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Systems of Demographic Measurement
The Dual Record System

# The Dual Record System: Retrospective Survey Subsystem

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# The Dual Record System: Retrospective Survey Subsystem

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# Systems of Demographic Measurement

This series of reports entitled *Systems of Demographic Measurement* is a subset of the Scientific Report Series of the POPLAB publications program. Its purpose is to review the range of methods for measuring population change, to discuss the technical aspects of each, and to lay the basis for a comparative evaluation. The reports under "General Evaluation" describe aspects of the measurement problem that can lead to an evaluation of the different methods in terms of these aspects. The reports under "Data Collection Systems" describe and appraise different systems of measurement that have been conventionally used or represent newer methodological approaches. Those under "The Dual Record System" present comparative findings on this system based on the experience of the POPLAB projects; materials from earlier POPLAB publications as well as unpublished data from the planning and various implementation stages of the several projects are drawn upon. Because these provide alternatives for selection and interpretation, inconsistencies are inevitable.

GENERAL EVALUATION:

The Measurement Problem (SR-22, July 1975)

DATA COLLECTION SYSTEMS:

La Méthode de l'Observation Démographique Suivie par Enquête à Passages Répétés (SR-14, August 1974)

National Dual Record and Related Systems (SR-15, November 1974)

El Método de Encuesta Demográfica de CELADE (SR-18, February 1975)

The CELADE Demographic Survey Method (SR-18A, March 1976)

The Conventional Vital Registration System (SR-20, April 1975)

The Single-Round Retrospective Interview Survey (SR-24, January 1976)

The Conventional Population Census (SR-25, February 1976)

THE DUAL RECORD SYSTEM:

The Dual Record System: An Overview of Experience in Five Countries (SR-26, April 1976)

Bibliography on the Dual Record System (Occasional Publication, June 1976)

The Dual Record System: Vital Event Recording Subsystem (SR-27, October 1976)

The Dual Record System: Retrospective Survey Subsystem (SR-29, March 1977)

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SR - Scientific Report Series

## Les systèmes de mesure démographique

Cette série de rapports sous le titre de *Systèmes de mesure démographique* fait partie de la Série rapports scientifiques du programme de publication des POPLABs. Elle a pour but de présenter la gamme de méthodes disponible pour mesurer les changements démographiques, d'examiner leurs caractéristiques respectives et de fournir la base pour une évaluation comparative. Les rapports sous le titre "Evaluation générale" decrivent les aspects du problème de mesure qui se prêtent à une évaluation de ces aspects. Les rapports sous le titre "Systèmes de collecte de données" présentent et donnent une évaluation des systèmes normalement utilisés aussi bien que de ceux qui représentent des innovations méthodologiques. Les rapports sur "La double collecte" fournissent les détails et les résultats des expériences des projets du programme POPLAB dans un cadre comparatif; ces rapports sont basés sur des rapports antérieurs des POPLABs et sur des données non publiées de diverses étapes du planning et de l'exécution des projets. En vue des alternatives de sélection et d'interprétation, certaines inconsistences sont inévitables.

## Sistemas de medición demográfica

Los informes de los *Sistemas de Medición Demográfica* representan un juego de la Serie de Informes Científicos del programa de publicaciones de los POPLABs. Tiene por objeto una reseña de los métodos disponibles para medir cambios de población, tratando los aspectos técnicos de cada uno, suministrando de esta manera la base para una evaluación comparativa. Los informes en la "Evaluación General" tratan de los aspectos del problema de medición que conduce a una evaluación de los métodos a base de estos aspectos. Los informes del grupo "Sistemas de Recolección de Datos" describen y avalúan los distintos sistemas de medición de uso tradicional tanto como las metodologiás más recientes. Los informes del "Doble Registro" ofrecen un recuento de los detalles y de los resultados de la experiencia de los proyectos POPLABs dentro de un marco comparativo: estos informes están basado sobre publicaciones anteriores de los POPLABs y sobre datos inéditos de varias etapas del planeamiento y de la ejecución de los proyectos. Dado estas alternativas de selección y interpretación, ciertas inconsistencias son inevitables.

to our readers || à nos lecteurs || a nuestros lectores

An abstract in English appears at the end of the publication.
Un résumé en français est donné à la fin de cette publication.
Un resumen en español aparece al final de esta publicación.

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# I. Introduction

## A. THE DUAL RECORD SYSTEM

The acceleration of interest in population questions has brought about a scientific reassessment of the sources of demographic data and the realization that these sources are often inadequate to meet the variety of objectives such data are expected to serve. National statistical systems have been traditionally based on the census and the continuous registration of births and deaths. It is widely recognized, however, that the information provided through these traditional methods is frequently deficient when judged against criteria such as timeliness, level of detail provided, accuracy, and sensitivity to change.

It is not surprising, therefore, that in recent years a number of methods for improving the quality of demographic data have been proposed and that some of these are now being tested in a variety of administrative and cultural situations. These methods range from refined analytic techniques of estimation to improved systems of data collection. Among the latter, various methods, including single retrospective surveys, multiple retrospective surveys, modifications of the civil registration system, and sample registration systems, have been proposed and tested.

One system that holds particular interest is the *dual record system*, in which two independent records are collected on each vital event occurring in a sample of geographic areas.[1] These two records are established through a continuous observation recording subsystem and through a retrospective survey subsystem.

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[1]The present report uses the term *dual record system* in a specialized and restricted sense to mean a system in which two specially designed data collection subsystems are used to measure demographic change. Other measurement systems have been based on the concept of linking two or more records, such as tests of the completeness of birth registration through matching with census data. For a review of these investigations see Marks, Seltzer, and Krótki (1974).

The design of dual record systems calls for delineation and mapping of an appropriate number of sample geographic areas or clusters of contiguous households. The size of the clusters and their number and distribution in a country or region depend upon the objectives of the system, for example, the detail of the planned tabulations and the sampling accuracy required, as well as upon administrative and cost considerations.

In each of these sample areas a vital event record is compiled currently for each birth and death by some form of continuous vital event recording. This vital event record is purely for statistical purposes and exists as a temporary confidential record outside the conventional vital registration system. Hence, there are no legal barriers to extending the coverage of items as far as desirable and feasible. The occurrence of each birth or death, as well as a range of important variables related to these vital events, can readily be collected. These data permit vital events to be analyzed in relation to the demographic, social, and economic factors that relate vital statistics to current population problems.

The second record is created by periodic household interview surveys covering the same geographic units. These surveys collect retrospective information on births and deaths. The survey form is also designed to collect information on the current population size to be used in the computation of crude and specific rates and in the analysis of other factors related to population change. Here, again, the item coverage can be extended to a range of variables of special interest for demographic analysis.

The records of events identified by the recording subsystem are matched, on an individual basis, with the records of events identified by the survey subsystem. Further, by use of the Chandrasekaran-Deming formula (Chandra Sekar and Deming, 1949), estimates of the number of events missed by both subsystems and an estimate of total births and deaths are obtained. Since events identified by one subsystem should match with those identified by the other, the dual record system is, to some extent, self-checking and has a built-in quality control feature.

Over the past 15 years, dual record systems of this type have been developed for, and tested in, a wide variety of settings. Some of these have been designed to provide information on the methodological and operational characteristics of the system. This is particularly true of the experiments carried out under the International Program of Laboratories for Population Statistics (POPLAB), University of North Carolina at Chapel Hill (UNC-CH). Other applications are primarily for the purpose of producing direct and usable estimates of the rate of population change in a region or country.

Four major areas of research corresponding to the major operational elements of dual record systems can be identified. These include:

1. Sample design of dual record systems
2. Design of the continuous recording subsystem
3. Design of the survey subsystem
4. Methods of matching and of estimation

It is the third of these, namely, the design of the survey subsystem that is the focus of this report.

### B. SCOPE AND PURPOSE OF THIS REPORT

The objectives of the present report are twofold. First, Chapters II and III provide a detailed description of the methods and operations employed in the several POPLAB surveys. This serves to document such information as well as to provide a comparative framework so that similarities and contrasts among countries can be seen. The second objective, the subject of Chapter IV, is to present and examine research findings relating to the survey subsystem. In particular, attention is directed to efforts to maintain quality control and minimize error.

Numerous secondary sources of information were tapped in the preparation of this report, including prior publications of the POPLAB program and individual POPLAB projects, unpublished tabulations and working documents of the POPLAB projects, conferences with UNC-CH country representatives, and verbal and written communications from country POPLAB personnel.

### C. THE POPLAB PROJECTS

Four of the five POPLAB projects discussed in this report are located in government institu-

tions. These are the Centro de Investigaciones en Métodos Estadísticos para Demografía (CIMED) in Colombia, the Centre de recherches et d'études démographiques (CERED) in Morocco, the Demographic Studies Unit (DSU) in Kenya, and the Demographic Research Center (DRC) in Turkey. The fifth POPLAB, the Mindanao Center for Population Studies (MCPS) in the Philippines is located in a university setting. Myers (1976) provides an overview of the organization and experience of these parent institutions.

# II. Preparing for the Survey

## A. INTRODUCTION

The objectives of the retrospective survey were to provide a population base to be used in the estimation of vital rates, to obtain reports of as many of the births and deaths occurring in the study area as possible, and to provide supplementary information of interest.

The preparatory work involved in developing the survey subsystem of a dual record system is obviously closely related to preparations involved in the recording subsystem. Consequently, much of what is said in this chapter relates to both subsystems. However, special attention is given to those aspects relevant to the survey only.

## B. DEVELOPMENT OF THE OPERATIONAL PLAN

### *1. The Study Population*

The *study population* comprised the population-at-risk to one or more of the events of interest (births, deaths, migration). This involved (among other criteria) reference to geographic area and to time, both of which required careful definition especially in view of the existence of two independent data collection subsystems. Attention was paid to delineating the study area, to the movement of persons into and out of the area, and to the dates of such migration. A description of these activities is given in Section II.C.

As is often the case in social research, institutional populations, such as prisoners, hospital patients, and hostel residents, were excluded from the study populations in all POPLAB projects. Provision was normally made, however, through household membership or residency rules, to enumerate events occurring in hospitals or other institutions to members of the study population.

The unit of enumeration for the study population used by POPLAB projects was the *household*. The definition of household membership can be rather complex and can lead to difficulties in the field. A complex definition covering all eventualities may be cumbersome and difficult to

apply in the interview situation. On the other hand, a simple definition may be interpreted differently by various interviewers and thus lead to error.

In order to qualify for membership (or residency) a person must have resided in the household for a given period of time. Equally, a person must have been absent for a certain length of time before membership was lost. Other factors, such as intention to stay or move away, possession of another legal residence, and temporary absences, were often taken into account. It should be noted that servants, lodgers, and other such persons were usually included as household members. The length of time required to establish household membership was 90 days in MCPS/Philippines, 3 months in DSU/Kenya and CIMED/Colombia, and 6 months in DRC/Turkey. CERED/Morocco defined a resident simply as someone who resided in the household more often than in any other household.

MCPS/Philippines affords an example of the possible complexity of rules used in determining whether an individual is to be included in the study population. After excluding institutional populations, the 90-day residence rule was applied. This stated that a person who had lived or who intended to live in the house for at least 90 days and who slept there more than elsewhere, or slept in the house as often as elsewhere and whose spouse slept in the house, was a resident. In addition, a person who was temporarily away for less than 90 days was considered to be a household member. Students were only defined as such if they were less than 25 years of age: unmarried students were considered residents of their parents' households and married students residents where their spouses lived.

In addition to geographic and temporal considerations involved in defining the study population, careful thought should be given to the choice between the *de jure* population consisting of the household members (as defined above), whether present or absent at the time of interview, and the *de facto* population including all persons present, whether household members or not, but excluding those absent. Adherence to either of these definitions in the field is fraught with complications. For example, persons spending the previous night in the household but having left the household at the time of interview should be included in the *de facto* population since the place where the person slept the preceding night is the criterion usually used to determine presence or absence. However, obtaining interviews with such persons (which may be necessary if the person is a female of childbearing age) is often impossible. This problem can be overcome by including persons who entered the household on the day of the interview and who did not spend the preceding night there, but such provisos introduce onerous complications into interviewer instructions. Obtaining the *de jure* population is equally complex since the detailed rules of household membership have to be followed carefully. For a more detailed discussion of the study population, see World Fertility Survey (1975, Sections 3.1, 3.2, and 7.7) and Marks, Seltzer, and Krótki (1974, Section 4.B.4).

The determination of the study population poses considerable difficulties in the field. For this reason, it may be preferable to collect data for both the *de jure* and *de facto* populations and to separate out the study population at a later stage. This was done by several of the POPLABs. DSU/Kenya collected complete data for the *de facto* population and for additional persons not spending the previous night in the household but who had been away for less than three months. The CERED/Morocco and MCPS/Philippines surveys covered both the *de jure* and *de facto* populations. DRC/Turkey collected data for present and prior household members, and CIMED/Colombia for persons usually residing in the household.

At the tabulation stage, MCPS/Philippines attributed events to their respective populations and adopted a modified *de jure* approach. CERED/Morocco enumerated vital events on a modified *de facto* basis: the habitual residence of the mother or deceased was ignored except in cases where a hospital not located in the cluster was involved (Housni, 1975). DSU/Kenya was able to separate out the *de jure* population for tabulation purposes in most of their survey rounds. However, in Round 2, the data were collected in such a way that the two populations were inseparable and only the "total" population could be tabulated.

*2. Other Definitions*

In addition to the concepts involved in determining those persons eligible for interview, several other terms used in demographic inquiries require careful definition. For example, the definition of *stillbirth* as distinct from *live-born infants who die within minutes of birth* should be clear and precise. The concept of *marriage* usually encompasses both legal and consensual unions, though CIMED/Colombia collected this information in separate categories.

*Migration* is defined only in relation to the resident population. *In-migrants* are persons moving into the study area who qualify for residency by their intention to stay. *Out-migrants* are residents who move away. Hence, persons who move in and out of the area within the length of time required to establish residency are not considered.

*3. Baseline Surveys*

In general, the discussion in this report refers to the retrospective periodic household surveys which obtained information on both the population and vital events. Prior to dual record operations, however, a baseline survey was conducted by several of the POPLABs (MCPS/Philippines, DSU/Kenya, and DRC/Turkey) in order to obtain an initial estimate of the study population.

The MCPS/Philippines baseline survey for the original sample (Adlakha, Booth, and Lingner, 1977) was completed by the beginning of September 1971 in the urban area, and by the end of November 1971 in the rural area. In the new sample areas the baseline survey was conducted during March 1973. Operations were carried out by interviewer-checkers, so called because their duties also included the map-checking and house-numbering operations involved in mapping (Section II.C). As interviewers, they obtained the basic identifying and demographic (age, sex, marital status, and relationship to household head) data for each member of the study population. Data on births and deaths that had occurred since Christmas 1970 were also collected (for the original sample) so that temporally out-of-scope events reported in the first retrospective survey could be identified.

The DRC/Turkey baseline survey was conducted in November 1974 by the survey teams used in the later survey rounds. A list of residents was prepared, and the complete household questionnaire was filled out. This questionnaire was later updated at each survey round (Section II.B.5).

DSU/Kenya conducted a baseline survey in June 1973 (Kenya, Central Bureau of Statistics, Demographic Studies Unit, 1975). The questionnaire was quite detailed, covering name, relationship to head of household, sex, age, marital status, residency status, whether mother and father are alive and whether each person was actually seen by the interviewer. In addition two methods of fertility measurement were tested. Female residents aged 12 and over in one-half of the sample were questioned about the number and dates of marriages; husband's presence or absence; if absent, his age and when he was last seen by his wife; and how many other wives he had. A birth history was also obtained including name of child, whether the birth was a live birth or stillbirth, date of birth, sex, whether child was still alive, whether living with mother, or if dead, date of death. The female residents aged 12 and over in the other half of the sample were asked how many of their children ever born alive (by sex) were living with them, living elsewhere, and had died. Particulars of the most recent birth included sex, month and year, and whether the birth was single or multiple.

A second baseline survey was conducted by DSU/Kenya in January 1975 in 17 new clusters (Adlakha, Booth, and Lingner, 1977). The questionnaire asked for only *de jure* household members to be listed and included only items on name, relationship to head of household, sex, age, and marital status.

*4. Choice of Survey Approach*

The collection of vital events by survey can be done in one of two ways. The first approach is to collect information on population independently at each survey round (without reference to information gathered in preceding rounds) and to ask about events occurring in a defined reference period. The second involves updating the household membership list at successive rounds, thereby obtaining data on births, deaths, and

migrations. Both approaches are subject to error. The first suffers from problems of telescoping and omissions, while the second may miss such events as births to out-migrants, deaths to newborn infants, and deaths to in-migrants, although retrospective questions were used by the POPLABs to elicit these events. Further, the second approach is susceptible to incorrect responses of "no change" given by inattentive or uncooperative respondents or supplied by careless interviewers, and may seriously underreport new households. These problems are discussed more fully by Marks, Seltzer, and Krótki (1974, pp. 178-181). In the POPLAB experience reported here, both approaches utilized retrospective questions relative to vital events—the first approach to a greater extent than the second.

The first approach was adopted by CIMED/Colombia and CERED/Morocco. DSU/Kenya also used this approach in the first two of their 6-month study periods. In the third and fourth periods, however, some respondents were transferred to the second approach, the household membership list being obtained from the previous survey, or from the recording lists.

MCPS/Philippines supplied its interviewers with the household membership lists in the second, third, and fourth surveys. This was felt to be advantageous in obtaining data on deaths and out-migrations, but disadvantageous with respect to births and in-migration. In later periods household lists were not provided.

DRC/Turkey adopted the second approach of updating the household list at each successive survey. The same questionnaire was used at each survey round and changes were made where appropriate.

### 5. *Survey Frequency and Length of Reference Period*

The frequency of surveys in repeated visit situations is determined by several factors. On the one hand, cost and the likelihood of respondent fatigue favor longer intervals between visits. On the other hand, long intervals raise problems of response error (omissions and telescoping) and loss of households due to migration.

Administrative constraints may also help to determine survey frequency. For example, CERED/Morocco was obliged to employ permanent, full-time survey interviewers. This meant that the survey frequency had to be both regular and convenient for field operations. If the interval were too short, interviewing could not have been completed since there was also a shortage of interviewers, and if it were too long, the interviewers would have been idle, though still employed, for several months. These administrative and personnel constraints also meant that interviewing was almost a continuous process and that each survey round took five or six months to complete.

*Reference period*, as used in this report, refers to the interval of time for which retrospective information is sought from the respondent. Retrospective questions relative to vital events were used in *both* of the survey approaches discussed in the previous section, although to a lesser degree in the household update approach. The survey frequencies and lengths of reference period employed by the five POPLAB projects are shown in Figure 1. CIMED/Colombia employed varying frequencies of 3, 6, and 12 months. While it is true of the remaining four POPLABs that a survey was conducted every six months, it can be seen from Figure 1 that not all respondents were interviewed that often.

The length of reference period used by DRC/Turkey was determined by their choice of survey approach. Since surveys were conducted at intervals of six months and since the household list update approach was employed, the reference period was automatically six months. No experimentation on recall length or overlapping periods was conducted.

CIMED/Colombia also employed reference period length identical to survey frequency (though this was unrelated to choice of survey approach), so there were no overlapping reference periods. However, after the initial 3-month experimental survey in both the Santander and Bolívar study areas, surveys with differing lengths of reference period were conducted simultaneously. For the periods 1 October 1971 to 31 March 1972 and 1 April 1972 to 31 March 1973, two of the four clusters within each stratum were surveyed twice as often as the other two clusters. The length of reference period of the first pair of clusters was only half that of the second pair.

This can be seen from Figure 1. In Santander, the pair of clusters in each stratum receiving two surveys differed from the first to the second period, resulting in four combinations.

In the original areas, MCPS/Philippines conducted experimentation with respect to both reference period length and overlapping periods. During the third, fourth, and fifth successive surveys, half of the sample received three surveys with reference periods of 6 months. A further quarter of the sample received two surveys, the first at the end of the fourth 6-month study period with a 12-month reference period, and the second at the end of the fifth study period with a 6-month reference period. The final quarter of the sample received one survey at the end of the fifth study period with a reference period of 18 months. In addition, the surveys at the end of the sixth, seventh, and eighth study periods had reference periods of 12 months; thus a series of overlapping reference periods were introduced in those areas surveyed. The patterns of survey frequency and length of reference period can be seen from Figure 1.

DSU/Kenya conducted similar experimentation. From the beginning of operations to mid-1975, reference period lengths of 6 and 12 months were employed in a complex series of combinations involving overlapping reference periods of 6 months (see Figure 1). Depending on the particular combination, a respondent may have been interviewed by the survey interviewer as seldom as once, or as often as four times.

For reasons already discussed, CERED/Morocco conducted interviews continuously from August 1972 to December 1972 for the first survey, and from January 1973 to June 1973 for the second survey. Since the reference period was the 12 months immediately prior to date of interview, both the reference period and length of overlap differed from cluster to cluster.

### *6. Independence of Subsystems*

As mentioned in Chapter I, the dual record system utilizes two different data collection subsystems, namely continuous observation (or recording) and retrospective surveys. The Chandrasekaran-Deming formula, which uses data from the two sources to estimate number of vital events, is based on the assumption of independence of the two sources. Lack of independence, in the form of positive correlation or collusion, results in an underestimate of events; negative correlation results in an overestimate. Since this formula was used by the POPLAB projects to estimate the number of vital events occurring in the population, various administrative measures were taken to try to ensure independence of the two subsystems. MCPS/Philippines and CERED/Morocco maintained separate field offices for the recording and survey operations. With the exception of CERED/Morocco, recording was suspended during survey interviewing in order to ensure minimal contact and collusion, and to avoid confusing the respondents.

MCPS/Philippines employed the extra precaution of not allowing survey interviewers to work in an area where they lived or had previously lived. In addition, an interviewer was not assigned to an area more than once, and was not allowed to interview a resident recorder unless absolutely necessary. The need for independence between the two subsystems was strongly emphasized during interviewer and recorder training and was reemphasized at frequent intervals. To deter collusion, both the interviewers and recorders were encouraged to be loyal to their own organization.

For administrative reasons, DSU/Kenya employed only one group of supervisors for both recorders and interviewers. This was not thought to be of any danger to independence, since the two operations were not conducted simultaneously in the same cluster. However, within each cluster both the recording and survey operations were supervised by the same person, thus producing a possible dependency between the two. In contrast to MCPS/Philippines, DSU/Kenya preferred interviewers to live in the areas where they worked or at least to be members of the major tribe. This was in the interests of creating rapport and of avoiding transportation problems, but it may have led to some contact with recorders.

In the CIMED/Colombia project, the supervisors of the survey interviewers were instructed to discourage fraternization between recorders and interviewers. CERED/Morocco employed no special precautions against collu-

sion beyond instruction during training. The DRC/Turkey interviewers were instructed not to get in touch with recorders. It is unlikely that there was any collaboration in the urban areas since the interviewers had no way of identifying the recorders. However, in the rural villages, a courtesy visit was paid to the *muhtar* (elected political leader) who was usually involved in the recording subsystem. Some exchange of information may have occurred at this time.

In an effort to maintain independence between the two subsystems, MCPS/Philippines conducted experimentation on the use of incentives to obtain information on vital events. Throughout the whole study a small monetary alertness premium of 3 pesos (about U.S. $.50) was awarded for the first report of a birth or death. Clearly, this system favored the recorders since they made more frequent contact with the respondents. The incentives were believed to produce greater independence between the two data collection subsystems. It is conceivable, however, that they would lead to negative dependence in that a fieldworker may not report events known to be already reported by the other subsystem. However, this was not found to be a problem in MCPS/Philippines.

While it is possible to some extent to maintain administrative independence, there may be other largely unavoidable dependencies in the system. For example, a visit by a recorder may cause the respondent to remember events longer than might otherwise have been so. This may have some effect on the quality of data collected in later surveys, especially with long reference periods. Another source of dependence arises from the fact that events missed by both subsystems may be different in some way from reported events. If this is so, the subsystems are dependent in that they are sensitive to the same type of event. This lack of independence is difficult to detect and control: it may arise from respondent fatigue or from selective reporting (of such events as illegitimate births and socially sanctioned deaths) where the respondent refuses to report events to both the recorder and the interviewer. Respondent fatigue was encountered in significant proportions by CIMED/Colombia, DSU/Kenya, and DRC/Turkey (see Section III.C).

### C. MAPPING OF STUDY AREAS

The identification of area boundaries and of all dwelling units within the study area is important in any household data collection process. In dual record systems this operation is especially important because of the need to cover the same households by the two independent data collection subsystems.

The mapping operations in the five POPLABs differed somewhat depending on the availability of good maps. Where no maps existed or where maps were inaccurate, the area had to be mapped; where existing maps were accurate, the mapping operation was reduced to marking buildings on the map. The buildings and/or households were numbered, and these numbers were entered on the map. Physical, permanent features such as streams, roads, paths, bridges, and churches were used as guides in mapping and were marked on the map as landmarks for the users. The maps were updated at frequent intervals, usually after each survey round.

CIMED/Colombia used the country's 1964 census tracts in sketching the clusters. Checks were made to determine whether each cluster contained approximately 400 dwellings as required by the sample design. In each cluster the dwellings were systematically listed, assigned consecutive numbers, which in some cases were physically posted on the buildings, and marked on the sketch map. The maps and household listings were constantly updated by the recorders and new constructions were assigned numbers. The survey interviewers also updated the maps on their rounds. Nine months after the first mapping operation a second operation was carried out by the recorders. This involved the mapping of segments (there were eight segments per cluster) and the introduction of a new numbering system. Whereas dwelling number 154 had previously represented the 154th dwelling in a particular cluster, the same number later represented the 54th dwelling in Segment 1 of the cluster. This change in the numbering system introduced problems at the matching stage.

DSU/Kenya also used census maps showing the administrative boundaries that delineated the clusters to be used in the study. However, the exact location of the boundaries was often un-

clear in the field and local officials had to be consulted or the mappers had to establish the boundaries themselves. A series of field sketches were made showing the boundaries, roads, and geographical features. The final sketches were drawn in the office, since fieldwork was time consuming and difficult because of such problems as rain, bush, and snakes. Though the buildings were plotted on the maps by sighting from at least two reference points, the resulting locations were later found to be rather inaccurate. Most buildings were numbered in the field. For some areas numbering was done in the office but this proved to be unsatisfactory. Other difficulties in the mapping operation included language problems, rivers being known by different names along their course, and difficult terrain. Corrections were made during the baseline survey.

In mapping the 17 new clusters, DSU/Kenya conducted considerable experimentation using aerial photographs, topographic maps, and cartographic enlargement procedures to form the area boundaries. This procedure (Kenya, Central Bureau of Statistics, 1975) greatly reduced boundary errors and dependence on rough sketch maps, and was felt to be more accurate, easier to apply, and cheaper than the initial procedure.

For the urban area of the MCPS/Philippines study, land title maps were available. These were enlarged and all buildings were entered on them by a staff of four mappers. During the baseline survey, each inhabited building was assigned a number in the field by a team of interviewer-checkers, and tin plates bearing the numbers were affixed to the buildings if the consent of the resident was obtained. The maps were revised in the field as necessary. For the rural areas, the lack of suitable maps made the mapping operation much more difficult and lengthy. Six extra mappers were recruited and trained for several weeks. After the boundaries had been mapped, all buildings were marked in. The interviewer-checkers checked that all buildings had been included and then numbered the inhabited buildings, affixed the number plates, and corrected the map as necessary (Madigan, et al., 1973; Madigan and Abernathy, 1975).

The urban area of the CERED/Morocco study was also better mapped than the rural area. The 1971 Population and Housing Census provided maps of the urban districts, the limits of which were verified. All streets and constructions were indicated on the maps. In most cases the municipal numbers were used to identify the buildings, but if no such number existed a number was assigned and painted in black on the building. For the rural areas, topographical maps were used as a basis. Cluster and subcluster boundaries were shown on a second set of enlarged maps, which also accommodated all constructions and their numbers. Subcluster delimitation and the location and numbering of buildings were done in the field. The numbers were painted on the buildings in black paint. They began with the subcluster (or daily task) number; for example, buildings in Subcluster 3 were numbered 300 to 399 (Housni, 1975).

The complete mapping operation for DRC/Turkey was carried out by the Census Geography Division of the State Institute of Statistics. However, in some of the rural areas where entire villages were included in the sample, no mapping was carried out. During the baseline survey, the interviewers checked map boundaries (where relevant), prepared the list of structures, and at the time of interviewing prepared a register of residents.

## D. DEVELOPMENT OF QUESTIONNAIRES AND FORMS

### *1. Introduction*

The household questionnaires and birth and death reporting forms used in the survey subsystem were designed and developed by the individual country POPLABs. The basic content of these forms is the same for each POPLAB, though they differ somewhat in detail, length, and format. Reproductions of some of these questionnaires and forms appear in Madigan and Abernathy (1975), CIMED/POPLAB staff (1973), Housni (1975), and Kenya (1976). In most cases, several versions of each form were developed as more experience was gained in question wording and interviewing.

### *2. Household Questionnaires*

The basic demographic and social data for each household were collected by means of the household questionnaire. The content of this

questionnaire for each of the POPLAB projects is shown in Table 1. From this table it is obvious that the content of the questionnaires changed somewhat from one survey round to the next. This was partly because some data did not need to be collected more than once, and partly because there was the need to maximize the total amount of information collected while keeping the questionnaires short.

The amount of detail required in identifying a household was approximately equal for the five POPLABs; this included administrative or political region and subregion, cluster number, dwelling number (except DRC/Turkey), and household number. For some variables, the amount of detail collected differed from POPLAB to POPLAB. For example, CIMED/Colombia collected quite detailed data on employment, including whether or not a person was currently employed, whether looking for work and how actively, reason for not working, months worked, hours worked, and income. Such detail is not shown in Table 1.

The CERED/Morocco birth history collected during the second survey included the length of intervals between first marriage and first birth, all successive births (up to the seventh), and first and second marriages. Information was also obtained on age at first and second marriages, age of first husband, duration and reason for termination of first marriage, and number of pregnancies.

The birth history questions in versions A and C of the DSU/Kenya questionnaire were asked of all women aged 12 years and over. For each live birth, data were obtained on the date of birth and the sex of the child. If the child was still living the name was reported; if the child had died age at death was reported.

### *3. Birth and Death Reporting Forms*

During the household interview, questions were also asked about births and deaths occurring during the reference period. These events were recorded in detail on specially designed birth and death forms. Tables 2 and 3 give the content of the birth and death reporting forms, respectively, and indicate the burden to the respondent by means of summaries of numbers of questions asked. Some of the data reported on these forms duplicate data already collected in the household interview. These data are for identification purposes and for use in matching the events with those reported by the recording subsystem.

### *4. Migration Reporting Forms*

CIMED/Colombia, DSU/Kenya (first survey round only), and MCPS/Philippines collected data on migration, in addition to that on the household and vital events. These data were not only of interest in themselves but also were important in identifying births and deaths that might otherwise not have been reported. Both births occurring to resident women who later moved out of the study area and deaths of persons who had moved into the area during the reference period, and who qualified for residency, should be included in the number of events reported.

The content of the migration reporting forms is shown in Table 4. Data on migration were collected by MCPS/Philippines during the first five successive surveys. For later surveys, however, the migration questions were incorporated into the household questionnaire, with information reduced to migration status and the date of any change in status. This meant that complete household data were directly available for each migrant.

CIMED/Colombia collected migration data on the household questionnaire in such a way that the household information was automatically collected for in-migrants (defined as those born in a different site) who qualified for residency. Some additional data on in-migrants were reported and are shown in Table 4. Data on out-migrants are also shown in Table 4.

### *5. Precoding*

The questionnaires and forms used by CIMED/Colombia were entirely precoded. The DRC/Turkey interviewers reported the data in code form, though the questionnaires were not fully precoded. However, only one question, that on occupation, needed to be coded in the office. Some of the easier questions on the MCPS/Philippines forms were precoded, while CERED/Morocco used no precoding at all. DSU/Kenya used no precoding in their household question-

naires during the first two survey rounds. However, during the third and fourth rounds the questionnaire was almost entirely precoded, with only relationship to head of household coded in the office. The birth and death forms were coded in the office on separate coding sheets. In general, keypunching was done directly from the questionnaires and forms, except in the case of DSU/Kenya events.

### 6. *Pretesting*

The questionnaires and forms were pretested by CIMED/Colombia, MCPS/Philippines, and DRC/Turkey. This involved conducting complete or partial interviews in households not included in the study area. Difficult or ambiguous questions were thus identified and modified.

Prior to completion of the questionnaire, CIMED/Colombia pretested draft versions in Bogotá; this resulted in numerous alterations. The first surveys in Santander and in Bolívar, each of which had a recall period of three months, were also regarded as experimental and led to revisions. MCPS/Philippines followed a similar procedure: some questions were pretested in a small urban area outside the study area, and the first survey was also used as a pretest. The pretest undertaken by DRC/Turkey consisted of a complete pilot survey in seven areas not included in the national sample.

## E. SURVEY PERSONNEL

### 1. *Organization of Personnel*

Two approaches to personnel organization were employed by the POPLAB projects. These were the single-interviewer approach where each interviewer works independently, and the team-of-interviewers approach where several interviewers, usually accompanied by a supervisor, work together.

The team approach was adopted by CIMED/Colombia, CERED/Morocco, and DRC/Turkey. CIMED/Colombia worked on a cluster basis: with each cluster divided into eight segments, each interviewer was assigned one segment in which to work. CERED/Morocco operated on a similar basis: each cluster was divided into five subclusters affording one per interviewer. The DRC/Turkey team leaders divided each cluster among the interviewers after arrival in the field.

The adoption of the team approach meant that within an area or cluster, survey operations could be completed in several days, so that it was possible to suspend recording operations and thereby aid independence. (Only CERED/Morocco did not do so.) In addition, the team approach afforded greater supervision and allowed field verification to be carried out before the interviewers left the cluster.

The single-interviewer approach was adopted by MCPS/Philippines and DSU/Kenya. In both of these POPLABs recording was either suspended during interviewing or organized in such a way that recorders and interviewers visited a cluster at different times. It has been argued that this approach has the advantage of clearly defining an interviewer's responsibility. However, with the careful division of each cluster into individual interviewer assignment areas in the team approach, this argument is largely nullified.

### 2. *Interviewer Recruitment and Characteristics*

The survey interviewers employed by the five POPLAB projects varied according to the needs of the particular country and to the availability of personnel. A summary of their main characteristics is presented in Table 5.

CIMED/Colombia intended sex and educational level of interviewers to be design variables so that equal numbers of males and females and of high school graduates and university graduates were sought as interviewers. These ratios, however, could not be attained, partly because of insufficient numbers of women with the desired educational levels and partly because women could not be assigned to areas at random for personal safety reasons. In addition, the higher educational requirement had to be relaxed to one or two years of university education. On the average, the interviewers were young, especially in Santander where the majority were students. This was not a requirement for the position, but resulted when the older candidates dropped out during training.

During the first study period of the MCPS/

Philippines project, 17 interviewers were employed in the urban area, and 23 in the rural. These numbers were increased slightly for later surveys, but no additional interviewing positions were created for operations in the new study areas which began during the fifth study period. Most of the urban interviewers were females. Rural interviewers were fairly evenly distributed by sex. Candidates for interviewing positions were given an IQ examination, abstract reasoning test, personal interview rating, and were examined during training on concepts, techniques, and interviewing skills demonstrated in practice interviews. They also had to be able and willing to walk long distances over hilly terrain.

CERED/Morocco obtained its interviewers from existing government personnel. Consequently, they were full-time, permanent, male (for prevailing cultural reasons) employees. Since there was a shortage of interviewers, they were required to pass only the routine entrance examination of the Statistical Bureau, covering French, mathematics, and Arabic. Most of the interviewers had some relevant experience (35 percent had worked with the Population and Housing Census) and only 10 percent had no experience at all.

DSU/Kenya was able to recruit its interviewers from a large pool of candidates and to employ them on a temporary basis. In the interests of creating rapport with the respondents and of avoiding transportation problems, preference was given to people who lived close to their respective clusters. The basic educational requirement was completion of primary education (about seven years of school). In practice, however, rather higher standards were met.

The DRC/Turkey interviewers were already full-time employees of the State Institute of Statistics and were, therefore, experienced in interviewing. They were employed in the POPLAB project for the duration of interviewing only.

### 3. *Interviewer Training and Final Selection*

The recruitment of the interviewers has been described in the preceding section. However, except in CERED/Morocco, where all candidates who passed the entrance examination were accepted, final selection of interviewers depended on performance during training.

The length of the interviewer training varied somewhat from project to project. CIMED/Colombia gave 6 days training, DSU/Kenya 5-11 days, CERED/Morocco 15 days, and MCPS/Philippines 3-4 weeks. The DRC/Turkey interviewers were given 1 or 2 days of orientation since they were already experienced in interviewing techniques. In all cases, manuals were provided for use in training and as reference tools.

The training programs prepared by CIMED/Colombia, MCPS/Philippines, CERED/Morocco, and DSU/Kenya were all similar. They included an explanation of the purposes of the study and survey, a guide to the maps and their use, a clear definition of the terms involved (e.g., resident, stillbirth) and instruction on interviewing techniques and filling out the questionnaires and forms. Simulated interviews were also conducted as part of the training. CIMED/Colombia, CERED/Morocco, and MCPS/Philippines examined the trainees by means of written tests and supervised interviews in the field. CIMED/Colombia and MCPS/Philippines selected interviewers on the basis of their performance during training and in the final examination. DSU/Kenya also evaluated performance during training.

The temporary nature of the work meant that CIMED/Colombia, MCPS/Philippines, and DSU/Kenya conducted training sessions prior to each survey. MCPS/Philippines required all interviewers to attend training regardless of experience in earlier survey rounds. This was to guard against slackness on the part of the interviewer; in a few cases interviewers with prior experience failed to pass the examination at a later round.

### 4. *Supervisors*

In all of the POPLAB projects discussed in this report, the survey interviewers were supervised in the field. Where teams of interviewers were employed, there was one supervisor per team. CIMED/Colombia thus employed five supervisors during the first study period and three during the second.

The CIMED/Colombia supervisors were

trained informally by the field directors. The CERED/Morocco supervisors received the same training as the interviewers and were, in fact, chosen from the supply of interviewers on the basis of performance during training. The DSU/Kenya supervisors received both interviewer and special training and later helped to train the interviewers. The DRC/Turkey supervisors, or team leaders, took part in the interviewer orientation and also received an extra half-day of instruction on their supervisory functions. During the first survey, MCPS/Philippines supplemented its supervisors (ex-teachers and graduate students) by more senior personnel. In later rounds, competent interviewers were recruited for these positions.

The duties of the CIMED/Colombia supervisory personnel involved distributing work to the interviewers in their team, observing some of the interviews, assisting in any difficulties that arose, collecting and reviewing the forms after completion, and completing or attempting to complete interviews not obtainable by the interviewers. Some reinterviewing was done by the supervisors as a means of quality control. In addition they reviewed the material at the office and prepared résumés on the work of the interviewers. The supervisors edited and coded the questionnaires both in the field and in the office.

The DSU/Kenya supervisors were recruited on an "in-house" basis from the Central Bureau of Statistics, rather than from their area of work, so in some cases they were unable to speak the local language. They were all males, aged 20-30 years and each had four to five interviewers to supervise. Their duties required them to: be thoroughly familiar with the area in which they worked, manage the questionnaires and supplies, provide liaison between the interviewers and area office, help with any problems that might arise, check that the interviewers were working properly, correct mistakes, and fill out work report forms. In addition to their survey responsibilities, the DSU/Kenya supervisors were responsible for the supervision of the recorders.

In the CERED/Morocco project, the supervisors were instructed to make contact with the local authorities, liaise with the central office, assign interviewer work loads, and help in difficult situations. The supervisors observed interviewers, reread forms, and reinterviewed on a sample basis. Completed forms were also collected and dispatched.

The MCPS/Philippines supervisors went into the field with the interviewers to point out the area boundaries. They attended the first few interviews and later made surprise visits to ensure that interviewers were working properly. Checks on interviewing techniques were made as well as on the information obtained. All birth and death forms were verified by reinterview by the supervisor. Field edits and central office edits were also carried out by the supervisors; they were also encouraged to code as much of the forms as possible since they tended to be more careful than the coders who had less interest in the work.

The 25 team leaders in the DRC/Turkey project were responsible for updating the maps and listings and for ensuring that every household was interviewed. They also checked that the interviewers carried out their responsibilities, edited all forms before leaving the area, and arranged for missing data to be obtained. It was also their responsibility to establish and maintain complete privacy of the data.

### 5. *Compensation of Interviewers and Supervisors*

MCPS/Philippines paid its interviewers by the hour rather than by the interview, so that interviewers would not be encouraged to hurry interviews at the expense of obtaining high quality data. Supervisors were paid by the day. Salaries were comparable to those paid in positions requiring similar background and skills.

CERED/Morocco paid the same monthly salary to both interviewers and supervisors. The amount was that received by other civil servants in the second category of the 11-point ascending scale. Travel expenses were also paid.

Remuneration of the CIMED/Colombia survey field staff was also in keeping with the salaries of Colombians with similar qualifications. Interviewers and supervisors working in the rural and semi-urban areas (all personnel lived in the urban area) received an additional 25 percent to cover per diem expenses. Those supervisors who were required to move about constantly were also reimbursed for travel expenses. The tem-

porary nature of the work meant that fringe benefits, normally accruing to government personnel and equivalent to 30 percent of the salary, were not applicable.

The DSU/Kenya interviewers were paid a monthly salary and house allowance, and were reimbursed for transportation costs including a bicycle allowance for the upkeep of bicycles used in fieldwork. The DRC/Turkey interviewers were paid on the government scale according to their level of education. They also received per diem and travel expenses in the field.

### *6. Turnover of Interviewers and Supervisors*

Temporary personnel were employed by CIMED/Colombia, MCPS/Philippines, and DSU/Kenya. CIMED/Colombia employed interviewers for one month and supervisors for six weeks, since they had extra duties such as coding to complete. MCPS/Philippines employed both interviewers and supervisors for two to three months. DSU/Kenya hired interviewers for one to two months; their supervisors were permanent since they also supervised the recording.

CIMED/Colombia's need for temporary personnel was counter to regulations requiring all government personnel to be permanent employees. This problem was solved by issuing a special governmental resolution prior to each survey, providing for the right to hire temporary personnel. A similar situation was encountered by CERED/Morocco. However, it was resolved differently, by extending interviewing for each survey to a five- or six-month period, so that the small group of permanent interviewers were fully occupied.

The rate of turnover of interviewer personnel varied from project to project. CERED/Morocco reported a zero rate of turnover for the 12 months of field operations. This probably arises from the fact that Moroccan government personnel are rarely dismissed. Similarly, DRC/Turkey experienced very low turnover since the interviewers were already employed by the State Institute of Statistics.

CIMED/Colombia employed students as interviewers in Santander; this resulted in a high turnover rate. In Bolívar, however, turnover was much lower, and several interviewers remained for the duration of the study. In general, good interviewers were rehired, though not necessarily in the same position. Two survey supervisors were rehired for the second and third surveys; for each of the fourth and fifth surveys, however, new supervisors were recruited since new personnel were considered to be more highly motivated. In Bolívar, because of lack of qualified personnel, supervisors were obtained by promotion of interviewers.

There was a large pool of applications for the MCPS/Philippines interviewer positions, and interviewers were not encouraged to return for future survey rounds. This was to prevent them from becoming "too clever" and from finding shortcuts in their work. In the urban area, new interviewers were recruited for almost every position. In the rural area, however, where the potential problem was not so great, about half of the original 23 interviewers worked for two or three consecutive rounds, and a few were promoted to supervisors and remained for all eight rounds. Turnover within each 6-month period was moderately low. In the first period 6 (out of 40) interviewers resigned and in the second period 5 (out of 40) resigned. Reasons for resignation were: finding better employment (accounting for 7 of the 11 resignations), needing to devote more time to studies (2), and sickness (2).

DSU/Kenya also had a large pool of candidates from which to obtain their interviewers. The turnover rate was high, only 10-20 percent returning for later rounds. In some cases, however, interviewers were employed as clerks or recorders after a round of interviewing had been completed, thus making them ineligible as interviewers in future surveys. Turnover among the supervisors was also moderately high.

# III. Conducting the Survey

## A. PREPARATION OF THE COMMUNITY

In any system of data collection involving direct contact with respondents, it is important to prepare the community before operations begin. This usually results in a lower refusal rate and in greater cooperation on the part of the respondent, which perhaps leads to better quality data. The importance of this community preparation in dual record systems is increased by the requirement of two independent subsystems of data collection. In any research period, the respondent is visited once by the survey interviewer and a number of times by the recorder. As discussed in Section II.B.6, dependence of the two subsystems is introduced when there is a significant proportion of respondents who refuse to give information to both the survey interviewer and the recorder.

The importance attached to community preparation and to gaining cooperation varied somewhat among the POPLAB projects. The Moroccan Ministry of Planning and Regional Development, the Ministry in which CERED/Morocco was located, sent letters to the governors of the provinces and to other administrative units within the study area, explaining the purpose of CERED/Morocco and the type of fieldwork to be done. These governors were asked to notify the local authorities in their area and to ask for their cooperation. When fieldwork began, the local and religious authorities were again notified by the interviewer-supervisors. Despite these efforts, problems in gaining interviews were still encountered. Several respondents were afraid that the interviewers were connected with taxation or military service.

The CIMED/Colombia field directors established contact with the local civil and church authorities, and these relations were maintained by the recording staff during their fieldwork. Prior to each survey, the interviewer-supervisors again notified the authorities. Efforts were also made to alert the public to the forthcoming survey interviews. These included displaying posters in public places, requesting by mail the cooperation of all heads of households, placing articles about the survey in local newspapers, and making radio announcements. The recorders also

alerted respondents to the fact that interviewers would visit them at a later date to collect data.

The District Commissioners of the districts under study by DSU/Kenya were notified by the Central Bureau of Statistics. The District Commissioners then notified other administrators. In some places, meetings between the administrators of locations and sublocations and the area residents were arranged to explain the surveys to the residents. In addition, the DSU/Kenya project was publicized in two newspapers and announced on radio prior to the baseline survey. However, noncooperation on the part of the respondents was a slight problem, especially in a few of the affluent urban areas where respondents are particularly wary of strangers. The problem was thought to stem from the interviewers' lack of proper identification and their inability to explain adequately the purposes of the survey. Misunderstanding of the purpose of the survey was also prevalent. A few respondents were afraid of being evicted from their homes; some thought the survey was related to voter registration; some noncitizens were afraid that they would have to leave, and people engaged in illegal activities were afraid of being reported to the authorities. However, these problems were confined to a few areas and were not widespread.

The MCPS/Philippines staff personally visited the local civic and church authorities to explain the purposes of the study and to elicit their cooperation. Other visits were made to the local press to ensure favorable publicity, to alert the community to the need of the study, and to emphasize the good intention of the project. Prior to interview rounds, newspaper articles and radio programs explained the purpose of the project and asked for cooperation. In addition, respondents were notified of the interviewers' visits in advance by the recorders.

DRC/Turkey used national radio announcements to alert the public to the existence and aims of their project. The interviewer team leaders (supervisors) were responsible for community preparation in the areas they were to visit. This involved establishing contact with the administration in each province, subprovince, and village. To facilitate this, each team leader carried a letter from the President of the State Institute of Statistics explaining the purpose and methods of the survey and asking for the cooperation and support of these authorities. For further publicity, loudspeakers were used immediately before interviews began in an area.

### B. TRAVEL ARRANGEMENTS

The provision of adequate transportation for the survey interviewers and their supervisors is an important aspect of the survey subsystem. This is especially true in the rural areas where the population is scattered and a large proportion of the interviewers' time is spent in travel. Reimbursement for travel expenses has already been discussed in Section II.E.5.

In the early stages of the MCPS/Philippines project, no transportation was available for the field personnel. This meant that rural interviewers had to walk as much as 7 kilometers per day over difficult terrain, often in adverse weather conditions. This proved to be a problem and led to several resignations. In addition, it meant that supervision was almost impossible to conduct effectively, except by means of spot-checks. By the end of the second research period, however, jeeps were brought in to alleviate the problem. In the urban area, transportation between households was not necessary, and public transport was available for travel from one part of the city to another.

Public transport was also used, where needed, in the urban areas covered by CERED/Morocco and CIMED/Colombia. In rural areas CERED/Morocco used chauffeur-driven cars, while CIMED/Colombia had station wagons at their disposal to transport the interviewers to their areas. In some of the Colombian rural areas, mules were used, especially in the rainy season when other forms of transport were not viable.

The DRC/Turkey field personnel travelled between clusters by public transport and in jeeps owned by the State Institute of Statistics. Within the sample areas, transportation was mainly on foot.

The need for transportation for the DSU/Kenya field personnel was largely circumvented by recruiting interviewers from the areas in which they were to work. Interviewers lived in or near the cluster, stayed with conveniently located friends or relatives for the duration of the survey,

or found rooms nearby. Consequently, the main form of transportation was walking, but public transport was used for between-cluster travel in the urban areas. In special circumstances, such as evening calls on difficult-to-find respondents, a Central Bureau of Statistics vehicle was used. The supervisors, who were not recruited from their area of work, were each issued a government motorcycle to be used in their work.

### C. THE INTERVIEW

#### *1. Introduction*

This section discusses the survey interview situation and some of the problems encountered during the actual implementation of fieldwork. The main features of the interview are shown in Table 6 for each of the five POPLABs.

#### *2. Choice of Respondent*

The preferred choice of respondent differed among the POPLABs. MCPS/Philippines applied the most stringent rules, while CERED/Morocco and DSU/Kenya accepted any "responsible" household member. In the absence of a responsible household member, DRC/Turkey accepted neighbors as proxy respondents, largely in the interests of completing the fieldwork quickly. Some experimentation was carried out by MCPS/Philippines on the effect of the respondent on the fertility questions asked of all women of childbearing age during Survey Rounds 2 and 3 (Table 1). In the second round, where proxy respondents were accepted, the survey obtained several reports of births to never-married women. In the third round, however, where the only acceptable proxy was the husband, questions were only asked of ever-married women.

#### *3. Applying Residency Rules*

The application of residency rules in the field proved troublesome to both MCPS/Philippines and CERED/Morocco, though for rather different reasons.

The CERED/Morocco definition of a resident as someone residing in the household more often than any other household was found to be inadequate with regard to people who resided equally often in more than one household. The definition also failed to take nomads into account. On the other hand, the complexity of the MCPS/Philippines residency rules meant that the interviewers took some time to determine whether or not a person was a resident. During the third and fourth rounds, therefore, in an effort to shorten interviewing time, the respondent was left to judge whether a person had migrated in or out less than 90 days ago. However, this was later felt to be too great a burden on the respondent and the responsibility again passed to the interviewer for Rounds 5-8.

CERED/Morocco also encountered difficulty in obtaining interviews with women. Since an unaccompanied woman is not allowed to invite a male into her home, most of the interviews took place outside of the house with friends, neighbors, and children present. In other cases, the interviewer had to be accompanied by the *mokkadem* (village elder) in order to obtain an interview.

#### *4. Number and Duration of Interviews*

The duration of interview varied both among and within POPLABs. The variation among POPLABs arose from the differing questionnaire lengths and from the amount of explanation accompanying each question. The variation within POPLABs arose from the changing questionnaire content (Table 1) and from the changing format and explanatory notes. For example, the MCPS/Philippines question-wording and accompanying explanations were shortened considerably over time, because the respondents were not listening to the long questions and explanations. The result was a reduction in interview duration from more than 40 minutes in Survey Rounds 1-5 to about 30 minutes in Rounds 6-8.

CIMED/Colombia interviews took longer in urban areas than in rural. This was due to the greater number of in-migrants in the urban areas and to the greater complexity and diversity of the work and education of the urban respondents (Colombia, 1975).

The number of interviews completed per interviewer per day is obviously related to the duration of interview. CERED/Morocco averaged 15 households per day during the first survey, and about 12 during the second survey when birth history questions were asked. Another

factor governing the number of interviews completed per day is the amount of time spent in travelling from one household to another. Clearly, this is greater in sparsely populated areas: CIMED/Colombia found that in urban areas 63 percent of the interviewer's time in the field was spent in interviewing, while in the rural areas this figure was only 35 percent. Consequently, while MCPS/Philippines interviewers completed 9-12 interviews per day in urban and rural village areas, they completed only 5-6 interviews per day in sparsely populated rural areas.

*5. Probing*

One of the problems encountered during interviewing arose from the fact that the population is largely non-number-conscious, which made it difficult to obtain exact information on numeric data such as age, dates, and parity. MCPS/Philippines dealt with this problem by strongly emphasizing the importance of obtaining accurate data and by including many probing questions designed to help the respondent give exact information. CERED/Morocco devised a historical calendar (reproduced in Housni, 1975, p. 31-32) for use in obtaining dates of events, but this was not local enough to be really useful. DSU/Kenya also used an events calendar since many respondents, especially women, did not know their age.

A further problem arose from the need to ask potentially embarrassing questions. This problem was particularly troublesome in Kenya, where it was embarrassing to ask in one of the local languages if a woman was pregnant. Interviewers often observed rather than asked if this was so.

### D. CALLBACKS, REFUSALS, AND RESPONDENT FATIGUE

*1. Introduction*

The number of callbacks necessary to obtain an interview with a respondent is ordinarily very low in the types of communities discussed here. In the rural communities there is almost always someone at home, and even in the urban communities the percentage of households with no one at home during the day is small. Since the cost of interviewing increases with the number of callbacks, there are grounds for minimizing the number of visits. This can be done by asking neighbors, or other persons, when the absent respondents will be at home and, when possible, by making appointments to see them at a later time.

As discussed previously in Sections II.B.6 and III.A, refusals should be kept to a minimum in the interests of maintaining the independence of the two data collection subsystems. In addition, the response rate should be as high as possible, as in any survey. Efforts to minimize refusals included the education and preparation of the community (see Section III.A) and the establishment of rapport between the interviewers and respondents.

Respondent fatigue is a potentially serious problem in situations where respondents are repeatedly interviewed. In dual record systems the problem is exacerbated by the need for two data collection procedures. Again, the magnitude of respondent fatigue can be partly minimized by emphasizing the importance of obtaining complete, high quality data and by interviewer efforts to establish and maintain good relationships or rapport with the respondents.

*2. Rapport*

Efforts to create rapport were stressed during the MCPS/Philippines interview training. Interviewers were instructed to be polite and pleasant at all costs, to avoid making the respondent feel inferior in any way, and to dress in keeping with the standards of the area (especially in poor areas). The need for rapport was felt to be very important because of the strong and widespread familial relationships: the annoyance of one respondent might easily have led to the refusal of many.

Efforts to establish rapport on the part of the DSU/Kenya interviewers included dressing neatly, and introducing themselves politely. The training manuals placed stress on not badgering the respondent, but rather on being willing to return if the respondent was busy or inconvenienced by the call. In addition, interviewers were recruited from the areas in which they worked and were required to be members of, or speak the language of, the major tribe in that area.

CIMED/Colombia interviewers were in-

structed to dress and conduct themselves in accordance with local mores. The DRC/Turkey field personnel were experienced interviewers and were accustomed to obtaining interviews. They carried identity cards as credentials and assured the respondent that information given would be treated as confidential.

### 3. *Callbacks*

The average number of callbacks necessary to obtain an interview are indicated in Table 6.

Very few of the MCPS/Philippines interviews had to be conducted during the evening or on weekends, but several callbacks were necessary to obtain some interviews. In the urban area, where many people were engaged in business activities, interviewers were instructed first to try to interview a member of the household who was not actively engaged in selling, and secondly to break off interviewing whenever the respondent needed to tend to business (such as when a customer needed attention).

The DSU/Kenya survey interviewers visited about one-quarter of the households more than once in order to obtain interviews. For the third survey round, this proportion varied from about 17 percent in the rural areas to about 34 percent in the urban areas. If necessary, CIMED/Colombia interviewers made up to four callbacks to a household, after which the supervisor also made visits. In the urban areas an average of seven visits were necessary to obtain five interviews; in the rural areas five visits yielded four interviews.

The number of necessary callbacks was greater in the urban areas covered by DRC/Turkey than in the rural. However, after several visits to a household, a neighbor was accepted as a proxy respondent, thus limiting the number of callbacks.

### 4. *Refusals and Respondent Fatigue*

The onset of respondent fatigue and the consequent increase in refusals are related to such factors as survey frequency, duration of interview, and the complexity of the questionnaire. Figure 1 shows the frequency and number of surveys carried out by each of the POPLAB projects. Clearly, MCPS/Philippines conducted the most surveys in its original areas, though only 25 percent was covered by all eight surveys. Details of the duration of interview are shown in Table 6, and details of the questionnaires in Tables 1-4.

In cases where an MCPS/Philippines interviewer could not obtain an interview, the supervisor was called in, and if the respondent continued to be uncooperative, the central office staff intervened. During the early survey rounds, a small religious sect, present in both the rural and urban areas, was encountered. The head of this sect refused for several weeks to allow the members of his faith to be interviewed, and permission was only granted after the city mayor's office had intervened. During the first five or six surveys the number of refusals was zero. Respondent fatigue began to become evident by the seventh survey round, though it did not lead to many refusals.

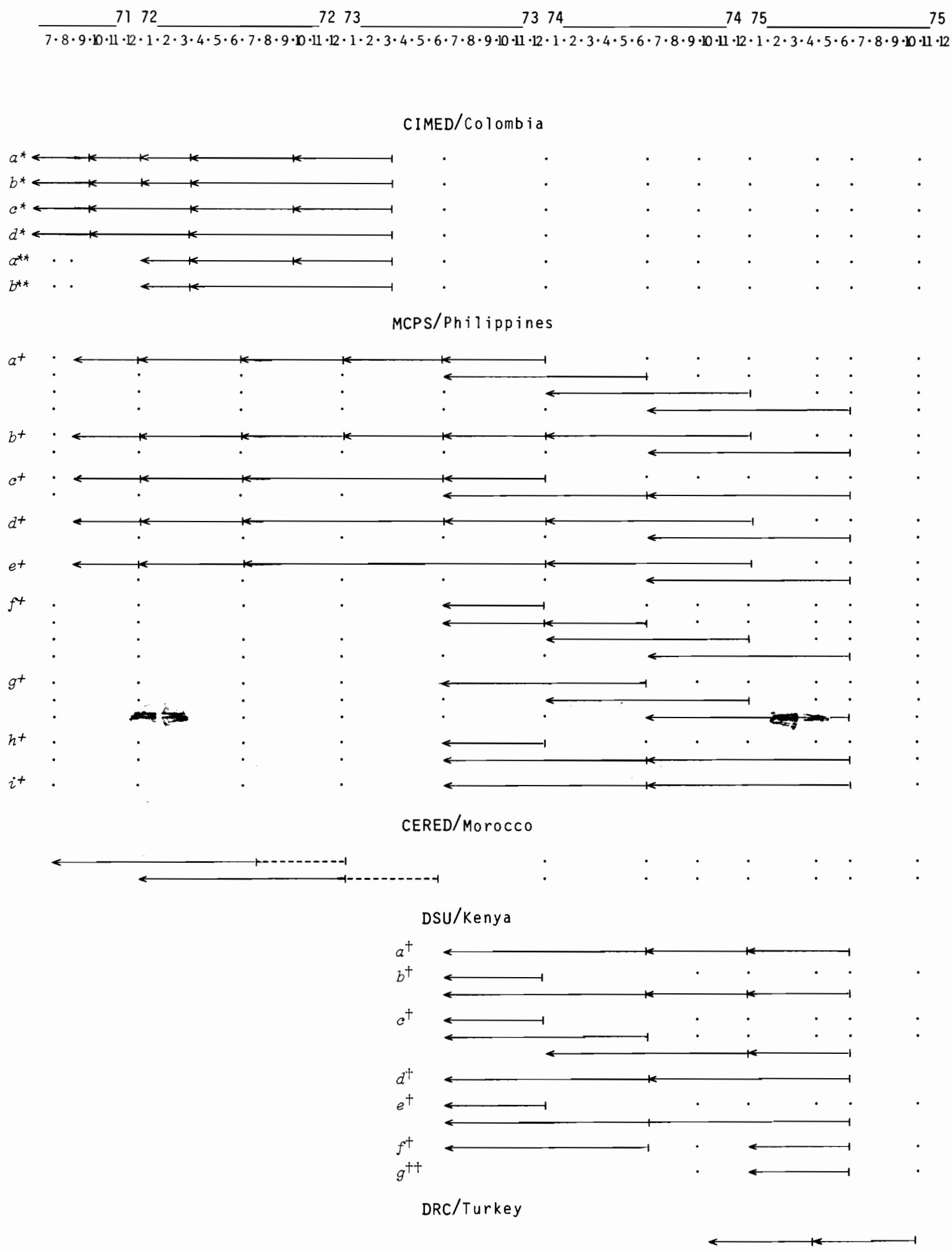
The DSU/Kenya refusal rate was very low, less than 1 percent. During the third survey round, interviewers encountered only 17 refusals (16 urban and 1 rural) out of a total of 8,500 households. This meant that the rate was 1 percent in the urban areas and insignificant in the rural areas. In general, the upper income urban clusters were the most inclined to refusals and respondent fatigue.

During CIMED/Colombia's first survey in Santander the refusal rate was less than 1 percent. However, this steadily increased over later rounds, indicating the presence of respondent fatigue. Nonresponse in Santander rose from 7 percent in the third survey to 9 percent in the fourth. Again, the bulk of this arose from the upper income urban clusters, though it should be pointed out that other surveys were also being conducted in these areas.

In the rural areas covered by DRC/Turkey, refusals were usually nonexistent, but in the urban areas refusals were more of a problem. However, these problems were to a large extent avoided by accepting neighbors as proxy respondents. This resulted in zero nonresponse.

FIGURE 1

*Survey Frequency and Length of Reference Period for Subsamples[1] of POPLAB Study Areas*




[1]Subsamples of study areas denoted by *a*, *b*, *c*, etc. refer to different patterns of survey frequency and reference periods.

| Date of survey

←———— Length of reference period.

---------- Period of interviewing where date of interview varies. CERED/Morocco only. See text (Section II.B.5).

*Santander

**Bolívar

+Original areas (the first survey in MCPS/Philippines original areas actually had a reference period extending back to Christmas 1970; however, only events in the latter four months were tabulated).

++New areas (MCPS/Philippines)

†Original clusters (DSU/Kenya)

††New clusters (DSU/Kenya)

# IV. Assessment of Efforts to Minimize Error

## A. INTRODUCTION

In order to minimize potential error, careful planning in the selection of geographic areas, in the definition of terms associated with the population of interest, in mapping and house numbering, and in other preparatory activities was given high priority in the establishment of POPLABs. The goal of all the preparatory activities discussed in the preceding chapters was a series of surveys designed and executed in such a manner that the total study population would be identified, located, and interviewed with as little error as possible, and that most, if not all, of the vital events occurring in this population during the reference period would be elicited with a minimum of error from the respondents in the interview process. The degree of success in attaining this goal is difficult to measure; nevertheless, the matter is of such import that it warrants concerted attempts in that direction.

The purpose of this chapter is to document POPLAB experience in controlling error in population coverage and event coverage, and to examine characteristics of events with respect to internal consistency and agreement in matched pairs. The latter involves events from the recording subsystem as well as from the survey.

## B. POPULATION COVERAGE

Coverage of the population in household surveys can be affected by a number of considerations, including the ability of interviewers to (1) determine which households are to be included in the survey, (2) locate physically the households, and (3) find for each household a suitable respondent who is able and willing to provide the required information. If all these conditions are met, household data are collected in due process, and the household is considered to be "covered."

Mapping procedures were initiated in all POPLABs to facilitate determining which households were located within the geographic boundaries of the reference areas and, hence, which households were to be included in the survey. This was accomplished by advance fieldwork in which mappers toured the areas, prepared maps, and noted on those maps the exact location of all

structures found in the reference area. Permanent or semi-permanent numbers were affixed to the structures in a prominent location. This assisted the interviewer in identifying and locating households within his jurisdiction. Maps were updated on a regular basis to include new structures, eliminate demolished structures, and record household changes within structures. Some details concerning the mapping procedures used in various POPLABs are presented in Chapter II.

The third condition, finding a suitable and willing respondent, was generally met by the adoption of arbitrary rules which designated as the respondent the most knowledgeable person available at the time of the interview. If no such person was available, callbacks were made. Under certain extenuating circumstances, neighbors provided the necessary information. A pilot survey was carried out in DRC/Turkey in 1973 in such a way that comparisons were possible between responses relating to number of children born and dead reported by women themselves and those reported by someone else (proxy responses). Preliminary analysis of the data "suggests that interviewers should seek answers concerning children born and dead from the mothers themselves insofar as possible" (Adlakha, 1975, p. 28).

Error-free data are not assured simply by identifying households to be covered, locating the households, and finding a suitable respondent. For example, in all POPLABs the respondent at each round was asked to identify all "resident" members of the household and to give pertinent information on each member. What is a resident? The POPLABs defined resident members of the household by various counting rules and, as an aid to full coverage of household members, some POPLABs used household lists from previous rounds, while others did not. How effective were efforts of this kind in controlling error?

### *1. Counting Rules*

Regardless of which counting system is used (*de facto*, *de jure*, or variations), it is imperative that household residents be defined in some manner. The several POPLABs developed their own definitions to suit their particular needs. As discussed in Chapter II, definitions were varied; the MCPS/Philippines definition of resident was quite complex, while the CERED/Morocco definition was relatively simple. Most of the POPLAB definitions incorporated the question of "intent" with regard to expected length of stay of those living in the household less than a POPLAB-defined length of time. Intent is a nebulous subject steeped in potential error but was considered essential in defining a resident.

In retrospect, after five years of experience, MCPS/Philippines (Madigan communication, 1976) indicated favor for:

> a simplified set of counting rules simply because of the expense of administering [a complex set] and because of respondent fatigue. However, one cannot easily become altogether simplified. If we had to do it again, we would eliminate "intent" as too costly to get, but would keep some residence rule like "90 days" or "place where he resides most of the time" or the like.

DSU/Kenya experience with counting rules (Cross communication, 1976) led to the observation that:

> no definition of resident or migrant is good. We find it difficult to explain our definition. The "three months rule" may be one reason why our urban birth rate was so high in the first six months. It is possible that women came into urban areas to give birth and stay three months but actually spent nine months in the rural areas. Persons who shift constantly and are never in one place for three months are also a problem.

### *2. Household Lists*

At the beginning of the POPLAB program, the question of updating household membership lists from previous rounds in an effort to induce full coverage of household members rather than starting anew at each round had not been resolved. Some experimentation was conducted in this area by several POPLABs.

In the early DSU/Kenya surveys no household lists from previous rounds were used. In some of the subsequent rounds (Kenya, 1976), the interviewer carried a roster of names originally collected in previous surveys and determined whether each person in the household was present or absent and, if absent, whether he or she had died or moved away. The interviewer then asked if there were any new members of the household as a result of birth or in-migration.

Coverage rates of vital events were not found to be higher when household lists were used.

As discussed in Section II.B.4, during Rounds 2-4 the interviewers in MCPS/Philippines carried the household roster completed during the previous round. This permitted them to probe the respondents about persons present at the last round but not listed in the current roster, and those listed in the current roster but not present in the last round. In Rounds 5 and 6, the interviewers were not provided with rosters from previous rounds in order to study advantages and disadvantages of each procedure. As a result, MCPS/Philippines concluded that there are both advantages and disadvantages to using lists from the previous round (Madigan communication, 1976):

> [Lists] give better control over migration and vital events in general. On the other hand, whenever we did not use lists and had to do a new canvass of the areas, we seemed to find households we might otherwise have missed. We tend toward favoring a compromise where we give them [interviewers] some information so that they have some idea of households previously enumerated, but not enough information to avoid making a canvass.

#### 3. *Field Verification*

Some POPLABs attempted to control error in household forms by reinterviewing a sample of the population. This was done by MCPS/Philippines, CIMED/Colombia, CERED/Morocco, and DSU/Kenya in order to detect and correct errors in the characteristics of the population as reported by the interviewers. In DRC/Turkey, only incomplete forms were sent back to the field. Reinterviews were generally conducted within a short period after the survey was completed.

### C. EVENT COVERAGE

Although seldom achieved in practice, full coverage of vital events with a minimum of error is a goal of POPLAB survey activity. Full coverage of population, previously discussed, was considered a necessary but not sufficient condition for full coverage of vital events. Other factors such as recall lapse, intentional or unintentional, and "scope" considerations also play a role in coverage of vital events. Potential problems in these and other areas were recognized from the beginning and attempts were made to deal with them with a view toward minimizing error. Selected measures, including some of an experimental nature, will be described prior to presentation of survey coverage and match rates derived from POPLAB experience.

#### 1. *Length of Reference Period and Survey Frequency*

It is generally conceded that memory lapse is a phenomenon to be reckoned with in survey work, yet procedures for doing so are not fully developed. In dual record systems, respondents are asked to recall vital events occurring in a specified time interval in the past. This optimum time interval (or reference period) is usually a matter of conjecture. Common sense dictates that it should not be "too long" and a number of practical reasons dictate that it should not be "too short."

As shown in Figure 1, several POPLABs initially used a 6-month reference period for reporting vital events in the surveys but also experimented with other periods as time passed. For example, CIMED/Colombia experimented with 3-, 6-, and 12-month reference periods in an effort to determine which period produced the highest yield per unit cost. Their data covered an 18-month period beginning in October 1971 and indicated that surveys with a 6-month reference period produced significantly higher vital event coverage rates than surveys with a 12-month reference period. With regard to cost, decreasing survey frequency from quarterly to annually decreased total cost by 12.7 percent. (Colombia, 1974b.)

In a related study, 10 randomly selected study areas in each *departamento* of CIMED/Colombia were subjected to two retrospective surveys using 6-month reference periods, and 10 study areas in each *departamento* were subjected to a single, 12-month reference period. Birth rates, death rates, and coverage rates were compared. Results showed that in the *departamento* of Bolívar a reference period of 6 months produced better results than a 1-year reference

period, especially with regard to fertility, whereas in the *departamento* of Santander no significant differences were found. There was not sufficient evidence, however, to conclude that a standard optimal reference period existed. (Colombia, 1973.)

In a field experiment conducted by MCPS/Philippines, 6-, 12-, and 18-month reference periods were studied. The purpose of this experiment was to investigate the effects of variation in length of the reference period on coverage rates when no changes in the recording subsystem took place. The design and tentative results of this study are described by Madigan, et al. (1976a.)

In the urban area, block units were drawn into a subsample through the use of probability sampling proportional to population size until approximately 50 percent of the population of the area were included. The same was done for the rural area using chunks instead of blocks. These two subsamples (one urban and one rural) were designated as Block *A*. Households in Block *A* were assigned to semiannual surveys covering the following three periods: 1 July–31 December 1972, 1 January–30 June 1973, and 1 July–31 December 1973.

The remaining 50 percent of the urban area was divided into two approximately equal parts in the same manner as described above. The rural area was also divided into two equal parts as described above. In both areas one of these two parts was designated as Block *B*; the other Block *C*. Households in Block *B* were assigned to two survey rounds during the experiment. The first round had a reference period of 12 months (1 July 1972–30 June 1973); the second round had a reference period of 6 months (1 July–31 December 1973). Households in Block *C* had an 18-month reference period (1 July 1972–31 December 1973).

Time periods of the experiment are shown in Figure 1: Block *A* is referred to as subsamples *a* and *b*; Block *B* as subsamples *c* and *d*; Block *C* as subsample *e*.

The conclusions from this experiment are that both urban and rural dual record projects employing a continuous recording system of visits to households every two or three months could decrease frequency of surveys from two to one per year without unduly sacrificing data quality. Furthermore, one survey every 18 months would produce data of sufficiently high quality in the rural area but not in the urban. Both of these conclusions assume that the continuous recording subsystem would remain unchanged.

In July 1974, DSU/Kenya conducted a study with similar objectives, one of which was to determine if an annual survey provided birth coverage rates of comparable magnitude to those of semiannual surveys. Preliminary results from the survey which involved a 12-month reference period are shown in Table 7. Coverage rates were calculated for the 12-month reference period as a whole, and for the two 6-month periods contained therein. It will be observed that there is some evidence of recall lapse in that coverage rates for the 6-month period closest to the date of interview were 10-20 percent higher than for the earlier period. However, in the January 1974 survey, which covered this early period (1 July–31 December 1973) and which involved a 6-month reference period, coverage rates were essentially the same as reported in the 12-month period. That survey included *B* clusters only.

In conclusion, it seems that a reference period of 3 months is unnecessarily short and cannot be economically justified. It also inadvertently encourages duplicate reporting of events and fosters respondent fatigue. A reference period of 6 months or 12 months would be more reasonable and, of these two, a 12-month period is more attractive from the standpoint of cost. If a 12-month reference period produces results as good as, or almost as good as, a 6-month period, total survey cost should be considerably reduced with relatively little damage to overall data quality. Limited POPLAB experience to date seems to suggest that a 12-month reference period is almost as good as a 6-month period for detection of vital events.

Survey frequency is directly related to reference period and depends upon the longest such period that can be scientifically tolerated. Such an "optimum" reference period was not identifiable at the beginning of the POPLAB program and, as a result, most POPLABs began operating with relatively short periods. These periods have generally been maintained pending exploration of the effect of longer time intervals on error and data quality, as discussed earlier.

*2. Scope Problems*

It is a recognized fact that some respondents have difficulty in associating vital events with the correct time of occurrence and also place of occurrence. Furthermore, there is the possibility of error on the part of the respondent with regard to identifying those events that fit the various definitions (live birth, fetal death, death, resident, etc.) of interest to the interviewer. These are "scope" problems—temporal, geographical, and conceptual. They adversely affect coverage of events.

Efforts were made initially to minimize errors of scope through intensive mapping, clear statement of definitions, the designation of reasonably short reference periods, and other measures previously described. Nevertheless, some errors of scope were expected in spite of attempts to control them and did, in fact, occur. Assessment of their magnitude is imperfect but some evidence is available.

As previously noted, field verification of vital events generally involved a return visit to the household by a different interviewer within a short period of time following the initial interview. Although conducted for a number of reasons, field verification was one of the principal means of detecting out-of-scope events, particularly among unmatched cases. The several POPLABs exercised considerable latitude in determining which events required a field visit. In CIMED/Colombia, "unmatched and doubtful forms were field verified" (CIMED/POPLAB Staff, 1973, p. 36). In CERED/Morocco, "approximately 20 percent of randomly selected events were field verified . . . . Included were matched, unmatched, and out-of-scope events." (Housni, 1975, p. 26). In MCPS/Philippines, "all birth and death forms turned in by the interviewer were checked by means of a reinterview with the family" (Madigan and Abernathy, 1975, p. 35). In DSU/Kenya all partially matched and nonmatched events were sent to the field to confirm their status (Kenya, 1976).

Table 8 shows the magnitude of out-of-scope events registered by interviewers in the survey subsystem during the surveys in CIMED/Colombia. It will be noted that approximately 30 percent of unmatched births were found to be out-of-scope events, while the comparable percentage for deaths was slightly lower. With respect to the *type* of out-of-scope problem involved, further examination of the CIMED/Colombia data indicated that in Santander 64 percent of out-of-scope births were due to geographic factors, 16 percent to temporal, and 20 percent to conceptual. For Bolívar, comparable figures for out-of-scope survey births were 56 percent due to geographic factors, 37 percent to temporal, and 7 percent to conceptual. Thirty-seven percent of out-of-scope survey deaths in Santander were attributed to geographic factors, 25 percent to temporal, and 38 percent to conceptual. Comparable percentages for geographic, temporal, and conceptual out-of-scope survey deaths in Bolívar were 35, 24, and 41, respectively. (Colombia, 1974b.)

During the first 6-month period of the dual record project in DSU/Kenya (Kenya, 1976), there were 971 births reported and, of this number, 167 (17 percent) were determined to be out-of-scope events. The reason for being out-of-scope was given for 161 of the events. Geographic reasons accounted for 113 events (70 percent), while temporal factors were responsible for 40 events (25 percent). The remaining 8 out-of-scope events were attributed to duplicates (4), respondent denial of occurrence of the event (3), and stillbirth (1). The situation with regard to deaths was similar, with 25 of a total of 131 deaths found to be out-of-scope. The reasons for events being out-of-scope were reported for the 25 events—10 due to geographic reasons and 12 due to temporal factors. The remaining 3 events were attributed to respondent denial of occurrence.

It is clear that scope problems were prevalent in the POPLAB program to a considerable extent in spite of efforts to keep them to a minimum. Geographic out-of-scope events were the most prevalent, and this suggests the need for more attention devoted to *where* the event took place, as well as the time frame of occurrence.

*3. Survey Coverage Rates*

The survey coverage rate is an indicator of the efficiency, or completeness, of the survey subsystem in eliciting births and deaths in the

population-at-risk. A number of theoretical and methodological considerations associated with coverage rates are discussed in detail by Marks, Seltzer, and Krótki (1974), who also give some practical advice designed to reduce coverage error introduced through the mechanism of out-of-scope events. The present report has already discussed measures incorporated by POPLABs to reduce scope problems. The concern here is to examine briefly survey coverage rates in the various POPLABs as a measure of efficiency in capturing births and deaths. Marks, Seltzer, and Krótki (1974) provide a benchmark for comparison of coverage rates which indicates the median completeness estimates for birth and death reporting for multiple-visit household surveys in selected Asian studies using two-way matching to be .83 for births and .72 for deaths. Coverage rates in the experiences of CIMED/Colombia, CERED/Morocco, DSU/Kenya, and MCPS/Philippines are shown in Table 9.

Several observations can be made relative to the data in Table 9:

a. As expected, survey coverage was better for births than for deaths.
b. Survey coverage was exceptionally good in MCPS/Philippines.
c. Generally speaking, survey coverage was rather low in the other POPLABs.
d. Survey coverage improved over time in MCPS/Philippines but not in CIMED/Colombia.
e. Except in CERED/Morocco, rural coverage rates for births were higher than urban rates. This distinction was not as evident for deaths, however, except for MCPS/Philippines.

#### 4. *Deliberate Concealment of Death*

Crude death rates estimated from the MCPS/Philippines data have been consistently low, which raises the question of possible deliberate concealment of death in the survey situation. MCPS/Philippines carried out a special study in 1973 to determine the extent of this phenomenon. The results indicated that deliberate concealment of death is extensively practiced in both urban and rural areas of the study population. It was estimated that approximately 50 percent of the deaths were not revealed to survey interviewers. It was postulated that a major reason for deliberate concealment of death in household surveys was the failure to register deaths with civil authorities and the fear of legal involvement if this fact became generally known outside the immediate neighborhood (Madigan, et al., 1976b). This study represented a unique effort on the part of MCPS/Philippines to assess the quality of survey data, and if the findings are indeed true, they raise serious questions about the utility of surveys to elicit data on deaths in that particular culture.

### D. EVENT CHARACTERISTICS

The several POPLABs were concerned with the accuracy of the data collected on individuals in the surveys. Field verification as a means of detecting out-of-scope events has already been discussed. Field verification also served as a check on accuracy in transcribing information supplied by respondents. Other methods employed in assessing quality of data on vital events included internal consistency checks and comparisons of data on *matched* events. Some POPLABs also attempted to determine characteristics of *unmatched* events in order to describe high risk cases with respect to nondetection.

#### 1. *Internal Consistency Checks*

Methods of improving quality of data varied from one POPLAB to another. In CERED/Morocco, "the control clerk and a reserve recorder searched for inconsistencies such as dual recordings or whether some events did not conform to the *de facto* principle. Anomalies discovered were brought to the attention of the statistician in charge." (Housni, 1975, pp. 24-25.) If possible, corrections were made in the office, otherwise in the field. In MCPS/Philippines, interviewers turned in completed event forms to supervisors at the end of the day. Supervisors examined the forms to see that all blanks were filled in and to check for consistency and correct coding of sex, marital status, age, relationship to household head, and other variables. Questionable forms were returned to the interviewers for further field checking. Consistency checks included, for example, a comparison of given name with sex,

age of decedent with birthdate, age with relation to household head, sex with relation to household head, age with marital status, and age with number of previous children. Consistency checks similar to those used in MCPS/Philippines were also carried out in the remaining POPLABs. Since discrepancies were resolved at the time of discovery and corrections made in the data, no published information is available with reference to their magnitude.

*2. Characteristics of Matched Events*

A rough measure of the quality of data on events may be had by comparing their characteristics as reported in the survey with characteristics of the same events reported in the continuous recording subsystem. This can only be done for matched events, of course. Perfect agreement would not be expected since, in many instances, the information is given by one person in the survey and by a different person in the recording subsystem. Furthermore, the extent of agreement on specific variables is dependent on matching rules adopted by each POPLAB. The more stringent the rules pertaining to a match, the greater the agreement to be found in comparing variables within matched sets.

A comparison of age of mother on birth events obtained in the survey and in continuous recording is shown in Table 10. It is fairly obvious that tolerance limits on age of mother permitted a discrepancy of at least one 5-year age group on either side of the age reported in the survey or in the age reported in the recording subsystem. Diagonal elements of the table indicate agreement in survey and recording data on age of mother—at least within the same age groups. Ninety-two percent of the events for both Santander and Bolívar are in this category. The off-diagonal elements of the table indicate non-agreement in age of mother by at least one year. Detailed data on age of mother for other POPLABs are lacking, but the CIMED/Colombia data may be fairly representative of other POPLABs having similar tolerance limits.

Data for Santander and Bolívar were examined with regard to agreement of month of occurrence of birth and death between the two subsystems. In Santander, 93 percent of matched births indicated the same month of occurrence of the event; in Bolívar the comparable figure was 94 percent. With regard to matched deaths, agreement on month of occurrence was 90 percent for Santander and 84 percent for Bolívar.

The Colombian experience in comparing characteristics of matched events is indicative of the problems involved in eliciting reliable responses on routine questions in surveys concerned with vital events. Discrepancies would have been more pronounced if more liberal tolerance limits for matching had been introduced prior to the comparison.

*3. Characteristics of Unmatched Events*

The available data on selected characteristics of unmatched events elicited in the survey tend to show that their characteristics are similar to matched events. During the year beginning 1 April 1972, CIMED/Colombia reported 127 unmatched survey births in Santander and 177 unmatched survey births in Bolívar. Mean age of mother for these unmatched events was 27.7 years in Santander and 27.4 years in Bolívar. Mean age of mother for matched events was 28.4 years in Santander and 27.5 years in Bolívar. In MCPS/Philippines, 85 unmatched survey births were reported in the first six months of 1972. The mean age of mother was 27.0 years. These births were not concentrated in any particular area but were scattered through the several chunks and blocks of the reference areas. Unmatched deaths during the same period were 15, seven of which were in the under 5-years age group.

# V. Summary

The first five years of the POPLAB program have been both a period of experimentation with various techniques involved in dual record systems and a period of collection of substantive data. The several POPLABs have gone their separate ways in many respects relative to data collection and analysis. Control of all aspects of the data has been under the jurisdiction of the individual POPLABs from the inception of the program. The Chapel Hill unit has, by design, made no demands for data to be collected and brought out of the respective countries for external analysis. This decision was based upon sound philosophical and administrative reasons and was made with the realization that analysis and dissemination of data on the *collective* POPLABs, such as this report, would not be as comprehensive and exhaustive in certain areas as might be desired. Nevertheless, through the cooperation of the POPLABs it has been possible to describe in this report the salient features of the several retrospective surveys operating in the program and to assess in some measure efforts made to minimize error in data collected through the survey mechanism.

Chapters II and III described the methods and operations employed in preparing for and conducting the surveys, and provided a comparative framework for examining similarities and contrasts among POPLABs. No attempt was made to single out a particular method or procedure as preferable to another although, in some instances, such an inference may readily be made.

In Chapter IV several routine methods of controlling error in population and event coverage used by the various POPLABs are examined and, in addition, some experimental issues are described. Some aspects of error control and experimentation have yielded results that may be sufficient under certain circumstances to formulate working rules regarding future activity in dual record systems. Some of the experimental projects, on the other hand, are incomplete, but preliminary data permit speculation on the outcomes. Perhaps the two most important speculative conclusions are that (1) event coverage rates in annual surveys are nearly as high as those in semiannual surveys, and (2) in certain

cultures deliberate concealment of deaths by respondents may be a serious limitation of surveys designed to elicit deaths from household members. If corroborated later on, ramifications of these findings with respect to dual record systems activity will be far-reaching.

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TABLE 1

*Comparative Content of the Household Questionnaires*

| Item | CIMED/ Colombia | MCPS/ Philippines | CERED/ Morocco | DSU/Kenya | DRC/ Turkey [g] |
|---|---|---|---|---|---|
| Personal data for:[a] | Persons usually living in households | De facto and de jure populations | | | Present and prior household members |
| Name | x | and nickname | x | x | x |
| Relationship to head of household | x | x | x | x | x |
| Sex | x | x | x | x | x |
| Age (in years) | x | x | x | x | x |
| Date of birth | x | | | | x |
| Birthplace | x | | x | x | |
| Residency status | x | x | x | x | x |
| Marital status | x | x | x | x | x |
| Father alive | | | x [c] | x | x |
| Mother alive | | | x [c] | x | x |
| Literacy | x | x [b] | | | x |
| Educational level | x [c] | x [b] | x | x | x |
| Occupation | x [c] | x [b] | x | | x |
| Work status | x [c] | | | | x |
| Fertility data for: | Women >12 years | Ever-married women | | Women ≥12 years | Ever-married women |
| Number of marriages | x | | | x | |
| Age at first marriage | x | | | | |
| Date of current marriage | x | | | | |
| Age at first 3 births | x | | | | |
| Date of last birth | x | | | x [e] | x |
| Sex of last child | | | | x [e] | x |
| Is last child still alive | x | | | x [e] | x |
| If dead, date of death | | | | | x |
| If dead, age at death | | | | | x |
| If dead, duration since death | | | | | x |
| Number of children | | | | | |
| Total | x | by sex [f] | | x [e] | |
| Living in household | x | by sex [f] | by sex | by sex [e] | by sex |
| Living elsewhere | x | by sex [f] | by sex | by sex [e] | by sex |
| Dead | x | by sex [f] | by sex | by sex [e] | by sex |
| Stillborn | x | | | | |
| Currently pregnant | x | | | | |
| Months pregnant | x | | | | |
| Birth history | | | x [b] | x [d] | |
| Household identification | x | x | x | x | x |
| Respondent | | x | x | | x |

[a] See Section II.B.1 for details of the study population.
[b] These data were not collected in the first survey.
[c] These data were not collected in the second survey.
[d] These data were collected on versions A and C of the household questionnaire used during the fourth 6-month study period.
[e] These data were collected on versions B and C of the household questionnaire used during the fourth 6-month study period.
[f] These data were collected in the second and third survey only.
[g] DRC/Turkey also collected additional information for the State Planning Office.

TABLE 2

*Comparative Content of the Birth Reporting Forms* [a]

| Item | CIMED/ Colombia | MCPS/ Philippines | CERED/ Morocco | DSU/Kenya | DRC/Turkey |
|---|---|---|---|---|---|
| **Miscellaneous** | | | | | |
| Household identification | x | x | x | x | x |
| Head of household | x | | x | x | x |
| Respondent | x | x | x | | x |
| **Newborn** | **(11)** | **(8)** | **(8)** | **(9)** | **(10)** |
| Name | x | x | x | x | x |
| Relationship to head of household | | x | x | | |
| Relationship to respondent | x | | x | | |
| Sex | x | x | x | x | x |
| Date of birth | x | x | x | x | x |
| Age | x | | | | |
| Place of birth (home, etc.) | x | | x | x | x |
| Place of birth (cluster) | x | x | | x | x |
| Assistant in delivery | | | x | | x |
| Live or stillbirth | number of each | | | x | x |
| Single or multiple birth | number | number | | x | number |
| Is child still alive | x | x | | x | x |
| If dead, age at death | | | | | x |
| If dead, date of death | x | | | | |
| Is child still living in household | | | x | x | |
| Present address | | x | | | |
| **Mother** | **(4)** | **(12)** | **(4)** | **(6)** | **(2)** |
| Name | x | and nickname | x | x | x |
| Father's name | | | x | | |
| Age | x | x | x | x | x |
| Date of birth | x | x | | | |
| Birthplace | | x | | | |
| Residency status | x | x | | x | |
| Marital status | | | | x | |
| Months since last birth | | | | x | |
| Parity | | x | x | x | |
| Children ever born | | | | | |
| Still living | | number | | | |
| Now dead | | number | | | |
| Religion | | x | | | |
| Educational level | | x | | | |
| Occupation | | x | | | |
| **Father** | **(0)** | **(8)** | **(4)** | **(0)** | **(0)** |
| Name | | x | x | | |
| Father's name | | | x | | |
| Age | | x | x | | |
| Date of birth | | x | | | |
| Birthplace | | x | | | |
| Residency status | | x | | | |
| Religion | | x | | | |
| Educational level | | x | | | |
| Occupation | | x | x | | |
| **Total number of items** | **18** | **30** | **19** | **17** | **15** |

[a] Figures in parentheses indicate the number of questions asked on the newborn, mother, and father.

## TABLE 3

*Comparative Content of the Death Reporting Forms* [a]

| Item | CIMED/ Colombia | MCPS/ Philippines | CERED/Morocco | DSU/ Kenya | DRC/ Turkey |
|---|---|---|---|---|---|
| **Miscellaneous** | | | | | |
| Household identification | x | x | x | x | x |
| Head of household | x | | x | x | x |
| Respondent | x | x | x | | x |
| **Deceased** | **(10)** | **(15)** | **(12)** | **(7)** | **(10)** |
| Name | x | x | x | x | x |
| Relationship to head of household | | x | x | | |
| Relationship to respondent | x | | x | | |
| Sex | x | x | x | x | x |
| Date of birth | x | x | | | |
| Age at death | x | x | x | x | x |
| Date of death | x | x | x | x | x |
| Place of death (home, etc.) | x | | x | x | x |
| Place of death (cluster) | x | x | x | x | x |
| Cause of death | | | | | x |
| Is death a stillbirth | | x | | | |
| Was death registered | x | | | | |
| Length of illness | | | | | x |
| If female, pregnant | | | | | x |
| Church where funeral held | | x | | | |
| Medical assistance prior to death | | x | x | | x |
| Marital status | | x | if $\geq$14 years | | |
| Residency status | x | | x | x | |
| Birthplace | | x | | | |
| Religion | | x | | | |
| Educational level | | x | | | |
| Occupation | | x | x | | |
| **Mother** | **(1)** | **(4)** | **(2)** | **(0)** | **(0)** |
| Name | x | and nickname | if deceased <5 years | | |
| Age | | | if deceased <5 years | | |
| Address | | x | | | |
| Educational level | | x | | | |
| **Father** | **(0)** | **(3)** | **(3)** | **(0)** | **(0)** |
| Name | | and nickname | x | | |
| Father's name | | | x | | |
| Educational level | | x | | | |
| Occupation | | | if deceased <14 years | | |
| **Spouse** | **(0)** | **(4)** | **(2)** | **(0)** | **(0)** |
| Name | | and nickname | if deceased was married woman | | |
| Address | | x | | | |
| Educational level | | x | | | |
| Occupation | | | if deceased was housewife | | |
| **Total number of items** | **(14)** | **(28)** | **(22)** | **(9)** | **(13)** |

[a] Figures in parentheses indicate the number of questions asked on the deceased, mother, father, and spouse.

TABLE 4

*Comparative Content of the Migration Reporting Forms*

| Item | CIMED/Colombia | | MCPS/ Philippines [b] | DSU/Kenya [c] |
|---|---|---|---|---|
| | In-migrants [a] | Out-migrants | | |
| **Miscellaneous** | | | | |
| Household identification | | | x | x |
| **Migrant** | | | | |
| Name | | x | x | x |
| Relationship to head of household | | x | x | |
| Sex | | x | x | x |
| Age | | x | x | x |
| Marital status | x | x | x | |
| Date of migration | | x | x | x |
| Reason for migration | x | x | x | x |
| Place migrated from/to | x | x | x | x |
| Duration of stay | | | x | x |
| Length of residence here | x | | | |
| Direct move from birthplace | x | | | |
| Occupation in previous place | x | | | |
| Births prior to leaving | | x | | |
| **Total number of items** | **6** | **9** | **10** | **8** |

[a] These data were obtained for persons born in a different site. They are additional to the information collected in other sections of the household questionnaire shown in Table 1.
[b] These data were collected in the first five survey rounds only.
[c] These data were collected in the first survey round only.

TABLE 5

*Comparison of the Characteristics of the Survey Interviewers Employed by POPLAB Projects*

| Characteristic | CIMED/Colombia | MCPS/Philippines | CERED/Morocco | DSU/Kenya | DRC/Turkey |
|---|---|---|---|---|---|
| Number | 40 (5 teams of 8)<br>24 (3 teams of 8) [b] | 40+ | 18 (3 teams of 6) [a] | 30 | 130 (25 teams of 5-6) [a] |
| Average number of interviewers per supervisor | 8 | 4–5 | 5 | 4–5 | 4–5 |
| Employment status | full-time temporary | full-time temporary | full-time permanent | full-time temporary | full-time permanent [c] |
| Sex | female & male | female & male | male | female & male | mainly male |
| Age | young | under 46 years | 20–25 | 20–25 | 25–35 |
| Education | secondary school or some university | some college (average of 3 years) | 3rd-5th level of secondary education | secondary school or college graduation | secondary school graduation |
| Extra languages | | fluent in Binisaya; speak and understand English | fluent in French and Arabic | fluent in local language; read, write, speak, and understand English | |

[a] This includes one supervisor per team.
[b] Only 24 interviewers were needed during the second period (1 April 1972–31 March 1973) because of a reduction in the sample size.
[c] The DRC/Turkey interviewers were permanent employees of the State Institute of Statistics. Part of their time was spent on the POPLAB project.

TABLE 6

*Main Features of the Interview, by POPLAB Project*

| Feature | CIMED/Colombia | MCPS/Philippines | CERED/Morocco | DSU/Kenya | DRC/Turkey |
|---|---|---|---|---|---|
| Preferred respondent | 1. household head<br>2. spouse<br>3. relative aged $\geq 18$ | 1. lady of house<br>2. spouse<br>3. child aged $>15$<br>4. maid if $>1$ year with household | 1. responsible household member | 1. responsible household member | 1. household head<br>2. responsible household member<br>3. neighbor |
| Number of interviews per day | urban: 10-20<br>rural: 8-12 | urban: 9-12<br>rural: 5-12 | 12-15 | not available | 15-20 |
| Duration of interview (minutes) | 15-20 | 30-60 | not available | not available | baseline: 15-30 |
| Number of callbacks | per interview:<br>urban: 1.42<br>rural: 1.28 | several | several | 23% visited more than once | several |

TABLE 7

*Birth Coverage Rates Obtained from a 12-Month Reference Period, and Subdivided into 6-Month Intervals DSU/Kenya, 1974*

| Cluster Areas [a] | Number of Clusters | Periods | | |
|---|---|---|---|---|
| | | 12-Month Total (1 July 1973-30 June 1974) | First 6 Months (1 July-31 December 1973) | Second 6 Months (1 January-30 June 1974) |
| All clusters | 72 | .705 | .648 | .765 |
| Urban | 32 | .645 | .593 | .704 |
| Rural | 40 | .716 | .658 | .776 |
| A clusters | 36 | .657 | .566 | .745 |
| B clusters | 36 | .746 | .713 | .784 |
| A–urban | 16 | .609 | .522 | .694 |
| B–urban | 16 | .675 | .645 | .713 |
| A–rural | 20 | .666 | .574 | .754 |
| B–rural | 20 | .758 | .725 | .795 |

[a] For purposes of experimentation, clusters were selected in such a way as to form pairs; one cluster in each pair was randomly designated as "A," the other "B."

SOURCE: Data prepared by DSU/Kenya for UNC-CH POPLAB Research Unit.

TABLE 8

*Number of Unmatched Events and Number and Percent Out-of-Scope by Departamento and Survey CIMED/Colombia, 1972-1973*

| Departamento and Survey | Births | | | Deaths | | |
|---|---|---|---|---|---|---|
| | Number Unmatched | Number Out-of-Scope | Percent Out-of-Scope | Number Unmatched | Number Out-of-Scope | Percent Out-of-Scope |
| **Santander** | | | | | | |
| 1 Oct 71–31 Dec 71 | 59 | 9 | 15.3 | 19 | 3 | 15.8 |
| 1 Jan 72–31 Mar 72 | 153 | 35 | 22.9 | 32 | 3 | 9.4 |
| 1 Apr 72–30 Sep 72 | 46 | 17 | 37.0 | 9 | 1 | 11.1 |
| 1 Oct 72–31 Mar 73 | 147 | 46 | 31.3 | 28 | 9 | 32.1 |
| **Total** | **405** | **107** | **26.4** | **88** | **16** | **18.2** |
| **Bolívar** | | | | | | |
| 1 Jan 72–31 Mar 72 | 95 | 16 | 16.8 | 14 | 5 | 35.7 |
| 1 Apr 72–30 Sep 72 | 67 | 14 | 20.9 | 7 | 2 | 28.6 |
| 1 Oct 72–31 Mar 73 | 211 | 87 | 41.2 | 38 | 10 | 26.3 |
| **Total** | **373** | **117** | **31.4** | **59** | **17** | **28.8** |

SOURCE: Colombia, 1974b

TABLE 9

*Estimated Urban and Rural Survey Coverage Rates [a] for Births and Deaths Four POPLABS, 1971-1973*

| POPLAB and Area | Date | Births | | Deaths | |
|---|---|---|---|---|---|
| | | Urban | Rural | Urban | Rural |
| CIMED/Colombia | | | | | |
| Santander | 1 Oct 71–31 Mar 72 | .76 | .81 | .42 | .38 |
| Santander | 1 Apr 72–31 Mar 73 | .70 | .79 | .53 | .59 |
| Bolívar | 1 Apr 72–31 Mar 73 | .73 | .69 | .55 | .45 |
| MCPS/Philippines | 1 Sep 71–31 Dec 71 | .66 | .92 | .49 | .79 |
| | 1 Jan 72–30 Jun 72 | .79 | .92 | .71 | .84 |
| | 1 Jul 72–31 Dec 72 | .92 | .93 | .84 | .91 |
| | 1 Jan 73–30 Jun 73 | .88 | .95 | .91 | .97 |
| | 1 Jul 73–31 Dec 73 | .87 | .96 | .83 | .90 |
| CERED/Morocco | 1 Jan 72–30 Jun 73 | .85 | .76 | .70 | .62 |
| DSU/Kenya | 1 Jul 73–31 Dec 73 | .74 | .76 | .58 | .55 |

[a] Survey coverage rate = $\frac{\text{Number of births (or deaths) elicited in survey}}{\text{Estimated total number of births (or deaths) occurring in population-at-risk}}$

SOURCE: Chanlett and Fichet, 1976

TABLE 10

*Age of Mother Reported in Survey Subsystem*
*Compared with Age Reported in Recording Subsystem for Matching Birth Reports*
*Santander and Bolívar, CIMED/Colombia*
*1 April 1972–31 March 1973*

| Survey Subsystem | Recording Subsystem | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Age of Mother | | | | | | | |
| | 15–19 | 20–24 | 25–29 | 30–34 | 35–39 | 40–44 | 45–49 | Total |
| **Santander** | | | | | | | | |
| 15–19 | 69 | 4 | – | – | – | – | – | **73** |
| 20–24 | 6 | 175 | – | – | – | – | – | **181** |
| 25–29 | – | 12 | 164 | 3 | – | – | – | **179** |
| 30–34 | – | – | 5 | 117 | 3 | – | – | **125** |
| 35–39 | – | – | – | 11 | 91 | – | – | **102** |
| 40–44 | – | – | – | – | 7 | 32 | – | **39** |
| 45–49 | – | – | – | – | – | 1 | 2 | **3** |
| **Total** | **75** | **191** | **169** | **131** | **101** | **33** | **2** | **702** |
| **Bolívar** | | | | | | | | |
| 15–19 | 83 | – | – | – | – | – | – | **83** |
| 20–24 | 20 | 204 | 2 | – | – | – | – | **226** |
| 25–29 | – | 12 | 155 | – | – | – | – | **167** |
| 30–34 | – | – | 13 | 124 | 4 | – | – | **141** |
| 35–39 | – | – | – | 1 | 69 | 3 | – | **73** |
| 40–44 | – | – | – | – | – | 27 | 1 | **28** |
| 45–49 | – | – | – | – | – | – | 5 | **5** |
| **Total** | **103** | **216** | **170** | **125** | **73** | **30** | **6** | **723** |

SOURCE: Data prepared by CIMED/Colombia for UNC-CH POPLAB Research Unit.

## Abstract

### The Dual Record System: Retrospective Survey Subsystem

Dual record system experiments in demographic measurement undertaken by the POPLAB program include four areas of research that correspond to operational management and estimation techniques: *sample design*, *continuous recording subsystem*, *retrospective survey subsystem*, and *matching procedures*. This report deals with the third area, the retrospective survey subsystem.

The objectives of the present report are twofold. The first is to describe in detail methods and operations employed in the several retrospective surveys carried out by POPLAB projects in Colombia, Morocco, the Philippines, Turkey, and Kenya. This provides a historical summary as well as a comparative framework, so that similarities and contrasts between country survey activities can be seen. The second objective is to present and examine research findings relating to operational aspects of the survey subsystem. In particular, attention is directed to efforts made by the POPLAB projects to maintain quality control and minimize error in data collected through the survey mechanism.

The first chapter is an introduction to dual record systems and to the five POPLAB projects involved in the report; it sets the stage for the detailed presentation in Chapters II and III pertaining to the first objective. Differential methods used by the various POPLABs in preparing for the survey are the subject of Chapter II, which includes some discussion on development of the operational plan, mapping of study areas, development of questionnaires and forms, and the selection and training of interviewers and supervisory personnel. These preparatory activities are important and have a direct influence on the quality of data obtained from the survey. Due to geographic and cultural differences as well as to differences in research objectives, interesting variations in execution of surveys were employed by the POPLAB projects. With emphasis on field operations, Chapter III discusses the manner in which the surveys were conducted. Similarities and differences among POPLABs with respect to arranging travel, defining and applying residency rules, choosing a respondent, conducting the interview, and dealing with nonresponse are pointed out. No attempt is made to single out a particular method or procedure as preferable to another although, in some instances, such an inference can readily be made.

Chapter IV is concerned with the second objective. The first five years of the POPLAB program have been both a period of experimentation with various techniques involved in dual record systems and a period of collection of substantive data. Chapter IV examines several routine methods of controlling error in population and event coverage used by the POPLAB projects and, in addition, describes some experimental issues. Population and vital event coverage, characteristics of matched and unmatched events, and deliberate concealment of deaths by respondents are discussed and, in some cases, data are presented. Some aspects of error control and experimentation have yielded results that may be sufficient under certain circumstances to formulate working rules regarding future activity in dual record systems. The evidence is still incomplete in certain other areas, but research and analysis of data are continuing.

## Résumé

Le système de double collecte: le sous-système d'enquête rétrospective

Les expériences du système de double collecte entreprises dans le programme de mesures démographiques du POPLAB portent sur quatre domaines de recherches qui correspondent aux techniques de gestion opérationnelle et d'estimation: *détermination de l'échantillon*, *sous-système d'enregistrement continu*, *sous-système d'enquête rétrospective* et *procédés d'appariement*. Ce rapport traite du troisième de ces domaines: le sous-système d'enquête rétrospective.

Les objectifs de ce rapport sont au nombre de deux. Le premier est de décrire en détail les méthodes et opérations utilisées dans plusieurs enquêtes rétrospectives effectuées dans le cadre de projets du POPLAB en Colombie, au Maroc, aux Philippines, en Turquie et au Kenya. On obtient ainsi un résumé historique ainsi qu'un cadre de référence, de sorte qu'apparaissent les similitudes et les différences entre les opérations d'enquête dans les pays. Le deuxième objectif est de présenter et d'analyser les résultats des recherches sur les aspects opérationnels du sous-système d'enquête. Il met particulièrement en évidence les efforts accomplis dans le cadre des projets du POPLAB pour préserver un contrôle de la qualité et pour réduire au minimum les erreurs dans la collecte des données dues au mécanisme de l'enquête.

Le premier chapitre est une introduction aux systèmes de double collecte et aux cinq projets du POPLAB évoqués dans le rapport; il prépare la présentation détaillée du premier objectif dans les chapitres II et III. Les différentes méthodes employées par les divers POPLABs pour préparer l'enquête font l'objet du chapitre II, qui contient une certaine analyse de l'élaboration du plan des opérations, de la cartographie des zones d'étude, de la rédaction des questionnaires et formulaires, enfin du choix et de la formation des enquêteurs et du personnel contrôleur. Ces opérations préparatoires sont importantes et conditionnent directement la qualité des données recueillies par l'enquête. En raison de la diversité géographique et culturelle, mais aussi des différences dans les objectifs de la recherche, les projets du POPLAB ont apporté d'intéressantes variantes dans le déroulement des enquêtes. Principalement consacré aux opérations sur le terrain, le chapitre III analyse les modalités d'exécution des enquêtes. Il met en évidence les similarités et les différences entre les POPLABs pour ce qui concerne l'organisation des déplacements, la définition et l'application des règles de résidence, le choix des enquêtés, la conduite de l'entrevue et la prise en compte des non-réponses. Nous n'avons nullement tenté de présenter une méthode ou un procédé particulier comme préférable aux autres mais, dans certains cas, on peut être amené à le faire aisément.

Le chapitre IV traite du second objectif. Les cinq premières années du programme POPLAB ont été à la fois une période d'expérimentation des techniques auxquelles font appel les systèmes de double collecte, et une période de constitution d'un fonds de données significatives. Le chapitre IV passe en revue plusieurs méthodes de routine des projets POPLAB pour supprimer les erreurs dans le comptage de la population et des événements; il décrit, en outre, quelques problèmes expérimentaux. Sont évoqués ensuite le décompte de la population et des données de l'état civil, les caractéristiques des événements appariés ou non, l'omission délibérée des décès par les enquêtés, avec chiffres à l'appui dans certains cas. Quelques aspects de l'expérimentation et de la suppression des erreurs ont donné des résultats qui pourraient éventuellement servir à formuler des règles pratiques pour l'utilisation, dans des activités futures, des systèmes de double collecte. Dans d'autres domaines, les résultats demeurent insuffisants mais les travaux de recherche et d'analyse se poursuivent.

## Resumen

El Sistema de Doble Registro: Subsistema de Encuestas Retrospectivas

Los experimentos con el sistema de doble registro en medición demográfica empredidos por el programa POPLAB incluyen cuatro áreas de investigación que corresponden a técnicas de administración operacional y de estimación: *diseño muestral, subsistema de registro contínuo, subsistema de encuestas retrospectivas y métodos de pareación*. Este informe trata del tercer área, el subsistema de encuestas retrospectivas.

El informe tiene dos objetivos. El primero es describir en detalle los métodos y operaciones empleados en la serie de encuestas retrospectivas llevadas a cabo por los proyectos de POPLAB en Colombia, Marreucos, las Filipinas, Turquía y Kenya. Esto proporciona tanto un resumen histórico como un marco de trabajo comparativo, de modo que es posible apreciar las similitudes y las diferencias entre las actividades de los distintos países. El segundo objetivo es presentar y analizar los resultados de las investigaciones relacionadas con los aspectos operacionales del subsistema de encuestas. En especial, se enfatizan los esfuerzos realizados por los proyectos de POPLAB con el fin de mantener el control de calidad y minimizar los errores en la recolección de datos a través del mecanismo de encuesta.

El primer capítulo constituye una introducción a los sistemas de doble registro y a los cinco proyectos de POPLAB involucrados en el informe, y prepara el camino para la presentación detallada, en los Capítulos II y III, de los metodos y operaciones utilizados. El Capítulo II trata de los métodos utilizados por los diferentes POPLABs en los preparativos para las encuestas, incluyendo una discusión sobre el desarrollo del plan operacional, el trazado de mapas de las áreas de estudio, el desarrollo de cuestionarios y formularios, y la selección y adiestramiento del personal entrevistador y supervisor. Estos preparativos son importantes y tienen una influencia directa sobre la calidad de los datos obtenidos a través de la encuesta. Debido tanto a diferencias geográficas y culturales como a diferencias en los objetivos de la investigación, los proyectos utilizaron interesantes variaciones en la ejecución de las encuestas. El Capítulo III discute la manera en que se condujeron los proyectos, enfatizando el trabajo de terreno. Se destacan también aquí las similitudes y diferencias entre los POPLABs con respecto a las disposiciones relacionadas con el transporte, definición y aplicación de las reglas de residencia, elección de los entrevistados, conducción de la encuesta, y modo de tratar la falta de respuesta.

El Capítulo IV se refiere al segundo objetivo. Los primeros cinco años del programa POPLAB han sido tanto un período de experimentación con diferentes técnicas involucradas en los sistemas de doble registro, como un período de recolección de datos substantivos. Este capítulo examina varios métodos utilizados por los proyectos para controlar el error en la cobertura de eventos y de poblaciones y describe, además, algunos problemas experimentales. Se discute, y en algunos casos se presentan datos sobre, la cobertura de poblaciones y eventos vitales, las características de los eventos pareados y de los no pareados, y la omisión de defunciones por parte de los entrevistados. Algunos de los aspectos del control de error y la experimentación han proporcionado resultados que, bajo ciertas circunstancias, pueden ser suficientes para formular reglas con respecto a futuras actividades en los sistemas de doble registro. La evidencia es aún incompleta en otras áreas, pero se sigue con la investigación y el análisis de los datos.

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