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I N D I C E

	<u>Página</u>
I. INTRODUCTION.....	1
II. SUBJECTS COVERED.....	1
III. CONCEPTS OR DEFINITIONS.....	5
IV. THE CENSUS SCHEDULE.....	5
V. FIELD WORK.....	6
VI. RESULTS.....	7

I. INTRODUCTION

The Experimental Census of Costa Rica represents an attempt to try new ways of obtaining data related to population, which may contribute to improve the quality of the information gathered in the Latin American countries.

The fact that demographic analysis depends on the adequacy of the available data, led the Latin American Demographic Centre (CELADE) to participate in this operation, jointly with the General Bureau of Statistics and Censuses of Costa Rica, the Inter American Statistical Institute (IASI) and the Economic Commission for Latin America (ECLA), Mexico Subside.

Because it is an Experimental Census, not all the questions that are traditionally asked in population censuses were made. That was the case, for instance, with illiteracy. No specific questions on family were included either, although tabulations on this subject have been designed so as to make possible the study of family groups according to some characteristics of heads of family and of their dependents.

II. SUBJECTS COVERED

1. Family. To investigate this subject the question, which is already traditional in population censuses, on relationship of each one of the persons enumerated on a schedule to the head of the household was included. While it is accepted that an interesting experience may result from the study of the different types of family, according to certain characteristics of the family group, due to the limited number of family units enumerated, the tabulations planned in this case do not allow a definite evaluation of results possible.
2. Fertility. Some of the questions included in the census schedule refer to fertility. It is a well-known fact that in most of Latin American countries vital statistics registration is incomplete; in many cases, in order to obtain demographic rates which reflect reality it is necessary to introduce significant corrections. In spite of that, the study of fertility through censuses has not become general. Less than half of the countries that took

censuses between 1960 and 1965 included questions on fertility and, in several cases, they have not been processed in a way that makes the determination of fertility levels possible.

On the other hand it has been verified in two countries -Chile and Venezuela- that census information leads to lower estimates of fertility, than those obtained with data from vital registration of these countries.

These facts suggest that measures must be taken in order to improve the collection of the information on the number of children ever born, which is obtained through censuses.

With this purpose, questions asked to women 15 years and over in the schedule of the Experimental Census of Costa Rica, on total number of children ever born and children born during the year 1967 (the latter tried for the first time in a census) have been arranged in a way other than the traditional, assuming that this will contribute to the improvement of the quality of the information gathered.

The tabulations proposed allow the determination of fertility levels and the study of differentials by educational level, activity, marital status and urban-rural are of enumeration.

3. Mortality. For the developing countries, with deficient vital statistics it is as difficult or even more difficult, to know the mortality level of the population than that of fertility. This is due to the fact that, for estimating the level of fertility, it is not infrequent to have data especially related to it (such as the number of children ever born to women classified according to the age) or census information which indirectly makes it possible to infer, although approximately, the fertility level in the past (such is the case of the age structure of population).

Estimating the level of mortality becomes difficult because, on the one hand, there are no questions in censuses addressed directly at achieving this aim and, on the other, because it is not possible to deduce indirectly, as in the case of fertility, the mortality level of a population in the past on the basis of its age structure.

These are the reasons why questions addressed at gathering information useful to estimate mortality have been tried out in the Experimental Census of Costa Rica. There are two questions: the one related to the number of children born alive who have died, which is asked to women, and the other, which investigates orphanhood.

The first question makes it possible, by classifying the female population by age, to establish relationships among surviving children and children ever born (or children dead/children ever born); from these relationships, mortality in the past can be approximately inferred. The second question makes it possible, by clasifying the population also by age, the elaboration of the proportion of orphans (paternal, maternal or both), which is also an indication from which an estimation of mortality in the past can be derived.

4. Migration. In most of the censuses prior to 1960, almost the only direct way of having an indication on the migratory movements of population, was to utilize the information gathered on place of birth and place of enumeration according to which any person registered in a place other than that of its birth was classified as a migrant; this information was generally obtained and presented at the level of major administrative units (Province, State, Department).

Only in the 1960 censuses and in subsequent ones, this subject has been given more importance; specific questions on place of origin of migrants and duration of residence in the place of enumeration, have been included.

In the Experimental Census, apart from the traditional question on birth place (at the level of minor administrative division and urban-rural), other question has been included, which investigates the place of residence of the population at a date five years before the enumeration, according to the same areas indicated for place of birth.

5. Underemployment. The attention given to the measurement of underemployment by population censuses could be considered negligible, in relation to the importance of the subject. As it is known in developing countries the failure of the system to absorb the available manpower generates different forms of underemployment.

Several indicators have been proposed and utilized to measure under-employment: the number of hours worked during a reference period, the level of income, etc.

In many censuses taken in Latin America, these two aspects have been investigated. This information is of great interest, but it does not allow, of course, an effective measurement of underemployment. For instance, the time worked is perfectly applicable to the urban paid worker; it is less suitable to the own account worker and practically unapplicable to agricultural manpower. Neither the datum on income as an indicator of underemployment in this last sector could be well utilized, since often an important part of income is paid in kind and consequently is difficult to measure, as is the case in regions in which subsistence agriculture prevails.

In order to determine the possibility of obtaining knowledge on this problem, it has been considered useful to test a few questions which refer to new aspects. Concretely, two questions were asked: a) number of persons working at the establishment where the enumerated worker operates and b) number of successive occupations of different kind carried out within the last six months.

The first of the above mentioned topics is particularly applicable to the manufacturing sector, on the basis of the hypothesis that the size of the exploitation unit (measured by the number of persons working) gives an indication of the type of organization and consequently of the productivity level, although that applies, in a more general way, to certain branches of industry. It might also make it possible to distinguish, through the size of the establishment, manpower engaged in commercial agriculture, from manpower in subsistence agriculture.

It is thought that the question on the number of the different kinds of occupations carried out during the last six months (which must not be confused with the number of employments) might afford a useful indication on an element of the instability of employment, which is change of occupation.

III. CONCEPTS OR DEFINITIONS

The following concepts or definitions were adopted for the Experimental Census:

Household: a group of persons, with family ties or not, which lead a life in common under a family system. It may also be formed by only one person. Generally, this group is constituted by the family head, the relatives who live with him, and persons who, by reasons of work or other tie, take part in this life in common. The other persons sharing the household and having their meals together with the family, must be also considered members of the family. Nevertheless, when there are six or more boarders, they shall be considered as a non-family group.

Head of the household: the person who is so acknowledged by the family, be it due to his (her) age, economic characteristic or other considerations.

Orphan: the person, of any age, whose father or mother, legitimate or not, has died.

Size of the establishment where the person works or have worked: Number of persons occupied in the establishment (1 person; 2 to 4; 5 to 9; 10 or over), understanding as such the production unit; that is to say, factory, workshop, etc. which operates as an independent unit, under a single administration, generally in only one place where it produces, transforms, refines or extracts any product or homogeneous group of products or goods. Such concept is applied to all the other activities.

Number of main occupations of different kind: Main occupations or occupations from which the largest income is derived, carried out successively, during the last six months.

IV. THE CENSUS SCHEDULE

The schedule used (one for each family) is divided into five sections. They are:

A. Identification. To register the geographic location of the family whose information is contained in the schedule.

B. General characteristics. It includes questions on relationship to the head of the household, sex, age, marital status, place of birth, place of residence five years before the census and whether orphan or not.

C. Educational characteristics. It consists of questions related to last year approved in the highest level and to the total number of years approved. It was asked only to persons 7 years and over.

D. Economic characteristics. It includes questions on the type of activity, occupation, type of establishment, size of the establishment, occupational status and number of main occupations of different kind carried out during the last six months, which were asked to persons 10 years and over.

E. Fertility. It includes two questions that were asked to all the women of 15 years and over. The first one on the number of children born alive and the second one (only for women between 15 and 49 years) on the number of children born alive during the year 1967.

V. FIELD WORK

According to the purposes of the census, two well differentiated areas were chosen: one purely urban (the city of Grecia) and other typically rural (districts of San José and San Isidro) in the Canton of Grecia, Province of Alajuela.

The following material was utilized:

- a) Census schedule (ECCR-1);
- b) Instructions to enumerators (ECCR-2);
- c) Enumeration Control Sheet (ECCR-3);
- d) Individual files for enumerators (ECCR-4);
- e) Maps of the enumeration segments (subdivisions of districts for census purposes);
- f) Identification cards for enumerators; and
- g) Instructions for editing (ECCR-5)

Both enumerators and supervisors were selected among the permanent staff of the General Bureau of Statistics and Censuses. 30 enumerators and 5 supervisors were appointed. Each enumerator had to get previously acquainted with the contents and handling of the schedule. Instructions were given in five sessions of two hours each.

The field work developed smoothly because it counted with enough vehicles which made it possible to transport the enumerators to the areas which were assigned to them and to exercise a continuous control over the field personnel.

According to the plan outlined the enumeration was started on March 15 and finished on March 19.

VI. RESULTS

It is the purpose of this section to illustrate, with a few examples, the utilization that can be made of the results derived from the census questions on the number of children ever born, the number of children surviving and on maternal orphanhood. The analysis is limited, due to lack of space and time, to only a few elaborations of the above mentioned questions.

As a rule a comparison is made between the known levels of fertility and mortality in Costa Rica with results provided by the census, taken in the Canton of Grecia. If the characteristics of this zone are different from those of the whole country, the comparison will not be valid. It is done, in spite of this, because there are no available estimates related to the zone -not even to the Province of Alajuela. It can be accepted, however, that the Canton of Grecia is representative of the whole country in some aspects (in connection with the level of fertility, for example).

In section (a) the question on the number of children ever born is examined. The analysis consists, basically, in the explanation of the way in which the expected values of the number of children ever born by age are obtained and in the comparison between the estimated values and those observed in the census. Some comments are made in relation to the quality of the information obtained as compared with that usually obtained in censuses and with the estimated, number, supposedly correct, of children ever born.

It is attractive to relate the question on children ever born and children dead to the question on orphanhood. The independent utilization of both questions, in order to derive from them estimates on fertility and mortality,

is not new. Among others, Mortara^{1/} Lotka,^{2/} Brass,^{3/} Burch,^{4/} Henry^{5/} have conducted studies on the subject. The relation between both questions, however, has not been emphasized. It is interesting to consider orphans and children dead as two outcomes of a single event: the death of one of the two components of the group, constituted on the occasion of a childbirth, formed by mother and child. At any time after the childbirth, one, and only one, of these four situations can occur: that mother and child are both alive, that both have died, that the mother is dead and the child alive (orphan) or, finally, that the child is dead and the mother alive (child dead). A census gathers information, from the viewpoint of mothers of all groups constituted (children ever born) and of groups broken by the death of children (children dead); from the viewpoint of the children, of the number of mothers alive and dead (maternal orphans).

In section (b), that deals with the question on children dead, an index measuring the proportion of children dead to total children ever born per woman, by age is examined. It includes one part, analyzing the theoretical way in which the index can be computed on the basis of a life table and a set of age specific fertility rates.

Expected values of the index computed according to model life tables and to an hypothetical schedule of fertility rates are presented together with similar values based on mortality tables and fertility rates for Costa Rica. Finally the theoretical expected values are compared with values derived from the experimental census. The analysis shows the possibility of estimating the level of mortality of a population in the past, on the basis of the results derived from the question on children dead and the utilization of a set of model life tables.

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- ^{1/} Mortara, G.: Revista Brasileira de Estatística, Año VII, Nos. 30/31. "Determinação da fecundidade feminina segundo a idade conforme o censo de 1940, e aplicações ao cálculo da taxa de natalidade, de tábua de fecundidade e do coeficiente de reprodução, para a população do Brasil", Rio de Janeiro, 1948.
 - ^{2/} Lotka, Alfred J.: Théorie Analytique des Associations Biologiques, Deuxième Partie, Paris, 1939, page 112 and following.
 - ^{3/} Brass, W.: "The Construction of Life Tables from Child Survivorship Ratios", Conference of the International Union for the Scientific Study of Population, New York, 1961.
 - ^{4/} Burch, Thomas K.: "Some Social Implications of Varying Mortality", United Nations World Population Conference, Belgrade, 1965.
 - ^{5/} Henry, L.: "Mesure indirecte de la mortalité des adultes", Population, 1960, N° 3, pages 457-466.

In section (c), the question on maternal orphanhood is examined, in a sequence similar to that of section (b). After presenting an index measuring the proportion of maternal orphans in the total number of people of a given age, it is considered first how the index can be computed theoretically, given a life table and set of age specific fertility rates; actual results, derived from life tables and schedules of fertility rates, are presented and these theoretical values, are compared with the results derived from the experimental census. Again, the analysis illustrates the possibility of estimating the mortality level of a population on the basis of information provided by a census through a question on orphanhood and with the aid of a set of model life tables.

