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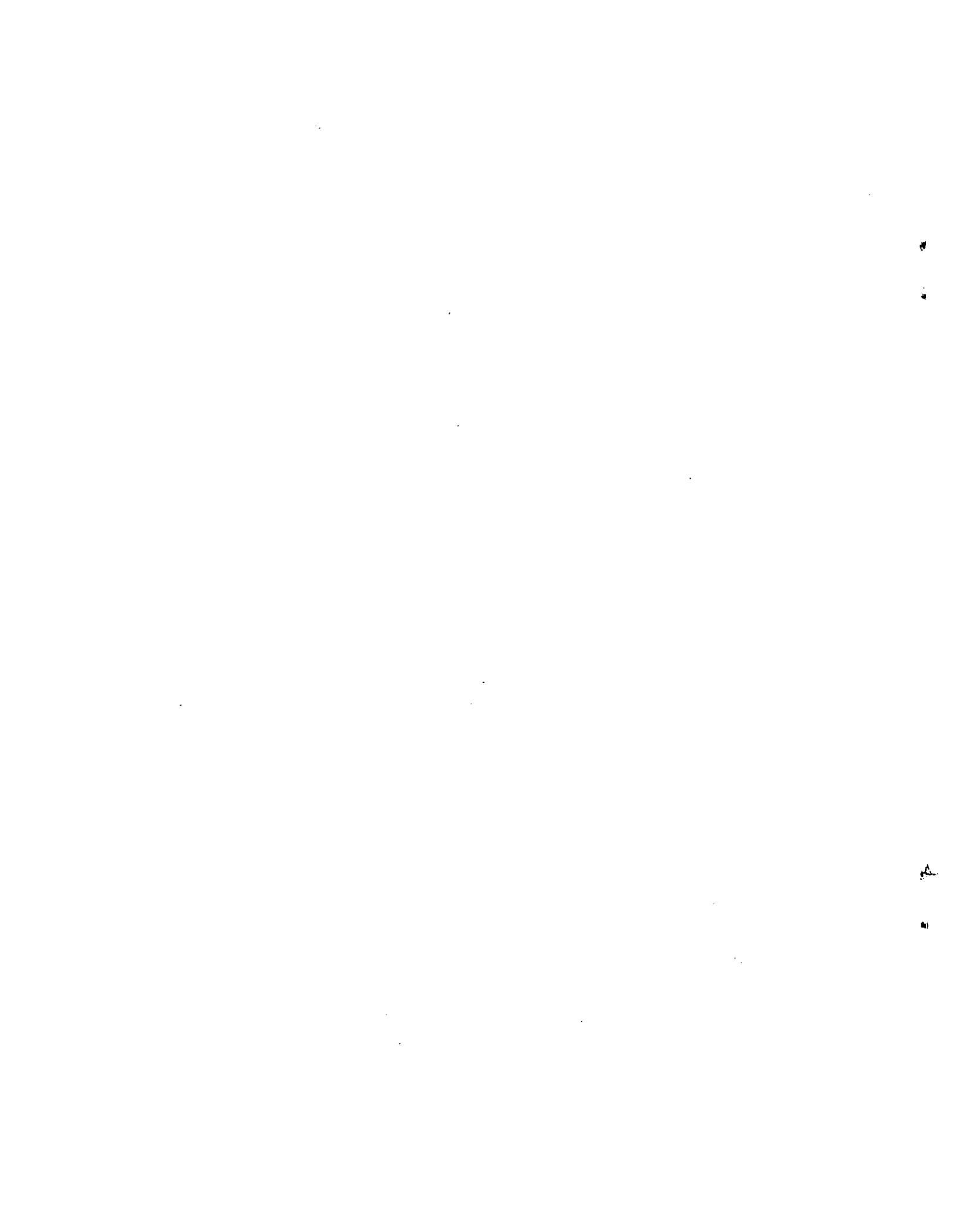
LC/DEM/R.5  
September 10, 1986  
ENGLISH  
ORIGINAL: SPANISH

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**C E L A D E**  
Latin American Demographic Centre

IX Interamerican Statistical Conference  
Rio de Janeiro, 15 to 18 September 1986

**SOME THOUGHTS CONCERNING THE 1990 CENSUSES:  
POSSIBLE AREAS FOR CO-OPERATION**



## LATIN AMERICAN DEMOGRAPHIC CENTRE

### SOME THOUGHTS CONCERNING THE 1990 CENSUSES: POSSIBLE AREAS FOR CO-OPERATION

Population and housing censuses are the best, and sometimes the only, source of information in the developing countries (and particularly in Latin America and the Caribbean) concerning the extent, characteristics and determinants of changes in population. No further discussion would appear to be necessary here of the fact that in most Latin American and Caribbean countries continuous registration systems (vital statistics) are generally marred by serious flaws, which result from these nations' lower levels of economic, social and cultural development. Population censuses will consequently continue to be the most useful means of gathering information about population; moreover, they provide an ideal sampling frame for other activities (surveys) directed towards gaining more detailed information about specific aspects of population.

If decisions concerning how a population census should be prepared, taken, processed, analyzed and published were to be taken jointly by census authorities, users and the persons responsible for managing the nations' finances, it would set a good example. Since a census is a large-scale undertaking, an effort should be made to demonstrate its usefulness to the entire population. It is necessary, therefore, that people be made aware of its importance and of the efforts which governments make to ensure that censuses are carried out largely with their own resources. In order to foster belief in the usefulness of censuses, it is also necessary to ensure that the results are published promptly and that they reach all parts of the country concerned.

To the extent that census results contribute to the formulation of economic and social development plans and, as part of such plans, serve the purposes of regional and local programmes, than the costly undertaking of

Despite the acknowledged importance of censuses, analyses of a number of censuses taken during the 1980s in Latin America and other regions have shown census results to be of lower quality and coverage than the censuses of preceding decades. 1/ 2/ It is therefore necessary to gather all the available information in the region concerning the organization and execution of censuses and to analyze these data with a critical eye in order to achieve an IMPROVEMENT in the quality and coverage of the censuses to be conducted in the 1990s.

There are a variety of reasons for the decline in quality noted in the censuses of the 1980s: inadequate design of census schedules (the format, the number of questions, the order of the questions, etc.), inaccurate phrasing of certain questions, the sometimes incorrect utilization of sampling in this, field problems relating to coding or pre-coding, the automatic assignment of inconsistent or non-existent values, the use of computer equipment for processing the data which is not suited to the particular characteristics of the countries in question, etc. Other problems relate to the unrealistic organization of censuses in a way which is not in keeping with conditions in the countries of the region, the lack of appropriate maps, insufficient training, etc. A more detailed discussion of the problems which have been identified is provided in the papers presented by Arretx/Chackiel and Silva at the Census Evaluation Workshop that was held in Buenos Aires 1/ 3/.

In view of the importance of censuses and the amount of work they involve, it is imperative that steps be taken to ensure the existence of a sound and highly organized infrastructure well in advance (human and material) of the census. In a number of cases it has been observed that the preparatory stages are carried out on an improvised basis due to time constraints which frequently, perhaps, stem from problems relating to the

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1/ Arretx, Carmen and Chackiel, Juan, Algunos problemas relativos a la recolección de datos demográficos en los censos de población de América Latina en la década del 80. Los censos de población de los 80. INDEC, Buenos Aires, 1985.

2/ Asian and Pacific CENSUS FORUM, East West Center Honolulu, Hawaii, Volume 9, Number 3, February 1983.

3/ Silva, Ari, La experiencia en el procesamiento de los censos en Latina en la década del 80. Los censos de población del 80. INDEC, Buenos Aires, 1985.

preparatory stages are carried out on an improvised basis due to time constraints which frequently, perhaps, stem from problems relating to the financing of census operations. The longer before the census date that the preparatory work can be begun, the more efficient the performance of these tasks are likely to be. The most important part of these preparations is the planning of all census activities, the timetable and the organization of the work, including, of course, the assignment of the corresponding responsibilities. The persons responsible for processing the data and the users of the information must work together with the institution in charge of the census in carrying out these pre-census activities. Another very important factor is the advance preparation of the maps to be used so that the best possible census coverage can be achieved and so that they will be available for specific studies that may be carried out later which will use the census as a sampling frame.

The purpose of this brief document is to present some ideas concerning the pre-census activities which have been carried out by the countries of the region with a view to increasing the coverage and thoroughness of upcoming population censuses. These activities can be carried out at two non-exclusive levels of collaboration: one inter-regional co-operation and the other international co-operation.

While no attempt is made to provide an exhaustive list, some pre-census and census activities which should be assigned a high priority are noted below; co-operation among the countries and the co-operation of international bodies are both, of course, called for in conducting these activities:

- a) **Experimental censuses;**
- b) **Seminars or working meetings to provide an opportunity for an exchange of experiences concerning specific subjects;**
  - i) The use of sampling at some stage in census operation;
  - ii) The selection of appropriate technology for census operations;
  - iii) Census organization and the advisability of simplifying data-gathering operations;
  - iv) The entry of information for processing;
  - v) The availability of up-to-date maps.

- c) Determining the content and design of the census schedule;
- d) The organization and taking of the census;
- e) Co-operation at the data-processing stage;
- f) Census evaluation:
  - i) Post-enumeration surveys;
  - ii) Indirect evaluation.
- g) The exchange of census information:
  - i) Census sample programme (OMUECE);
  - ii) Research programme on international migration in Latin America (IMILA).

A brief discussion of some of the ideas underlying the above-mentioned activities is presented in the following sections.

#### CENSUS EXPERIMENTATION

Census experimentation is certainly an important step in planning for the censuses for the 1990s, and it can be carried out on a joint basis by a number of countries, with their varied experiences and differing circumstances. Two types of operations are included in the term "census experimentation".

In the first place, this involves the inclusion of new questions or new ways of phrasing questions concerning a given subject. This type of experimentation could be done in surveys which are conducted for other purposes or as part of an experimental census. Examples of this type of experimentation are the experimental censuses of Comanche, Uyuni and Cliza in Bolivia, which were conducted by the National Statistical Institute of Bolivia in co-operation with CELADE. Another example is the experimental census of Junin de los Andes, which the Fundación Cruzada Patagónica and CELADE will carry out this coming October. In this case, the experimentation will relate to the order and form of questions about the children women have had and, particularly, about the survival of the child born most recently. Experimentation may also be done in connection with other aspects, in addition to the testing of questions.

The second type of experimentation involves conducting PILOT CENSUSES as a means of testing each stage in the census. A number of countries carry out pilot censuses as one of their preparatory stages, but do not analyze

the results. It is ESSENTIAL TO ANALYZE THE RESULTS OF PILOT CENSUSES, since this is the only way to assess the organization, collection and processing of information on an objective basis. Only then will the parties concerned be in a position to introduce the modifications suggested by such analyses. CELADE can provide technical assistance in this respect, and, indeed, has done so in connection with various experimental and pilot censuses.

#### SEMINARS.

Seminars or working meetings, in which the subjects referred to in section (b) could be examined one by one, appears to be particularly needed. Some of the proposed topics are elaborated below; the others are covered in the subsequent discussion of the co-operation possible in the various stages of the census.

#### The use of samples.

With respect to sampling, there are at least three possible uses which can be mentioned:

- During the information-gathering stage;
- As a means of projecting results;
- As a means of assessing the census through post-enumeration surveys.

The use of sampling during the information-gathering stage is dealt with later on in this document where some ideas for simplifying census operations are discussed.

The use of samples as a means of projecting results is clearly an important factor in the rapid distribution of census results (which helps to create confidence in the census) so long as the samples have been properly designed from both a statistical and practical standpoint. Such samples can be used later on for special studies. CELADE supports the use of such samples and can provide technical assistance in connection with their design and preparation.

Countries need to analyze the costs and benefits of post-enumeration surveys before committing resources to such operations, which have not resolved the problem of how to assess the coverage of censuses and the quality of the information they provide. It should be noted that:

- The costs have been very high in comparison to the benefits which have been obtained thus far.
- Skilled personnel are needed to conduct such surveys, and this therefore reduces the supply of human resources available for carrying out the census itself. It would be better to use these economic and human resources to ensure the success of the census.

The selection of appropriate technology.

An analysis must be undertaken, for example, of the use of computer technology in connection with various aspects of census operations for the 1990s; these aspects may range from the initial planning, data entry and preparation of tables to the drafting of specific reports. Microcomputers, in particular, will play a very important role, the nature of which will depend upon the phase of the census operations concerned and the size of the country in question 4/. In addition, the growing use of demographic data in regional, municipal and small-area planning will be furthered by the use of new data storage and processing technology. Using such equipment, population and housing data can be reprocessed rapidly and inexpensively at the user's request; therefore censuses can serve as an important source of information over a span of many years if they are used in conjunction with appropriate projection procedures 5/.

The decision to use a given technology either for census operations or for specific planning purposes should be taken with care in view of the great rapidity with which computer technology is changing and of the fact that the success of a given technology will depend on population size and the conditions in the country in question. It must also be established that

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4/ Silva, Ari, "El procesamiento de los censos de población de América Latina en la década de 1990: Un vistazo al futuro". CELADE, Notas de Población, No. 41, 1986 (en prensa).

5/ Conning, Arthur, Información censal geográficamente desagregada para la planificación en los países en desarrollo. CELADE, Notas de Población No. 39, December 1985. (Originally delivered as an English-language paper at the General Conference on Population held in Florence, Italy, on 5-12 June 1985 under the title, "Geographically disaggregated census data for planning in developing countries").

the approach is fully viable in the particular situation of the country before using it for the full census.

Interregional co-operation among national statistical offices through participation in technical seminars for comparing problems and sharing solutions in this area could help to maximize the effectiveness of new technology, avoid its misuse and eliminate major errors, insofar as possible, both during and after the census. CELADE could provide assistance in organizing and carrying out such seminars, drawing upon the experience it has gained in the course of the technical co-operation it has provided to most of the countries of the region in the preparation of their censuses for the 1970s and 1980s. The Centre has developed programmes for editing censuses (CONCOR) and currently is actively involved in the use of microcomputers for population data processing.

CELADE is also in a position to collaborate with national statistical offices in making population and housing census data available for regional, municipal and small-area planning. As a first step, CELADE will have the REDATAM system ready for use by early 1987; this system, which is currently being tested in two countries of the region, will make it possible to store microdata covering an entire census on standard hard disks for microcomputers (or laser disks at a low cost, for larger countries) and to obtain tabulations for small areas (down to a city block) rapidly and without the services of a programmer. CELADE is also analyzing programming packages which provide suitable small-area population projection methods with a view to their use in the design of plans and activities for such communities.

#### Up-to-date maps

Another topic which could be examined at international meetings is mapping. This topic is of great importance and should be dealt with by experts on the subject.

#### CENSUS SCHEDULE CONTENT AND DESIGN

The census schedule should include only those questions which, in accordance with the needs of each country, are essential in order to provide

information about population size, characteristics and changes. Studies requiring more detailed data should be based on suitable samples.

As regards the advisability of simplifying census schedules, it should be noted that some of the problems encountered in the analysis of the 1980 censuses could have been avoided if a simpler and briefer form had been used. Some of the obvious advantages would be:

- Avoiding the use of sampling, which, in practice, has proven to be complex;
- The smaller size of such a schedule would make it better and easier to handle;
- The costs involved (printing, design, paper, etc.) would be lower;
- The essential questions that would be included -if they were aptly phrased in understandable language- would necessarily yield higher-quality information, as well as permitting greater coverage;
- Instructions would be easier to give and to understand;
- There would be a more positive attitude on the part of both the population and the enumerators;
- The number of missing responses would be reduced and, therefore, the need to fill in missing information would be partly eliminated;
- Tabulations would be simplified;
- The results could be made available sooner than at present.

The idea of a simple and brief census schedule does, of course, involve an unorthodox concept of a population census. Precisely because of this fact, it would be highly advisable for countries to analyze this possibility and to experiment with and propose measures for ensuring an improvement in the censuses of the 1990s without impairing comparability with previous censuses. CELADE has a great deal of experience in relation to the content of census questionnaires and could therefore provide its assistance in this respect. ECLAC and other bodies belonging to the United Nations system could also collaborate in determining the content and design of census schedules.

The simplification of population census forms (or questionnaires, or schedules) in order to improve their quality would, in turn, make it necessary to reduce and simplify the questions asked in the housing census, which is usually taken at the same time as the population census. Questions concerning housing should reflect the basic conditions under which a population lives. In other words, they should provide information concerning the number of people who have drinking water, access to electricity, etc.: in short, what public services are being provided to the population. More specific and detailed questions about housing conditions should be asked in special sample surveys.

#### CENSUS TAKING AND ORGANIZATION

Some comments are called for concerning the simplification of field work which could be put into practice through an experimental census.

One geographic stratification which could serve as a basis for planning censuses in some Latin American countries would be the following:

- A) Large urban centres, which together could account for half and sometimes more, of a country's total population. Good maps of these centres would presumably be available;
- B) Remote zones that are difficult to reach and where living standards are very low, which therefore display an array of characteristics opposite to those of the stratum referred to in (A). The population in these areas is widely scattered and represents a small proportion of the total population;
- C) The rest of the country, i.e., medium-sized and small urban centres and rural areas which have relatively good communications during all seasons of the year.

The tools and methods for gathering information which would be most appropriate to the conditions in each of the above strata could then be anticipated.

The first problem which dividing a country into these three strata would pose is how to arrive at a clear definition of the boundaries between them, especially between strata (B) and (C). This would not be a difficult

problem to solve, however. If the object is to carry out a reliable census with good coverage throughout a country's territory and which would serve the interests of the entire population (including small minorities of little relative importance to the country as a whole), then an effort should be made to develop reasonably strict definitions of the boundaries dividing these three strata.

Once the three strata have been defined, the tools and methods for gathering information which would be best suited to the conditions in them should be carefully studied. Since the conditions in each category would be very different, the adaptation of the census to the specific situation in question would mean that different procedures should be used in each of the three cases.

Despite the fact that, in general, the collection of information in the countries of the region on the basis of samples has not yielded very satisfactory results, a sufficiently large sample could be used in stratum (A) but only if good maps are available and only for purely economic reasons, in order to allow all the data to be collected using the same census schedule as that applied in the rest of the country. Information on the population not included in the sample, within such large urban centres, would be collected using a very brief schedule. This would guarantee that the whole universe was covered. Census tracts should be used as the sampling unit; this unit, of course, has clearly-defined boundaries and the enumerator therefore has no opportunity to take part in selecting the dwelling where he will be to carry out interviews. Another advantage of using the census tract as a sample unit is that the enumerator must use a single questionnaire. The organization of the field work can be planned in such a way that the census could be taken in a single day and would therefore be a de facto census. Finally, the sample should also be large enough so that statistically reliable indicators can be obtained on the one hand and, on the other, so that the representativeness of the universe can be improved. IT MUST BE STRESSED THAT THE USE OF SAMPLING AS A MEANS OF COLLECTING INFORMATION IS ONLY ADVISABLE IN LARGE CITIES WHICH HAVE VERY HIGH QUALITY MAPS.

Field work would be much more difficult in stratum (B), where the conditions would be completely different than in stratum (A), and it would be unrealistic to think that the census could be carried out in a single day

in such remote areas. Careful consideration should be given to carrying out a de jure census; in other words, the implications of carrying out the census over a period of several days, weeks or months (i.e., taking the time needed to ensure good coverage and quality) should be examined. In this stratum, of course, the universal form would be used.

It would also be wise to consider the possibility of combining the census operations in such strata with other activities designed to aid these remote and very needy communities. For example, the health sector could collaborate by carrying out vaccination drives, while staff of the vital statistics system could assist in the collection of information on births, deaths, etc. In short, the census could be coupled with campaigns which would clearly benefit those areas where living standards are low.

In the rest of the country, which would be classified as stratum (C) (i.e., medium-sized and small urban centres and rural areas not included in stratum (B)), it would be more appropriate to have a universal census, since this would be the only way of ensuring a complete enumeration of small population centres and rural zones.

#### INFORMATION PROCESSING

Some collaborative activities in connection with the improvement of census data entry and processing by respecting the particular conditions in each country have already been mentioned in the section entitled "The selection of appropriate technology".

#### CENSUS EVALUATION

The activities involved in evaluating the data should also be regarded as a stage in the census operation, especially in view of the fact that the scope and thoroughness of analyses based on the information that has been collected depend upon such an evaluation. Furthermore, a census evaluation permits problems to be detected and means of solving them to be proposed.

Two methods for evaluating the data are generally used. Although they do not always lead to the same conclusions, these two types of evaluation should be considered as complementary approaches: i) direct evaluation by means of post-enumeration surveys; and ii) indirect evaluation.

Some comments have been made in the course of the earlier discussion of post-enumeration surveys; these included references to some of the constraints entailed by the high financial and human resource costs of such surveys in relation to the benefits they have yielded thus far.

Indirect evaluations are based on an analysis of the internal consistency of the information obtained from the census and on cross-checks with preceding censuses, vital statistics and all other available information which may be of use. CELADE has worked on these subjects in co-operation with the corresponding national bodies.

#### THE EXCHANGE OF CENSUS INFORMATION

CELADE maintains census samples in its data bank that provide a valuable source of information for use in a variety of studies which, because of the costs involved, would be difficult to carry out on the basis of the entire census. In addition, they permit comparative research for the countries of the region to be carried out, primarily by international agencies.

In addition to the promotion of an exchange of experiences in connection with the organization and taking of censuses, there should also be an exchange of census information, particularly with respect to the alien population enumerated in each of the countries of the region. International migration has grown and is therefore a subject which merits serious study in population censuses due, chiefly to the lack of other sources. To this end, the countries of birth of aliens enumerated in a given census should be identified one by one during the collection of information as well as during the coding stage and when tabulations are being generated. This information cannot be collected from a sample population. Such an exchange of information makes it possible to determine, albeit in approximate terms, how many natives of a given country have been enumerated in each of the countries of the region, in the United States, Canada and in some other countries outside the region which have identified aliens' countries of birth. CELADE has vigorously promoted this activity since the censuses of the 70s and, for practical purposes, has referred to it as "Research on international migration in Latin America" (IMILA). The information that has been compiled has contributed greatly to our knowledge about the magnitude and direction of international migratory flows. Nevertheless, this

information alone is not enough to provide a full picture of the true number and characteristics of migrants. In this connection, questions have been being tested since the mid 1970s in an effort to upgrade the available information on this subject, and some countries have already included previously-evaluated questions in their censuses for the 1980s. The results are promising and during the 1990 census round, it is possible that countries where migratory flows are a significant phenomenon may include appropriate questions for measuring and describing these flows.

September, 1986

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