harvesting, or spraying. |
| | 67 | If the household does not contract day laborers. |

a. For a description of the indicators see Figure 8 on page 45.

*Box 6*

**Calculating the well-being index for five households in Honduras.**
**A household's index is the average of the scores it obtained for 11 indicators of well-being**

| Indicator[a] | Household | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| *PALIMENT* | 67 | 67 | 67 | 100 | 100 |
| *PINGRESO* | 67 | 33 | 33 | 100 | 100 |
| *PJORNAL* | 33 | 33 | 33 | 100 | 67 |
| *PAGRICUL* | 33 | 67 | 67 | — | — |
| *PUSOJORN* | 33 | 67 | 33 | — | — |
| *PTIERRA* | 33 | 100 | 100 | 100 | 100 |
| *PSALUD* | 67 | 67 | 100 | 67 | 67 |
| *PGANADO* | 67 | 67 | 67 | 67 | 67 |
| *PDINERO* | 33 | 67 | 67 | 67 | 67 |
| *PCASA* | 67 | 33 | 67 | 67 | 100 |
| *PANIMAL* | 67 | 33 | 100 | 100 | 100 |
| Well-being index | 51.55 | 57.64 | 66.73 | 85.33 | 85.33 |

a. For a description of the indicators see Figure 8 on page 45.

Table 14. Distribution of households according to their scores for those well-being indicators that form the variables constituting the well-being index. (Number of households = 768.) From a case study in Honduras.

| Well-being indicator | Percentage of households according to score[a] (and level of well-being) | | |
|---|---|---|---|
| | 33 (highest) | 67 (middle) | 100 (lowest) |
| Cattle ownership | 20 | 80 | — |
| Having economic resources | 20 | 80 | — |
| Employment of day laborers (no. = 477) | 70 | 30 | — |
| Food security | — | 65 | 35 |
| Health problems | — | 72 | 28 |
| Day labor | 53 | 12 | 35 |
| Animal ownership | 48 | 29 | 23 |
| Market involvement (no. = 472) | 35 | 32 | 32 |
| Nonagricultural sources of income | 35 | 9 | 56 |
| Land ownership | 26 | 12 | 62 |
| Quality of housing | 20 | 33 | 47 |

a. See Box 5 for the meaning of the scores.

# STEP 7

# Checking the Logic of the "Well-Being Index"

Before you use the well-being index, you must ensure that the index's internal and external logic conforms with the descriptions of the different levels of well-being, that is, with the informants' rankings.

## Checking the Internal Logic

Checking the *internal* logic of the index means ensuring that the individual indicators, already quantified, truly contribute to the index in the way they were intended to.

### *Deviation from the overall average well-being index*

One way of doing this is to check if the deviation from the value of the overall average well-being index, as caused by variation in each index-constituting variable, was that which was expected, according to the informants' descriptions (Table 10).

Figure 8 shows the deviations[16] from the overall average well-being index of each of the 11 indicators, defined for the Honduras study as constituting the well-being index. The overall average well-being index, including all the households in the three sampled watersheds[17], was 67.78 points. In Figure 8, this value is represented as the vertical axis at "0". Table 14 shows that, for the indicator *cattle ownership,* 20% (i.e., about 150) of households obtained a score of 33, that is, they had cattle, and thus obtained an average well-being index of 53.57. This index is 14.21 points *fewer* than the overall average[18]. In contrast, the 618 households who obtained a score of 67 for this indicator obtained an average well-being index that was 3.46 points *more* than the overall average.

The numerical or "nominal" deviation from the overall average was therefore greater for those owning cattle than for those who did not. Such deviation conforms to the way the informants used the indicator to indicate a high level of well-being.

In contrast, the indicator relating to *food security* (or *PALIMENT*), used to indicate a low level of well-being, shows a larger (nominal) deviation for households having problems of obtaining sufficient food (+7.15) than for households not having such problems (-3.82). These findings, again, conform to the way the informants used the indicator.

Overall, we concluded that all the individual indicators contributed to the well-being index as had been intended.

### *Homogeneity analysis*

You can use another, more complex, way of checking the internal logic of the well-being index: the multiple correspondence analysis, or the homogeneity analysis (as it is called in the SPSS package). This analytical method allows you to discover possible associations between indicators that are index-constituting variables, that is, to discover two or more indicators that consistently express the same thing so that one indicator can be judged as redundant.

The homogeneity analysis is similar to the non-linear canonical correlation analysis used in "Step 4", but with the difference that, in the homogeneity analysis, all variables are entered as one set and all variables are considered as "nominal" or "categorical" variables.

16. The deviation is not adjusted for effects of other variables or for co-variation between these variables.
17. That is, 768 households.
18. Remember, the higher the score, the lower the well-being level.

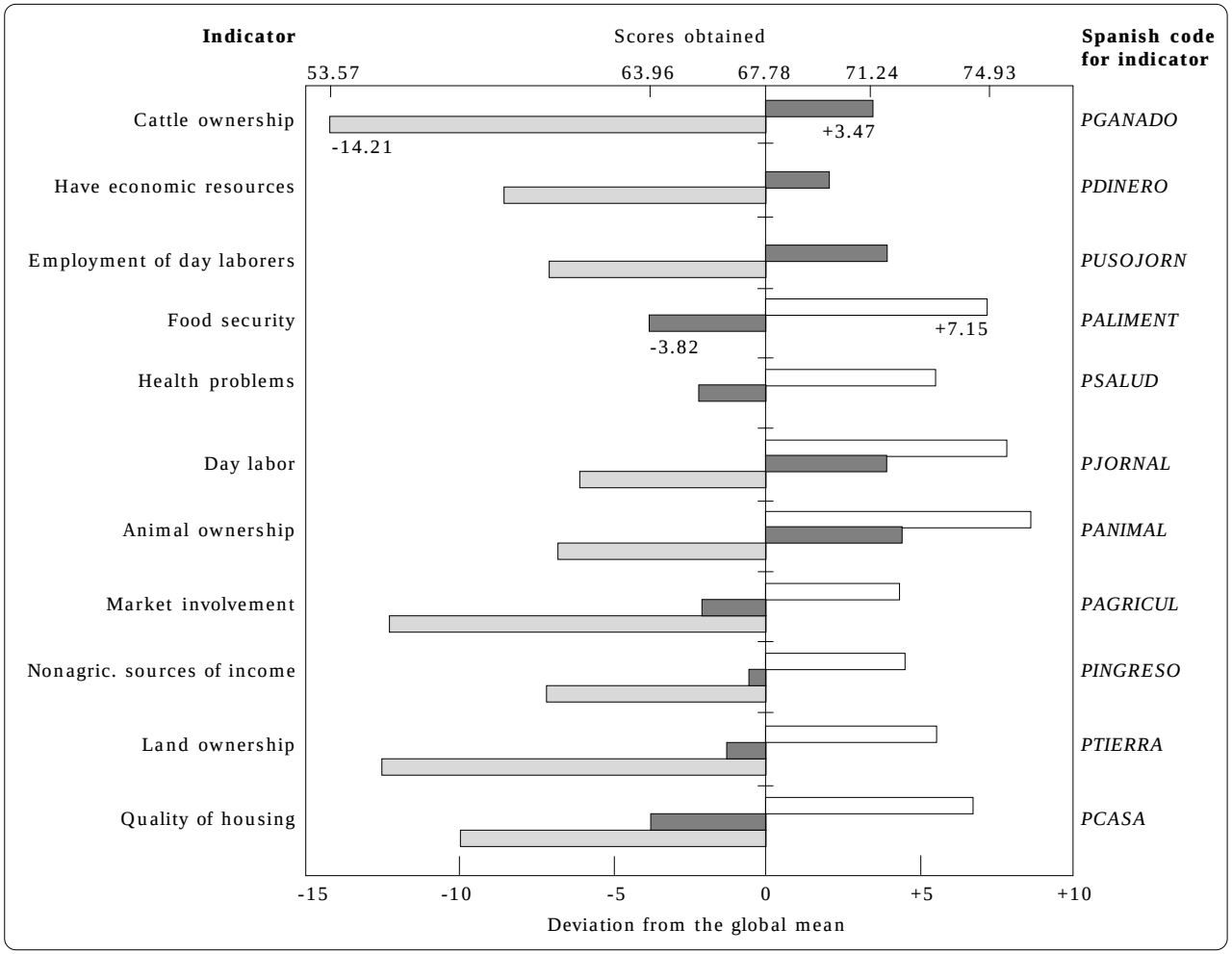



Figure 8. Deviations from the global mean (= 67.78) of the well-being index (on the zero axis) according to well-being indicator. (From a case study in Honduras.) (□ = 100; ■ = 67; □ = 33.)

Figure 9 shows the result of this analysis conducted on the 11 well-being index-constituting indicators used for the three Honduran watersheds. Each indicator is connected by a line to existing options. Except for the two lines representing, respectively, health (*PSALUD*) and food security (*PALIMENT*) indicators, none of these lines are parallel. For example, a close association exists between owning a lot of land (i.e., *PTIERRA* = 33) and being fully involved in marketing agricultural products (i.e., *PAGRICUL* = 33). In contrast, no association exists between owning little land (i.e., *PTIERRA* = 100) and not being involved in marketing agricultural products (*PAGRICUL* = 100).

With respect to the health and food security indicators, we decided to maintain both indicators, despite their apparent covariation, because they represent different, although associated, aspects of well-being.

This means that each of these indicators expresses a distinct aspect of well-being and, thus, that no indicator by itself would be sufficient to indicate well-being. Our results therefore confirmed that the multidimensional nature of well-being as a real-life phenomenon needs to be reflected in its measurements.

## Checking the External Logic

When you check the *external* logic of the well-being index, you examine the level of correspondence between the well-being index and the average well-being scores based on the initial rankings made by the informants ("Step 3"). You can do this by using a

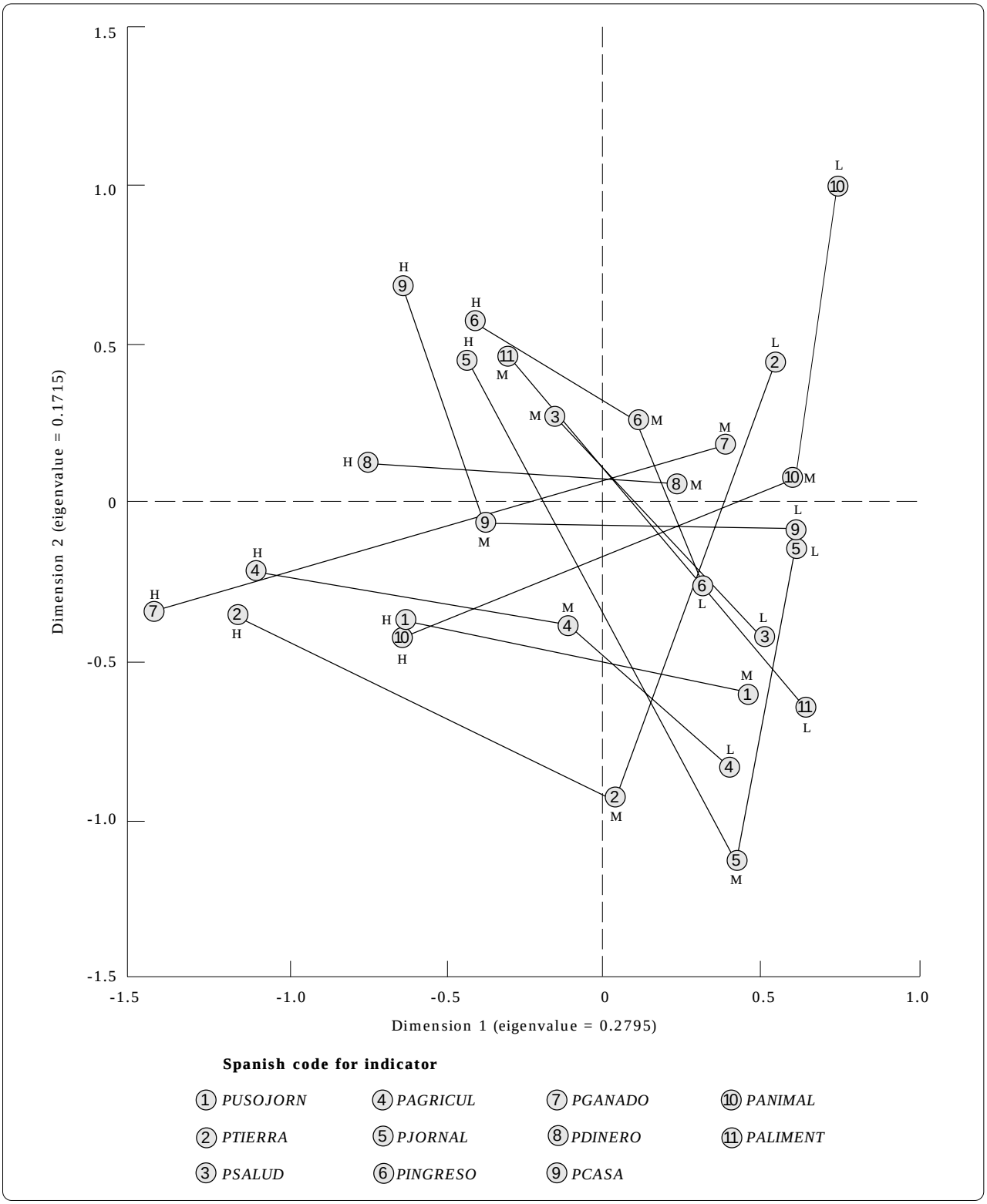



Figure 9. Correspondence between well-being index-constituting indicators, using category quantification and homogeneity analysis; from a case study in Honduras. H = high; M = middle; L = low levels of well-being. For an explanation of the codes, see Figure 8. (The eigenvalue measures that proportion of the total variation explained by a given dimension.)

Spearman's rank order correlation test (Spearman's Rho) for each community where you had conducted well-being rankings ("Step 2") and the questionnaire to establish the well-being index ("Step 5"). If the correlation between the well-being index and the well-being scores is not strong, then you know that the well-being index probably failed to adequately capture the different levels of well-being as described by the informants. This means you have to revise the well-being index.

For the Honduras study, the questionnaire was conducted in five of the communities where well-being rankings had also been conducted. In four of these communities, significant correlation was found between the average well-being score, S, calculated on the basis of the well-being rankings (see "Step 3") and the well-being index (Table 15). For the community of Albardilla, where no significant correlation was found, we went back to the original descriptions of the well-being levels as they were given by informants in that community. We carefully checked whether some important indicators had been left out or misinterpreted. As this was not the case, the most likely explanation of the lack of significant correlation is the small number of households—in each well-being category (i.e., 4, 3, and 3, respectively)—for whom data were available from both the well-being rankings and the questionnaire.

Figure 10 gives a more complete picture of variation in the well-being index as a function of the ranking-based well-being categories for the five communities. The boxes demarcate the 25-75 percentile range, while the vertical lines indicate the minimum and maximum, meaning that, for example, in Araulí, for category I (highest level), according to the well-being rankings, the middle 50% of households (the 25-75 percentile range) obtained a well-being index between 43.8 and 63.0 points, while the minimum was 39.18 and the maximum was 70.44 points.

## Using the Well-Being Index

Provided that the well-being index has both internal and external logic you can use the index to make a well-being or poverty profile, not only for the communities where you initially conducted the well-being rankings and the questionnaire, but also for the entire study area.

However, instead of working with an index, you will often find it more convenient to work with levels or categories of well-being, because these distinguish between those households having higher, middle, and lower levels. You can construct these categories (see "Step 8") on the basis of the well-being index, again guided by the ranking-based well-being categories.

Table 15. Correlation between the average well-being score (based on rankings) and the well-being index in five Honduran communities, as shown by the number of households per well-being level, Spearman's Rho, and the Rho's significance for each community.

| Community, department | Number of households at well-being level | | | Spearman's Rho | Significance of Spearman's Rho |
|---|---|---|---|---|---|
| | Highest | Middle | Lowest | | |
| San Francisco, Río Saco | 3 | 8 | 13 | .779 | 0 |
| Araulí, Cuscateca | 10 | 14 | 35 | .565 | 0 |
| Albardilla, Tascalapa | 4 | 3 | 3 | .598 | .068 |
| Jalapa, Tascalapa | 6 | 5 | 11 | .712 | 0 |
| Vallecillos, Tascalapa | 2 | 10 | 5 | .568 | .017 |

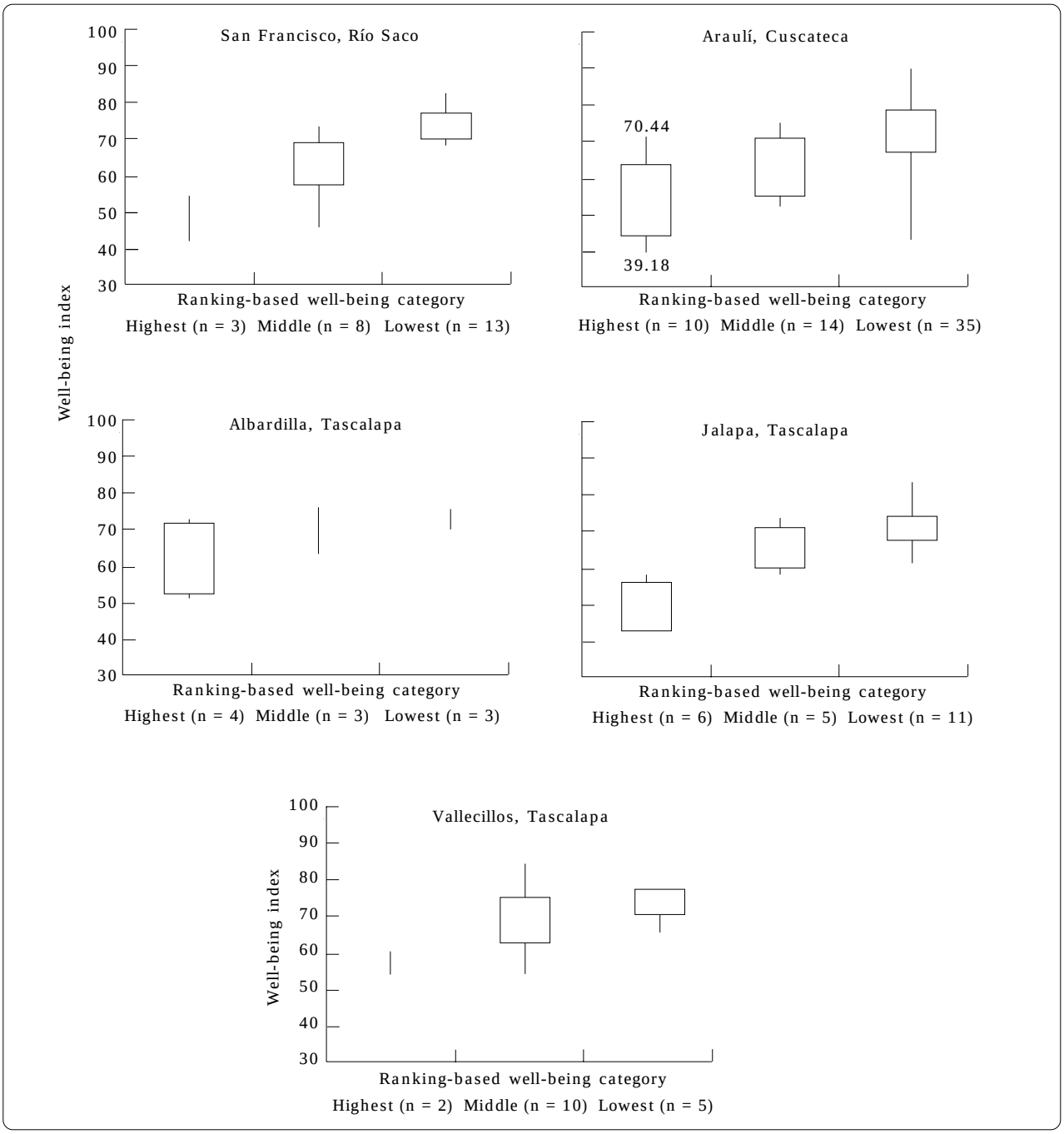



Figure 10. Variation in well-being index by ranking-based well-being category per community, in five communities, three departments, Honduras. (Vertical lines = minimum and maximum values of the well-being index; boxes = 25-75 percentile ranges; n = number of households.)

## STEP 8

# Defining "Well-Being Categories" according to the "Well-Being Index"

Once you have ensured the consistency of the internal and external logic of the well-being index, you need to define categories of well-being based on the index. These index-based categories must correspond, as much as possible, to the ranking-based categories ("Step 3").

The index-based well-being categories should be delimited on the basis of analyzing the variance of the well-being index as caused by average well-being categories, based on the well-being rankings conducted at a community level, as shown in Figure 10. The analysis indicates the appropriate ranges of well-being

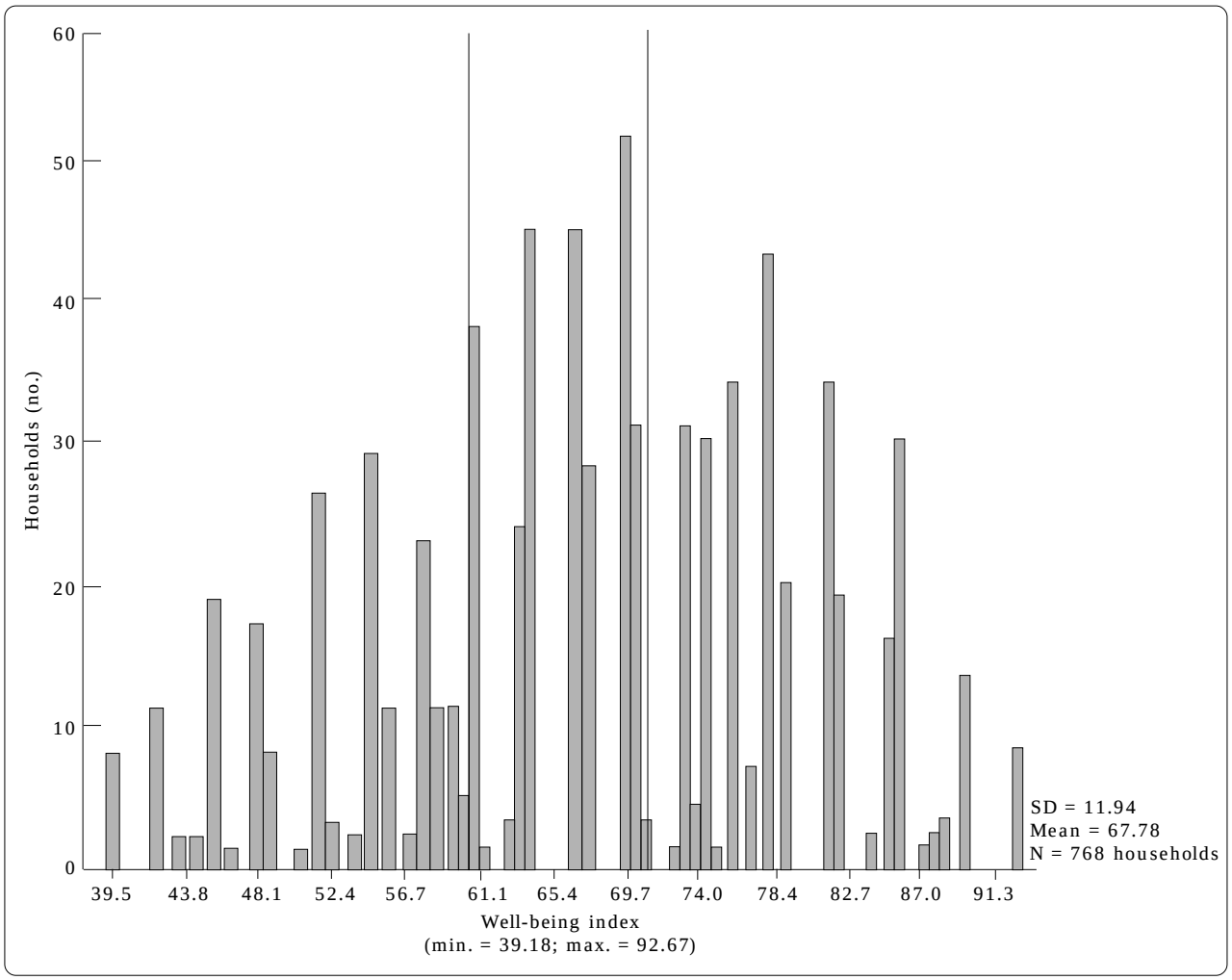



Figure 11. Distribution of households along the well-being index, showing the number of households (bars) and limits (vertical lines) between highest, middle, and lowest levels of well-being, from a case study of three departments in Honduras.

index values within which to place the limits between the highest, middle, and lowest well-being levels. The decision on where to put the exact limits between the categories should be guided by (1) an examination of the specific combinations of well-being indicators that give rise to index values in the identified ranges, and (2) a subsequent comparison of these ranges with the well-being rankings.

However, because a level of well-being, considered low in one community, may be considered middling in another community, some global well-being lines will have to be determined. Complete association between the index-based well-being categories and the ranking-based well-being categories cannot therefore be expected.

For the Honduras study, judging from Figure 10, the limits between the highest and middle levels of well-being should be sought in the range between 55 and 65 points, whereas the limits between the middle and lowest levels of well-being should be sought at well-being index values ranking from 65 to 75.

The exact limits between the well-being categories, however, were already determined ("Step 3"), based on (1) an examination of the combinations of scores on the individual index-constituting indicators (e.g., housing quality, land ownership, and food security; Table 14)—this time for *all* the households included in the questionnaire survey—and (2) on a comparison of these with the descriptions given in the well-being rankings. The highest level of well-being was defined as composed by households receiving a well-being index value of less than 60.2; the middle level of well-being by households receiving between 60.2 and 71 points; and the lowest level of well-being by households obtaining a well-being index of more than 71.

Figure 11 shows the distribution of households along the well-being index and indicates the limits separating the well-being categories.

In Table 16, the index-based well-being categories are associated with the ranking-based well-being categories. In three of the five communities where both rankings and questionnaires were conducted, a statistically significant association was found. However, once again, the lack of a statistically significant association (in this case, between two communities) seems to be a result of the very small number of observations[19] rather than because of failure in constructing the index-based well-being categories.

Table 16. Index-based well-being categories (WBC), obtained through ranking-based WBCs, per community, using five communities in Honduras. Values refer to number of households for which the index-based WBC associated with the ranking-based WBC.

| Community | Index-based WBC | Ranking-based WBC[a] | | |
|---|---|---|---|---|
| | | Highest | Middle | Lowest |
| San Francisco** | Highest | 3 | 3 | |
| | Middle | | 4 | 6 |
| | Lowest | | 1 | 7 |
| Araulí** | Highest | 6 | 5 | 2 |
| | Middle | 4 | 8 | 14 |
| | Lowest | | 1 | 19 |
| Albardilla | Highest | 2 | | |
| | Middle | 1 | 2 | 1 |
| | Lowest | 1 | 1 | 2 |
| Jalapa** | Highest | 6 | 1 | |
| | Middle | | 3 | 6 |
| | Lowest | | 1 | 5 |
| Vallecillos | Highest | 1 | 1 | |
| | Middle | 1 | 5 | 1 |
| | Lowest | | 4 | 4 |

** = Significant at 0.01 level (chi-square test).
a. The expected frequencies in the individual cells are very low because of the low number of observations per community. Caution should therefore be taken when attempting statistical interpretation.

19. The lack of a statistically significant association is found in Albardilla (as mentioned in "Step 7", p. 47), with only 10 households, and in Vallecillos, with 17 households, of whom only two were classified as enjoying the highest level of well-being, according to both the well-being rankings and the index-based well-being categories (Figure 10).

## STEP 9

# Creating and Using a Regional Poverty Profile

You have now reached the stage where you can make a regional poverty profile. You need to think about the way you will present it to the end user in terms of the maps, figures, and text you will write. You must interpret and summarize your findings to make them obvious to potential users.

Figure 12 presents our poverty profile for the three Honduran watersheds (Río Saco, Cuscateca, and Tascalapa). It tells us that, by percentage, more poverty is found in Cuscateca than in the other watersheds, that is, 44% of the population in Cuscateca belong to the lowest level of well-being, compared with 37% in Río Saco and 35% in Tascalapa.

The profile gives us, not only an idea of the geographical distribution of poverty (i.e., how many poor and less-poor households exist and where), but also important information about poor and not-so-poor households.

Table 17 describes the different well-being levels with respect to the 11 well-being indicators used to construct the well-being index. For example, the table shows that being poor, not-so-poor, and not poor mean slightly different things in the three watersheds. It shows that, in Río Saco, Atlántida, not being poor is strongly associated with being a professional or being involved in trade. This is not so obvious in the other two watersheds: 83% of not-poor households in Río Saco are professionals or traders, whereas this is the case for only 52% and 53% in Cuscateca and Tascalapa, respectively.

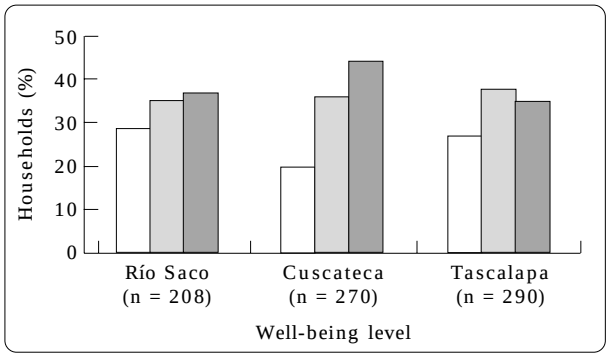



Figure 12. Distribution of poverty in the watersheds of Río Saco, Cuscateca, and Tascalapa, Honduras. (□ = highest; ▒ = middle; ■ = lowest levels of well-being; n = number of households.)

In contrast, agriculture appears to be a much more prominent means of acquiring a high level of well-being in Tascalapa and Cuscateca than it is in Río Saco. In Tascalapa, 85% of not-poor households own large extensions of land, compared with 57% and 63% for the not poor in Río Saco and Cuscateca, respectively. In Cuscateca, 84% of not-poor households produce primarily for the market, whereas this is the case for "only" 54% and 61% of not-poor households in Río Saco and Tascalapa, respectively.

At the other end of the well-being scale, members of 62% of the poorest households in Cuscateca and 66% in Tascalapa are characterized by being primarily day laborers for neighboring farms. In contrast, this characteristic applied to "only" 54% of the poorest households in Río Saco, who, in turn, were more involved in trade and crafts.

When the indicators are combined with the well-being descriptions originally made by the informants, they provide important information for designing and evaluating activities intended to alleviate poverty. For example, for the three Honduran watersheds, especially those of Cuscateca and Tascalapa, we now know that day labor is the principal source of income for a

Table 17. Poverty profile for three watersheds in Honduras, based on well-being-constituting indicators. Values are rounded and refer to percentages of households according to well-being level and watershed. The number of households surveyed in Río Saco = 208; Cuscateca = 270; and Tascalapa = 290.

| Watershed | Indicator | | Percentage of households according to well-being level | | | Percentage of all households |
|---|---|---|---|---|---|---|
| | Group | Description[a] | Highest | Middle | Lowest | |
| Río Saco | Land ownership[b] | ≥4 *manzanas* | 57 | 18 | 4 | 24 |
| | | 1-3 *manzanas* | 7 | 7 | 3 | 5 |
| | | <1 *manzana* | 37 | 75 | 93 | 71 |
| Cuscateca | | ≥4 *manzanas* | 63 | 15 | 0 | 18 |
| | | 1-3 *manzanas* | 7 | 18 | 4 | 10 |
| | | <1 *manzana* | 30 | 67 | 96 | 73 |
| Tascalapa | | ≥4 *manzanas* | 85 | 30 | 4 | 36 |
| | | 1-3 *manzanas* | 8 | 29 | 19 | 20 |
| | | <1 *manzana* | 8 | 41 | 78 | 45 |
| Río Saco | Market involvement[b] | Sell a lot | 54 | 33 | 0 | 26 |
| | | Sell surplus | 29 | 27 | 19 | 25 |
| | | Nothing for sale | 17 | 39 | 81 | 47 |
| Cuscateca | | Sell a lot | 84 | 39 | 9 | 50 |
| | | Sell surplus | 16 | 46 | 50 | 36 |
| | | Nothing for sale | 0 | 15 | 41 | 14 |
| Tascalapa | | Sell a lot | 61 | 27 | 6 | 31 |
| | | Sell surplus | 29 | 37 | 33 | 33 |
| | | Nothing for sale | 10 | 36 | 61 | 36 |
| Río Saco | Cattle ownership[c] | Own cattle | 47 | 8 | 0 | 16 |
| | | Don't own cattle | 53 | 92 | 100 | 84 |
| Cuscateca | | Own cattle | 59 | 11 | 1 | 16 |
| | | Don't own cattle | 41 | 90 | 99 | 84 |
| Tascalapa | | Own cattle | 64 | 19 | 2 | 25 |
| | | Don't own cattle | 36 | 81 | 98 | 75 |
| Río Saco | Animal ownership[b] | Own animals | 67 | 28 | 11 | 33 |
| | | Own only chickens | 28 | 40 | 54 | 42 |
| | | Don't own animals | 5 | 32 | 36 | 26 |
| Cuscateca | | Own animals | 87 | 42 | 19 | 41 |
| | | Own only chickens | 11 | 37 | 26 | 27 |
| | | Don't own animals | 2 | 21 | 55 | 32 |
| Tascalapa | | Own animals | 97 | 71 | 35 | 66 |
| | | Own only chickens | 3 | 21 | 40 | 23 |
| | | Don't own animals | 0 | 8 | 25 | 12 |

(Continued)

Table 17. (Continued.)

| Watershed | Indicator | | Percentage of households according to well-being level | | | Percentage of all households |
|---|---|---|---|---|---|---|
| | Group | Description[a] | Highest | Middle | Lowest | |
| Río Saco | Day labor[d] | Don't day labor | 97 | 75 | 28 | 64 |
| | | Day labor for <3 months | 2 | 13 | 18 | 12 |
| | | Day labor for >3 months | 2 | 13 | 54 | 25 |
| Cuscateca | | Don't day labor | 89 | 59 | 28 | 51 |
| | | Day labor for <3 months | 0 | 12 | 10 | 9 |
| | | Day labor for >3 months | 11 | 30 | 62 | 40 |
| Tascalapa | | Don't day labor | 87 | 48 | 15 | 47 |
| | | Day labor for <3 months | 5 | 20 | 20 | 16 |
| | | Day labor for >3 months | 8 | 32 | 66 | 37 |
| Río Saco | Nonagricultural sources of income[e] | Professional or trade | 83 | 51 | 20 | 49 |
| | | Crafts | 3 | 6 | 12 | 7 |
| | | Farmers or day labor only | 13 | 43 | 68 | 44 |
| Cuscateca | | Professional or trade | 52 | 37 | 8 | 27 |
| | | Crafts | 15 | 15 | 8 | 12 |
| | | Farmers or day labor only | 33 | 49 | 85 | 62 |
| Tascalapa | | Professional or trade | 53 | 40 | 9 | 32 |
| | | Crafts | 6 | 8 | 7 | 7 |
| | | Farmers or day labor only | 41 | 52 | 84 | 60 |
| Río Saco | Employment of day laborers[f] | Employ day laborers | 80 | 47 | 27 | 52 |
| | | Don't employ day laborers | 20 | 53 | 73 | 48 |
| Cuscateca | | Employ day laborers | 91 | 59 | 23 | 64 |
| | | Don't employ day laborers | 9 | 41 | 77 | 36 |
| Tascalapa | | Employ day laborers | 99 | 84 | 59 | 81 |
| | | Don't employ day laborers | 1 | 16 | 41 | 19 |
| Río Saco | Quality of housing[b] | Good | 87 | 36 | 9 | 41 |
| | | Intermediate | 10 | 28 | 12 | 17 |
| | | Poor | 3 | 36 | 79 | 42 |
| Cuscateca | | Good | 56 | 23 | 7 | 23 |
| | | Intermediate | 33 | 47 | 27 | 36 |
| | | Poor | 11 | 30 | 65 | 42 |
| Tascalapa | | Good | 8 | 0 | 0 | 2 |
| | | Intermediate | 73 | 46 | 15 | 42 |
| | | Poor | 19 | 54 | 85 | 56 |
| Río Saco | Food security[f] | No food shortages | 98 | 82 | 42 | 72 |
| | | Food shortages | 2 | 18 | 58 | 28 |
| Cuscateca | | No food shortages | 98 | 90 | 71 | 83 |
| | | Food shortages | 2 | 11 | 30 | 17 |
| Tascalapa | | No food shortages | 86 | 43 | 15 | 45 |
| | | Food shortages | 14 | 57 | 85 | 56 |

(Continued)

Table 17. (Continued.)

| Watershed | Indicator | | Percentage of households according to well-being level | | | Percentage of all households |
|---|---|---|---|---|---|---|
| | Group | Description[a] | Highest | Middle | Lowest | |
| Río Saco | Health problems[g] | No health problems | 90 | 72 | 49 | 69 |
| | | Health problems | 10 | 28 | 51 | 31 |
| Cuscateca | | No health problems | 96 | 74 | 68 | 76 |
| | | Health problems | 4 | 26 | 32 | 24 |
| Tascalapa | | No health problems | 83 | 74 | 57 | 70 |
| | | Health problems | 17 | 26 | 43 | 30 |
| Río Saco | Have economic resources[c] | Savings or lends | 33 | 19 | 1 | 17 |
| | | No savings | 67 | 81 | 99 | 83 |
| Cuscateca | | Savings or lends | 37 | 19 | 9 | 18 |
| | | No savings | 63 | 81 | 91 | 82 |
| Tascalapa | | Savings or lends | 41 | 25 | 9 | 23 |
| | | No savings | 59 | 76 | 91 | 77 |

a. "Manzana" is a local land measure that is equivalent to 0.7 ha (about 7000 $m^2$) that is used in various Central American and Caribbean countries. In some regions, it is the equivalent of 1 acre (6400 $m^2$).
b. Distribution is significantly different with respect to both well-being level (at $P < 0.001$) and watershed (at $P < 0.05$).
c. Distribution is significantly different (at $P < 0.001$) with respect to well-being level only.
d. Distribution is significantly different with respect to both well-being level (at $P < 0.001$) and watershed (at $P < 0.05$), although only for the middle and lowest levels of well-being.
e. Distribution is significantly different with respect to both well-being level (at $P < 0.001$) and watershed (at $P < 0.001$), although only for the highest level of well-being.
f. Distribution is significantly different with respect to both well-being level (at $P < 0.001$) and watershed (at $P < 0.01$).
g. Distribution is significantly different with respect to both well-being level ($P < 0.001$) and watershed ($P < 0.05$), although only for the lowest level of well-being.

substantial group of the poorest households. From the well-being descriptions, we also know that poor farmers would prefer to live off their own land, however small this may be, if they could receive an income equivalent to or higher than what they are already earning as day laborers.

Such information should prompt development workers and researchers to explore options for ensuring poor farmers such a level of income, *given* the limited resources that they possess. Such options should improve the lot of the poor according to their own, and not to some externally defined, criteria.

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