

# Functional classification of undernourished populations in the Republic of El Salvador<sup>1</sup>

## Methodological development

V. Valverde, F. Trowbridge, I. Beghin, B. Pillet,  
Isabel Nieves, Nancy Sloan, T. Farrell,  
P.R. Payne, J.L. Joy and R.E. Klein

*Typical government nutrition programmes usually lack precise information on the size of groups that could benefit from interventions, on the different types of potential beneficiaries and their location, and on socio-economic and cultural characteristics through which they could readily be identified.*

*In the functional classification approach to the definition of nutritional problems, detailed information on human behaviour and social constraints is collected at family and community levels. The data are then interpreted in general terms in order to understand how these factors contribute to inadequate levels of nutrition within larger groups. This new approach should enable more effective measures for reducing the numbers of those living under conditions of deprivation to be presented to planners and decision makers.*

### The concept

A large amount of data has been collected on child malnutrition in Central America and Panama since the 1930s culminating in recent studies by the Institute of Nutrition of Central America and Panama/Office

of International Research, National Institutes of Health (1972), in Honduras by the Sistema de Análisis y Planificación de la Alimentación y Nutrición (1976), and by the Instituto de Nutrición de Centro América y Panamá/Unidad de Análisis del Sector Salud (1976) in Nicaragua. However, their usefulness to planners and administrators is limited, particularly when the attempt is made to establish priorities for regions within a country, to select suitable programmes for dealing with nutri-

tional problems, and to design specific projects for specific regions and subgroups of families within them. For example the questions "what intervention" and "for whom" cannot be answered by data aggregated at national level. This experience emphasizes the need to define the nutritional problems of developing countries in particular, not only in a practical manner but also in one that may be of immediate use.

Such an approach should also lead to a better understanding of the interrelationships between the factors believed to cause nutritional problems. Basic to it is the fact that the population of any given country is heterogeneous, and comprises distinct-

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The authors were, in October 1977, on the staff of the Institute of Nutrition of Central America and Panama (INCAP), Guatemala, C.A., except for F. Trowbridge, School of Hygiene and Public Health, Johns Hopkins University, Baltimore, Maryland; P.R. Payne, Department of Human Nutrition, London School of Hygiene and Tropical Medicine; and J.L. Joy, Department of Nutritional Sciences, University of California, Berkeley, California.

TABLE 1. QUESTIONS TO BE ANSWERED BY THE FUNCTIONAL CLASSIFICATION PROJECT

1. Which regions of El Salvador, described in geographical and administrative terms, have most malnutrition problems?
2. What are the general social, economic and health characteristics of population groups living in different regions?
3. What is the total population of each region and subregion? How many malnourished preschool children are found in each region? What is the approximate number of lactating and pregnant women?
4. What is the relative importance of the different social, economic and cultural factors as causes of malnutrition in each region, and in the distinct categories of population?
5. What is the size of these categories of population and their nutritional status?
6. What kind of programmes are most relevant for the different regions and categories of population? How many people respond to identified programmes?
7. What is the political, economic and operational feasibility of the suggested programmes? Who will finally benefit from them?
8. What amount of economic resources is needed to induce important changes in the number of families suffering from malnutrition in the different regions?
9. How can changes in nutritional status be detected, utilizing the existing information systems?

tive occupational, social and cultural groups. These differences affect both the process by which malnutrition becomes a problem, and the process through which it can be ameliorated or eradicated.

Realizing this, Joy (1973) introduced the concept of "functional classification of undernourished populations", i.e., the grouping of populations into categories that can be used in nutrition and development planning. Each functional category has a set of common characteristics, e.g., the same nutrition problem, or membership of an identifiable group (geographic, socio-economic, etc.). A third characteristic<sup>2</sup> is that the

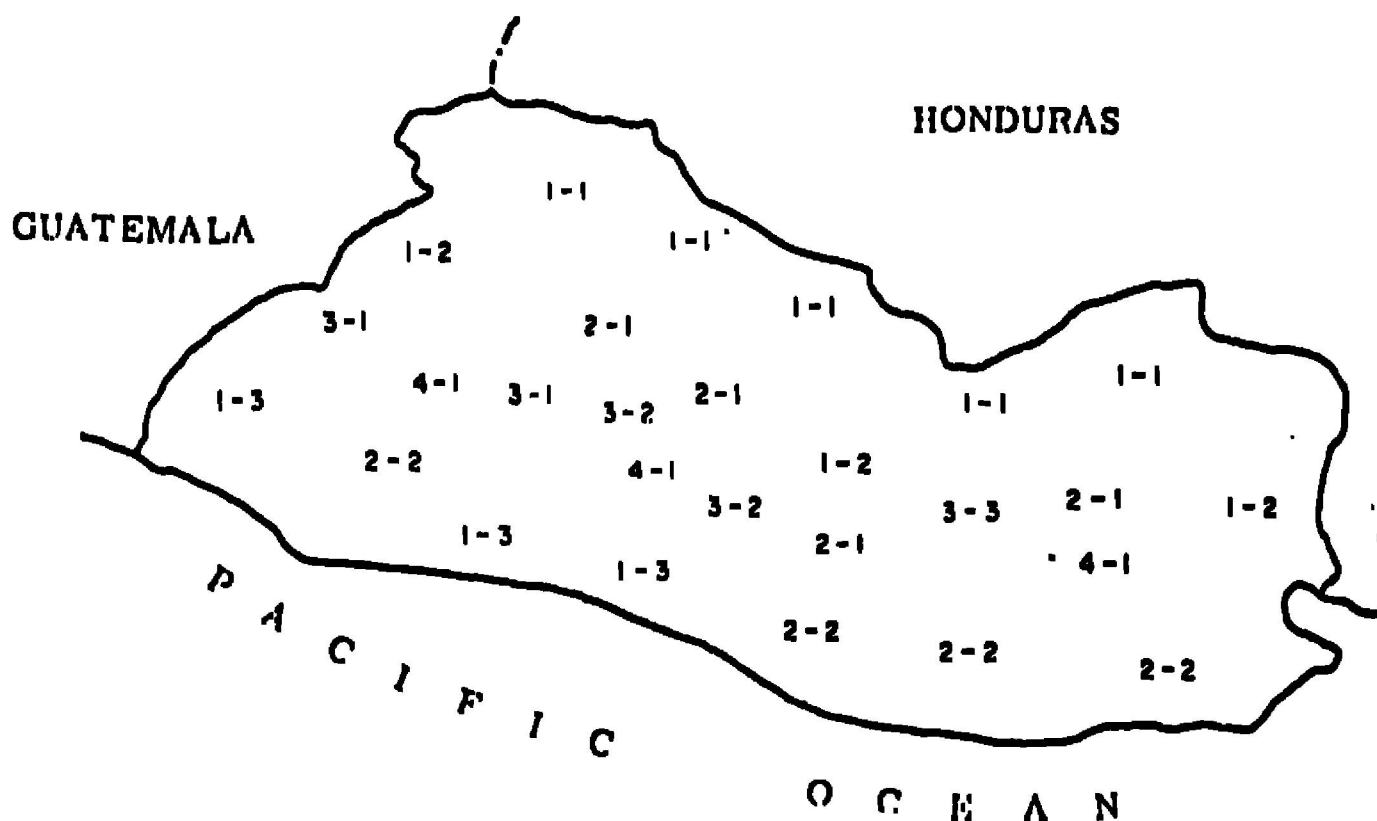
<sup>2</sup> Essential to Joy's approach, although not specifically identified in the quoted reference.

members of a given group have a high probability of responding in the same manner to a given intervention. A fourth category is added in this paper: the feasibility of reaching the group within the existing administrative divisions and through the existing administrative structures.

Hakim and Soljmano (1976) and Payne (1976) have reviewed the assumptions on which previous efforts to integrate nutritional components into national plans in developing countries are based. The need to define the nutritional and food prob-

cupation, and nutritional status of their children.

A "functional classification" of malnourished populations, therefore, is essentially a new way of collecting and presenting information. It differs from earlier approaches in that: 1) it starts from the identification of distinct sets of affected people in a given region; 2) it studies their particular problems, behaviour and expectations in greater depth; 3) it estimates the size of each group; and 4) it attempts to assess their respective problems by region or subregion.



- 1-1) Northern subregion of marginal agricultural exploitation
- 1-2) Central subregion of marginal agricultural exploitation
- 1-3) Coastal subregion of marginal agricultural exploitation
- 2-1) Central subregion of intensive agricultural exploitation
- 2-2) Coastal subregion of intensive agricultural exploitation
- 3-1) Western subregion of coffee exploitation
- 3-2) Central subregion of coffee exploitation
- 3-3) Eastern subregion of coffee exploitation
- 4-1) Urban groups

Figure 1. Location of agricultural subregions and urban groups in El Salvador

lems within the framework of a functional classification has been stressed by Joy and Payne (1975) and FAO (1975). Abercrombie (1975) has also mentioned the importance of identifying sets of categories of poor people as an initial step toward the solution of deprivation. In a recent work carried out in four rural-subsistence agricultural communities of eastern Guatemala, Valverde *et al.* (1977) quantified and characterized families by size of landholdings, oc-

The level of disaggregation of the data collected permits reaggregation according to the needs of the planner: at national level, by region, by administrative division, by socio-economic stratum or by type of employment. This in turn should facilitate identification of relevant programmes aimed at reducing malnutrition in groups of families or individuals in a given region.

A first attempt to develop such a type of methodology was made in

El Salvador, where the Government had expressed interest in this matter and offered its collaboration.

Methodology development

PROJECT OBJECTIVES AND ORGANIZATION

The objectives of the project conducted in El Salvador were first, to update and integrate nutrition and socio-economic information in order to orient the existing programmes, and those to be determined by the future national food and nutrition policy; and second, to develop a methodology for elaborating a functional classification.

A multidisciplinary advisory committee was set up to define the nature and type of data to be gathered, establish the collection methods, prepare a tentative analytic plan and guide the general field operations. A nine-point list of questions, detailed in Table 1, was drawn up.

INFORMATION SOURCES IN THE COUNTRY

A search of the literature for general data on the political, economic, demographic and agricultural conditions of El Salvador produced some useful material, e.g., the national housing, population, and agricultural censuses of 1971, the list of administrative boundaries for each *municipio*<sup>3</sup> of the country, and the 1976 population census giving the number of houses and total population in each *cantón*. Other material was discarded where data could not be disaggregated by regions or subregions, or the methods used for its collection were not considered sufficiently reliable.

DEFINITION OF REGIONS AND ADMINISTRATIVE BOUNDARIES

At the time of the project, regional divisions of the country were being

revised. It was therefore necessary to define regions specifically for the project. This was done on the basis of different patterns of land use assuming that each would correspond to: 1) more or less homogeneous socio-cultural environments, and 2) similar types of nutritional problems.

In order to provide data useful for planners and administrators, the *municipio* was chosen as the most convenient administrative unit since information on *cantón* boundaries were not available. Existing maps of land-use and other survey and census data enabled the country to be divided into three agricultural regions: 1) *marginal agricultural exploitation or of subsistence*; 2) *intensive agricultural exploitation* (cash crops for export); and 3) *coffee production*.

A fourth "urban" category included all *cantones* and capitals of *municipios* with 10 000 or more inhabitants in 1975. Subregions were designated based on geographic criteria to give a total of nine groups located as in Figure 1. The four regions were used as sample frames for all subsequent field activities. Table 2 summarizes the results of the initial classification by region and subregion in terms of land area and population.

USE OF CENSUS INFORMATION

The original data of the population and housing censuses were aggregated and summarized at household level for each of the 2 057 *cantones* of El Salvador. The variables included: sex and age distribution, civil status, family size, occupation, literacy, school attendance, educational achievement, infant and child mortality, fertility, house ownership, type of house, sources of water, waste disposal and home industries. These variables were further subdivided; for instance, water by source, etc. Total numbers and percentages were calculated for each variable and its respective subdivisions. This information, aggregated and summarized by *cantones*, is now in a flexible form and can easily be used in preparing subfiles at the municipal level, or it can be aggregated according to various other criteria, such as the areas covered by health posts, agricultural extension agencies, or interpreted as national averages or percentages. It can also be used to provide characteristics of *cantones* with particular features such as a high level of unemployment, a low level of schooling, etc.

FIELD SURVEYS

Any information considered essential for the project, but not available

TABLE 2. POPULATION/REGION CLASSIFICATION

Region	Subregion	Area	Population	Density
		Km <sup>2</sup>		Pop./km <sup>2</sup>
Urban	Urban <sup>1</sup>		1 154 590	--
Coffee	Western	1 437	304 679	212
	Central	681	124 065	182
	Eastern	408	104 975	257
TOTAL		2 526	533 719	211
Intensive agricultural exploitation	Central	337	137 903	409
	Coastal	3 605	497 905	138
TOTAL		3 942	635 808	161
Marginal agricultural exploitation	Northern	6 560	745 388	114
	Central	4 474	719 077	161
	Coastal	3 531	436 798	124
TOTAL		14 565	1 901 263	130

<sup>3</sup> El Salvador is administratively divided into 14 departamentos, 261 municipios and 2 057 cantones.

<sup>1</sup> All cantones and municipal capitals with a population of 10 000 inhabitants or more.



from existing studies, was gathered through field surveys. Three types of studies were conducted: evaluation of nutritional status, socio-economic evaluation of families, and ethnographic descriptive studies of community life.

#### *Evaluation of nutritional status*

The purpose of this part of the research was to assess the nutritional status of infants and preschool children. This was necessary to identify and establish the extent of potentially important differences in nutritional status between regions, and between categories of population within each region. A sample of 6 409 children of both sexes, aged 6 to 59 months, was taken from 148 communities distributed among all regions. Measurements of weight, height and arm circumference were obtained by means of household visits. The urban sample included only children living in the slums of San Salvador. Anthropometric measurements were also collected from a national sample of 787 children aged 6 to 59 months included in a national survey on vitamin A status conducted by another INCAP group in 1976. This information was then compared with standards for normal children in developed countries, and the results were analysed at the national, regional and, in some cases, sub-regional level.

#### *Socio-economic evaluation of family units*

Socio-economic data on family composition, occupation, education, migration, various indicators of wealth and income, and agricultural production were collected from two groups of the population to identify the family characteristics associated with malnutrition in each region, related factors common to all regions, and to provide quantitative support to the descriptive community studies. A total of 625 "low-risk/well-nourished" families and 625 "high-risk/malnourished" families (having at least one child under 75 percent adequacy of weight for age) were selected from the nutritional status survey in the four regions for comparison purposes.

#### *Descriptive studies on community life*

The rationale for these studies was to obtain a better understanding of the complex interrelationships between social, cultural and economic factors, and those processes related to nutrition and health.

Four communities, each considered to be representative of one of the regions, were selected based on demographic, geographic and economic criteria. The ethnographers lived in each community for six to eight weeks practising the classical methods of anthropological research - participant observation and open interviews. Data were gathered according to a field guide especially designed for this study after consultation with the advisory committee. Subsequently other communities in the same region were visited in order to assess the general applicability of the observations. Finally, field notes were organized, analysed, interpreted and presented in separate reports ac-

cording to the subheading listed in Table 3.

#### DATA ANALYSIS

The process of data analysis was aimed mainly at answering the questions listed in Table 1. The first two, on regional differences and nutritional status, utilized the anthropometric and 1976 population census data. Characterization of the regions in socio-economic terms was based mainly on the information at the cantón and/or municipal level, through the reanalysis of the population, housing and agricultural censuses of 1971.

Information on the nutritional status of children from different family categories (questions 3, 4 and 5) was based on data obtained from the socio-economic and anthropometric surveys. The nutritional status of children from different types of families was estimated, and the total size of these categories quantified using the population censuses of 1971 and 1976.

The issues dealing with the type, relevance and costs of nutritional interventions (questions 6, 7 and 8) required the integration of all data collected. For example, the data allowed an analysis of the effect and response of specific subgroups or populations in a given region, e.g., the response of landless farmers in the subsistence region to programmes of increased land availability and production, minimum salaries, health services, education, and community organization.

Finally, in relation to nutritional surveillance (question 9), the regional anthropometric studies developed as a requirement of this project were useful in validating the nutritional data on children gathered in health posts by government officials. This information, routinely collected by the health services, consists of a basic medical diagnosis of malnutrition and information on weight, as recorded at the first annual visit to the clinic, in selected areas, of all children under five years of age. As a result of this validation of health-post data, the government, using its own informa-

TABLE 3. REPORTS ON COMMUNITY LIFE

#### SUBSISTENCE PATTERNS

- Economic activities and land tenure practices
- Community economics and services
- Household economics

#### FOOD AND NUTRITION

- Food processing and storage
- Diet and eating habits
- Infants' and children's diets
- Beliefs and attitudes related to food

#### HEALTH AND HYGIENE

- Environmental sanitation
- Personal hygiene of mother and children
- Use of available medical facilities
- Associated beliefs and practices

#### CHILD BEARING AND CHILD REARING

- Male-female relations and reproduction
- Pregnancy and child bearing
- Child-rearing practices

#### COMMUNICATION, EDUCATION, CHANGE AND INNOVATION

- Communication
- Change and innovation
- Education and related opportunities



tion system, began implementing a nutrition monitoring surveillance programme in 1977. Other indicators, once refined and validated, will no doubt be incorporated in future years.

### Future improvements

Although many useful lessons were learned from this first attempt to develop a methodology, a critical review of the work in El Salvador identifies aspects that need improvement in the future elaboration of functional classification. Three of these are discussed below.

### ORGANIZATIONAL PROCEDURES

The study showed that community studies and family profiles could be carried out in a period of about 10 to 12 weeks, depending on the size and diversity of the community and the specific nature of the problem. Ideally, the human resource inputs should be trained anthropologists. However, if an appropriate and detailed field guide-line is available, mature personnel with sound foundations in the social sciences will suffice. Furthermore, field work of this nature should be preceded by an exhaustive review of the literature, both with respect to nutritional problems and to the general cultural environment where the research is to take place. It is also especially important that this type of research be carefully supervised by professionals with training in social or cultural anthropology, and that all members of the team are aware of the purpose of the functional classification approach.

### TYPES OF DATA TO BE COLLECTED

The most efficient strategy to be used in this type of project is clearly that of anthropometric studies. However, the sample size in the regions was larger than necessary. Information on 700 to 800 children, derived from 20 to 25 sites chosen randomly in each region, would have provided reliable information on the extent of malnourished children in distinct regions. Although desirable, data re-

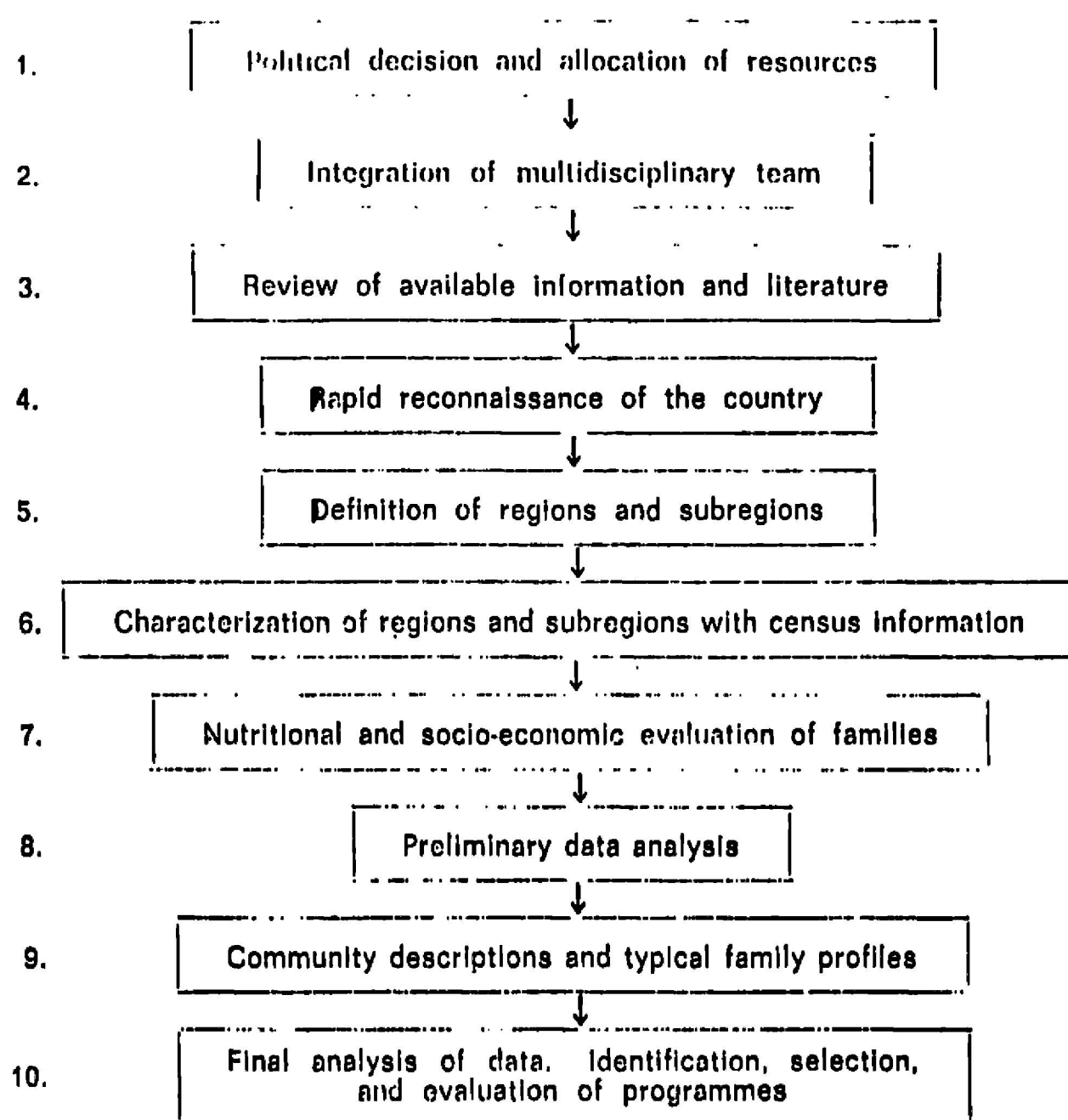


Figure 2. Suggested sequence of steps in the elaboration of functional classification

garding other nutritional deficiencies in groups other than children (e.g., iron-deficiency anaemia in pregnant women) would have increased the cost considerably.

The role of the socio-economic survey at family level is of key importance for the whole exercise, and a detailed definition of variables to be used should be decided upon and defined early in the project. All families chosen for anthropometric studies should be included in the socio-economic survey, since in countries where census data are not available or are unreliable, the representativeness of the socio-economic data is of crucial importance for the project.

Descriptive studies of community life have proved to be useful tools to differentiate problems in distinct regions and to identify relevant measures to reduce them.

Observational studies of typical family profiles, not included in this study, along with community descriptions, would have provided further insights into the nature of the prob-

lem. These will be useful in future to improve the identification process of relevant measures for specific sets of families as well as the potential response to interventions. In fact, family profiles are essential in a functional classification approach since, in conjunction with the community descriptions, they help to answer questions of the following nature:

- In what ways does the family financial situation need to be changed to reduce substantially its risk of malnutrition?
- In what manner might the food habits of a family be changed in order to reduce its risk of malnutrition?
- What forms of social action might achieve the necessary changes?
- To what extent might the overall problem be solved in this way?

### SEQUENCE OF OPERATIONS

Each stage must, in such a complicated series of studies, be carefully planned and phased, and activities

periodically evaluated. An idealized sequence of steps toward elaborating a functional classification is graphically summarized in Figure 2.

Although a functional classification can be used to motivate politicians to allocate resources, it should be preceded by political decisions and resource allocations to combat malnutrition. If this is not the case, elaboration of the classification may simply end up as an academic exercise.

The second step is to establish a group to be directly in charge of the project. Ideally, this should include those who will eventually make use of the information generated.

The third step consists of an extensive review of the existing data relevant to food and nutrition planning, as well as information on the geographic, demographic, social, economic, agricultural and other characteristics of the country. Decisions should be made in the early stages of the project regarding the desirable level of disaggregation of the data for operational purposes. Data files at the chosen level should be established immediately.

The fourth step, critical to the whole process, consists of a series of visits throughout the country to obtain an intuitive understanding of the nature of the problem. Such visits should include informal conversations with a cross-section of local residents regarding what problems they perceive as the most pressing. Also valuable is direct observation of activities related to food production, processing and preparation.

These visits are of great help in the preparation of data-collection hardware and in anticipating potential problems in sampling procedures.

The fifth step is to divide the country into suitable regions. The group should review the pros and cons of using existing regional divisions of the country or of defining new ones. Whatever the final decision, administrative boundaries for each region should be explicitly defined.

The sixth step is the characterization of regions and subregions in general socio-economic terms. This should be done on the basis of all

the information collected by the project hitherto, plus census material. It is essential at this point to discuss the census data files with statisticians and computer programmers, since aggregating or disaggregating the data, and their transfer to a different computer system, for example, and subsequent analysis can be extremely expensive. Such discussions should ensure that the resulting data file is flexible enough for various subsequent analyses. A check on the homogeneity of the regions by socio-economic variables may lead to a reassessment of the initial regional breakdown. Mapping of these variables will indicate the adequacy of the initial regional division.

Thus, the regions with population data will serve as sample frames for the evaluation of nutritional status, socio-economic characteristics of the families, descriptive studies and any other relevant information to be collected.

Once sample frames are defined, one can proceed to the seventh step, that of nutritional and socio-economic evaluations. The ethnographers should join the anthropometry field teams visiting the communities to begin identifying, in regions and

subregions, the communities that fulfil the requirements for the descriptive studies on community life and family profiles. These visits will also provide an excellent opportunity for ethnographers to obtain general information on the regions as a whole, and initiate the collection of notes on community life.

As the eighth step, it is desirable that, before starting descriptive studies at community level, a first attempt be made to analyse the data. Categories of population by region, their size, prevalence of malnutrition and health problems, associated factors, etc., should begin to be identified. This will orient the selection of types of families to be included in profile studies, and focus the latter on specific problems of distinct categories of population. However, the ethnographer should be careful not to allow these preliminary analyses to influence or bias his observations.

Community description and the family profiles follow as the ninth step.

The tenth step consists of classifying categories of population by regions and subregions, estimating their size, and identifying and evaluating possible programmes.

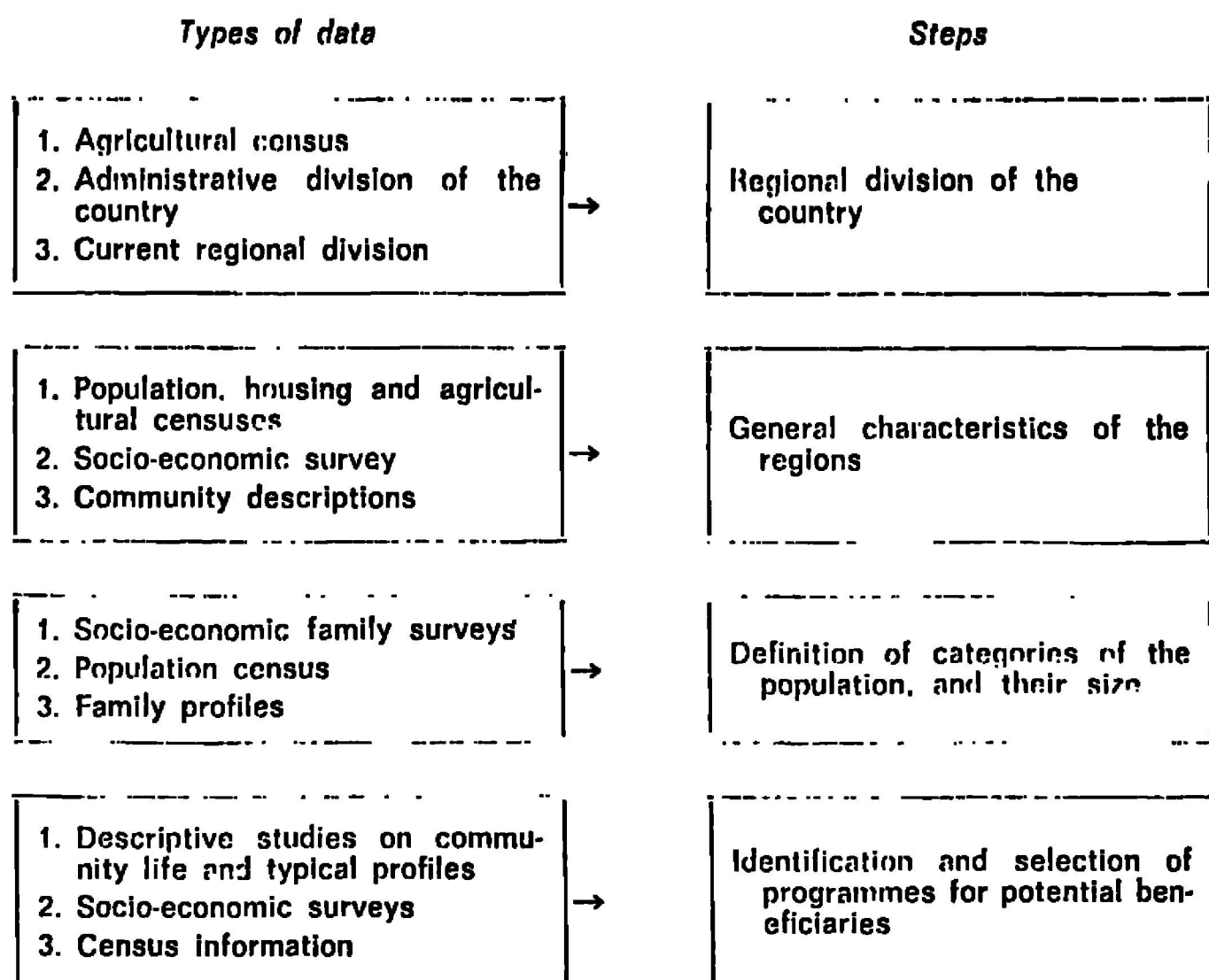


Figure 3. Types of data for different steps of functional classification approaches



Finally, the selected interventions can be integrated in an overall plan for "food and nutrition", "reduction of poverty", "improvement of living conditions", "rural development" or any other desirable title.

The potential contribution of the different data sources in the integration exercise is illustrated, as an example, in Figure 3.

## Conclusion

The El Salvador study confirms the authors' initial concern about the inherent difficulties involved in identifying categories of deprived groups in a population. Nevertheless, based on this study and other work by Valverde *et al.* (1977) and Rawson and Valverde (1976), they believe that methodological problems in adopting a functional classification approach can be overcome.

The elaboration of a functional classification enables the causality of malnutrition to be better understood. However, it does not necessarily identify new and miraculous programmes differing materially from those usually implemented in developing countries. New definitive or packaged answers should not therefore be expected from this approach. There will always be a need for continuous review of results and discussions with planners and administrators.

A functional classification approach is not only valuable because of the type of information it provides for programme design, but also because during its elaboration it raises fundamental questions on the development process of the country. It also shows how programmes not primarily conceived to reduce malnutrition can play an important role in nutrition improvement. A review of programmes in the light of a functional classification and the final selection of the best alternatives can be expected to lead to the appraisal of the political and economic feasibility of proposed measures.

The activities carried out in El Salvador cost approximately US\$100 000. The costs of a new exercise in another country of similar size could

be significantly reduced. The cost of activities, beyond this first phase, cannot be estimated at present. Obviously, the cost and outputs will need to be compared with traditional methods of evaluating nutrition status in order to determine the real value of functional classification.

The El Salvador experience also shows that the marginal extra cost of studying the total framework, instead of focusing the effort of data collection on critical categories of malnourished families, is small compared with the total cost of setting



Village road-making in El Salvador  
A rural development intervention

up the evaluation machinery. Furthermore, if a serious attempt is made to clearly define the nutrition problem, then the process of elaborating a functional classification should be considered as a permanent ongoing process and not as a once-and-for-all venture.

The major findings of this Project have been communicated to the Government of El Salvador. At the present time, the Ministry of Planning is defining the National Food and Nutritional Policy for the country. Based on the national policy, the specific activities to be included in the Food and Nutrition Plan will be

defined. The data from the Project are being utilized by the Ministry of Planning to determine the type and geographical location of programmes to be undertaken.

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