The Philippine Statistician

Vol. xxiii, Nos. 3 - 4, 1974

DEVELOPMENT AND MAINTENANCE OF THE SAMPLE VITAL REGISTRATION SYSTEM IN THE PHILIPPINES

By

TITO A. MIJARES*

I. INTRODUCTION

Underregistration of vital events in the Philippines, as in other countries, is still a major problem that invalidates the direct measurement of vital rates from the legal civil registration records. When the extent of underregistration is not fully ascertained, this problem is aggravated. Efforts during the past decade to improve vital registration has been hampered by many factors, foremost of which is the lack of funds to conduct a continuing information drive to improve the level of civil registration on a nationwide scale. With limited funds, government programmes in the form of sporadic seminars have been held all over the country in the past years to upgrade the level of civil registration, but no avail. Even the active participation of civic and religious organization, have been solicited in education campaign for civil registration but the effect, if any, was hardly felt.

In spite of all these efforts, the crude rate derived from the legal civil registration records continue to fall short of expectations. Some demographers had estimated the level of registration of vital events to be as low as 60 per cent of the actual occurrences. The finding of a study on birth and death registration by this Bureau of 1965 placed the level of registration at 60.3 per cent for births and 70.0 per cent for deaths.

We cannot guarantee the preparation of reliable estimates on the country's rate of growth unless a study, specifically on

* Project Director, POPCOM/NCSO Project. Acting Executive Director, National Census and Statistics Office. The assistance of Mr. Francisco V. Nazaret, Mrs. Nelia R. Marquez, Miss Luisa Engracia and Miss Dolores M. Mortel, all of NCSO is gratefully acknowledged.

these crude rates, is conducted. One of the more recently developed procedures to obtain estimates of vital rates and other population characteristics is to adopt a sample registration system in place of, or in addition to, the usual legal civil registration system. A sample scientifically selected can be taken as a representative of the entire population, and vital rates observed in the sample may be used to estimate vital rates for the entire population within quantifiable error.

II. THE POPCOM/NCSO PROJECT

Realizing the need for reliable, if not accurate, crude vital rates, the Bureau of the Census and Statistics, now known as the National Census and Statistics Office (NCSO), has been undertaking a nationwide project aimed to develop a sample registration system from which estimates of crude vital rates may be reliably obtained. This project is jointly funded by the Commission on Population (POPCOM) and the United States Agency for International Development (USAID).

A. *Objectives of the Project*

The main objective is to arrive at reliable estimates of birth and death rates in the country-both at regional and national levels, by developing and maintaining a good civil registration system in the sample areas so as to attain a level of registration coverage of at least 90 per cent. The project also hopes to detect regional variations in the crude rates, if any, as well as make possible, estimates of migratory patterns and other demographic characteristics of the population.

B. *Organization*

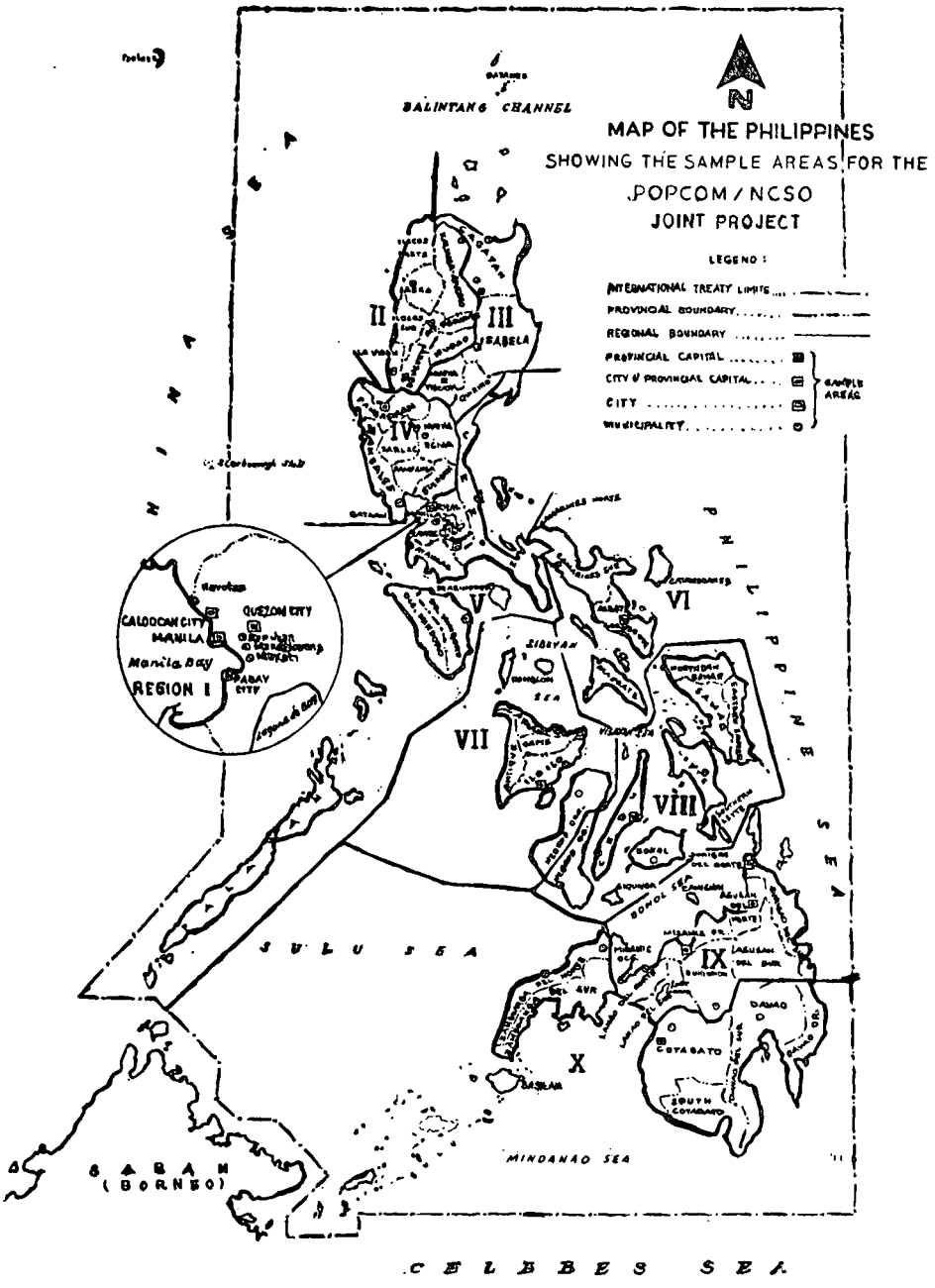
The Project was formally organized in September, 1970. A Technical Working Committee (TWC) composed of NCSO personnel, was formed to assist the Project Director in various phases of the work. The initial phase of the work was devoted to the preparation of questionnaires, administrative and other reporting forms and manuals of instruction for field and office work.

Almost simultaneously, ten regional offices all over the country were set up. Except for Regions I and V,

which were under the direct supervision of the TWC at the Central Office located in the NCSO's premises, the eight regional officers were established in cooperating universities and colleges. The ten regional offices were as follows:

No.	Region	Location of Regional Offices	Cooperating Universities/ Colleges
I	(Manila & Suburbs)	Manila (NCSO)	—
II	(Ilocos & Mt. Prov.)	Baguio City	University of Baguio
III	(Cagayan Valley and Batanes)	Tuguegarao, Cagayan	Cagayan Teachers College
IV	(Central Luzon)	Dagupan City	Luzon Colleges
V	(Southern Tagalog and Islands)	Manila (NCSO)	—
VI	(Bicol)	Legaspi City	Divine Word College
VII	(Western Visayas)	Iloilo City	Central Phil. University
VIII	(Eastern Visayas)	Cebu City	University of San Carlos
IX	(Northern Mindanao)	Cagayan de Oro City	Xavier Univ.
X	(Southern Mindanao)	Cotabato City	Notre Dame University

The selection of these regional centers as shown in Figure 1 was determined in accordance with the design of the Project.


BALINTANG CHANNEL
N
MAP OF THE PHILIPPINES
SHOWING THE SAMPLE AREAS FOR THE
POPCOM / NCSO
JOINT PROJECT
LEGEND :
INTERNATIONAL TREATY LIMITS
PROVINCIAL BOUNDARY
REGIONAL BOUNDARY
PROVINCIAL CAPITAL
CITY & PROVINCIAL CAPITAL
CITY
MUNICIPALITY
SAMPLE AREAS
II
III
ISABELA
IV
V
VI
VII
VIII
IX
X
REGION I
CALOOCAN CITY
QUEZON CITY
MANILA
Manila Bay
PASAY CITY
SIBUYAN SEA
BOHOL SEA
SULU SEA
MINDANAO SEA
PHILIPPINE SEA
DAVAO
COTABATO
SOUTH COTABATO
SABAH
(BORNEO)
CELEBES SEA

At the start of the project, agreements were entered into between the NCSO and the Cooperating Universities/ Colleges which have provided, among other things the following:

1. The services of a qualified faculty member to be appointed as the Project's Jr. Specialist for the region;

2. Adequate and suitable office space for the regional staff within the premises of the school for which the Project shall pay rent of not more than one hundred pesos (100.00) per month, including light and water; and,

3. Free access to data gathered for studies and researches at the university/college, subject to the confidentiality rule as provided in Commonwealth Act 591 and upon clearance from the Project Director.

The Regional Office is headed by a Jr. Specialist with a staff consisting of three enumerators and a clerk-typist and some casual employees.

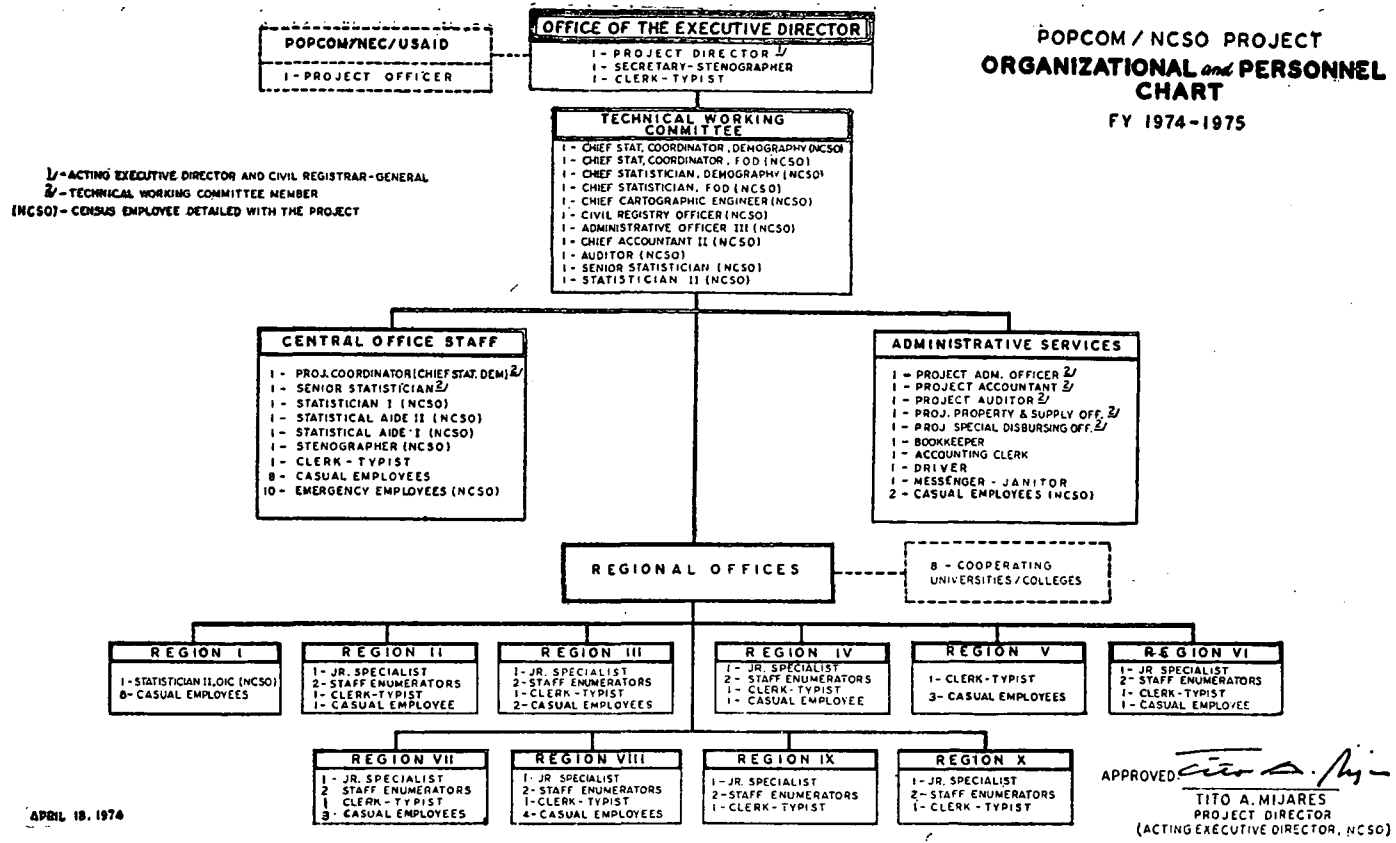
Since the project involves civil registration, also included are the Local Civil Registrars (LCRs) in the sample registration municipalities and cities and Barrio Captains (BCs)/ Special Reporters (SRs) for each sample ED as part of the registration phase. A Municipal Liaison Man (MLM) consolidates the reports of the LCRs and the Barrio Captains/ Special Reporters. A schmatic diagram of the organizational set-up of the Project is shown in Chart I.

C. *The Dual Records System*

Like projects of other countries with incomplete vital registration statistics: i.e., India, Pakistan, Brazil, Thailand, Turkey and Liberia, the Project has adopted the dual records system of gathering vital events in the sample EDs.

Sample registration alone is not capable of giving detailed information on demographic processes. There are certain types of data which cannot be derived from a registration system. The base population from which the crude rates are calculated

POPCOM / NCSO PROJECT
ORGANIZATIONAL and PERSONNEL CHART
FY 1974-1975



1/ - ACTING EXECUTIVE DIRECTOR AND CIVIL REGISTRAR-GENERAL
2/ - TECHNICAL WORKING COMMITTEE MEMBER
(NCSO) - CENSUS EMPLOYEE DETAILED WITH THE PROJECT

APRIL 18, 1974

APPROVED

TITO A. MIJARES
PROJECT DIRECTOR
(ACTING EXECUTIVE DIRECTOR, NCSO)

can be determined through a periodic survey, covering about the same time element, in those areas where the sample registration scheme has been set up, for the purpose of complementing the information gathered in the registration.

Except for Thailand which adopted its legal civil registration system as one of the independent sources of vital events, all the other countries had adopted the Dual Records System sought to establish their own registration schemes. Retrospective surveys or periodic household enumerations were generally adopted as the other leg of their dual records system.

In the Philippines, the two independent systems of recording vital events established in sample registration areas are:

1. The Continuous Reporting System (CRS)

2. Periodic Household Enumeration System)PHE)

The model that we have adopted is similar to that of Thailand, wherein the legal registration system of the country was used as the first leg of the dual system. The only difference is that the Philippines, in addition to the legal civil registration records, has set up a complementing reporting scheme by using barrio captains in sample areas. In the absence of barrio captains in sample enumeration districts, special reporters were hired to do the work. The supplementary reporting of barrio captains was designed to ensure the complete area coverage of the CRS.

A brief discussion of the two legs of the system follows:

1. *The Continuous Reporting System (CRS)*

The system made use of the Book of Register of the Local Civil Registrar (LCR) in the sample registration areas. The LCR in each sample registration area submitted monthly reports on registered vital events occurring among household residents of sample enumeration districts (EDs) located in the municipality of his jurisdiction. In addition to the LCR's reports, there were monthly reports of barrio captains (BCs)/Special Reporters (SRs) on occurrences of births and deaths in their respective areas of assignment. These two reports were combined through a matching procedure

to obtain the total events recorded under the CRS.

2. *The Periodic Household Enumeration (PHE) System*

The periodic household enumeration system represented the other leg of the two independent system of recording vital events. During the first year of operation, the Project conducted a complete enumeration of household residents of all sample EDs in sample registration areas for the purpose of establishing the base population from which changes in population composition were observed. In the succeeding years, the periodic household survey included the collection of demographic characteristics of the residents of the sample EDs as well as the collection of vital events. The base population, as determined from the survey, was used by both CRS and PHE in the computation of the vital rates.

The total number of events that have occurred among the residents of sample areas in the dual record system is arrived at by matching the events gathered under the two independent systems. Either one or both systems, CRS and PHE, may miss one or several events. After matching procedures, all events will fall under one of four categories, namely: events reported both by CRS and PHE; events reported by CRS only; events reported by PHE only and events reported by neither system.

D. *The Concept of Permanent Residence*

A great deal of difficulty is encountered in the matching procedures due to the mobility of the resident population. It was then decided that the estimates on vital rates be prepared separately for the permanent population and the migrant population. For purposes of the Project, a "permanent resident" is defined as an individual who resided continuously in the sample area for the entire year for which a rate is being computed, that is, he must be in the ED from January to December 31 of that particular year.

It might be recalled that in the usual estimation of crude rates, that total number of births or deaths, in a year is divided by the total man-years lived by the population for that year. In other words, the denominator of this ratio is estimated

by the average of the population at the beginning of the calendar year, which is equivalent to the assumption that each death, birth, in-and out-migrant of the original population contributes half a year, and the rest, a full year to the total man-years. Unfortunately, experience at least in the Philippines, does not show that the migrants stay in the area for half a year, on the average. There is also a peak season for migrants largely dependent on the agricultural activities in the rural areas, which does not coincide with the mid-year period. These conditions therefore distort the average-man-years concept usually employed in estimating crude birth and death rates.

During the first two years of observation (1971 and 1972), the usual formula using the average population as the denominator was used and it was noted that our estimates were very unstable, especially at the lowest level of estimation. A close look at the data went into our estimates showed that in-migrants and out-migrants were contributing much to the instability of our estimates at the ED level. To do away with this difficulty, the concept of permanent residence was adopted. In symbols:

$$R_r = \frac{N_r}{P_r}$$

where: R_r = birth or death rate for residents only in a given year

N_r = number of events that occurred to these residents from Jan. 1 to Dec. 31 of that year

P_r = number of permanent residents in the area

E. *Sampling Design*

At the start of the Project, crude national averages, for the years 1960 through 1969, of births and deaths were calculated from registered events at civil registry offices. These came out at 26.7 per 1,000 population for the birth rate and 7.8 per 1,000 for the death rate, estimated by using the number of registered birth and death events over the period of ten years as the numerators and the average population between 1960 and 1970 as the denominators. For the 1970 population

figures, the preliminary reports of the municipal census supervisors during the 1970 Population and Housing Census were used because final tabulations of census returns were not yet then available. Similar calculations of birth rates and death rates were done for each municipality and city. On the basis of these calculations, the stratification of the enumeration units was done.

1. Stratification —

Within each region, municipalities and cities were grouped into five (5) strata as follows:

Stratum I consisted of municipalities in the region that have crude birth and death rates which are either equal to or greater than the national average; that is, in the first quadrant in the diagram shown below $B \geq 26.7$, $D \geq 7.8$,

Stratum II consisted of municipalities in the region belonging to the second quadrant; $B < 26.7$, $D \geq 7.8$,

Stratum III consisted of municipalities in the region belonging to the third quadrant; $B < 26.7$, $D < 7.8$,

Stratum IV consisted of municipalities in the region belonging to the fourth quadrant; $B \geq 26.7$, $D < 7.8$,

Stratum V consisted of all chartered cities in the region.

	(D) Crude Death Rate	
II B < 26.7 D ≥ 7.8	I B ≥ 26.7 D ≥ 7.8	
	(26.7, 7.8)	B Crude Rirth Rate
III B < 26.7 D < 7.8	IV B ≥ 26.7 D < 7.8	

2. Selection of the sample enumeration districts (EDs)

One sample municipality was selected at random from each of the first four strata with probability proportionate to the 1970 population size. From each sample municipality, a simple random sample of enumeration districts (EDs) was chosen with equal probability and with a sampling fraction of approximately 30 per cent.

In Stratum V, the largest city in the region which is also the site of the regional office, was picked as the sample area. The EDs located in the sample cities of Baguio, Tuguegarao, Dagupan, Legaspi, Cagayan de Oro and Cotabato were selected at random with equal probability and a sampling fraction of 20 per cent. Those of Iloilo and Cebu were similarly chosen with equal probability and a sampling fraction of 10 per cent, where as those of Manila and Suburbs had a sampling fraction of 3 per cent.

The sample municipalities selected in each region are indicated on the map on page 4. The distribution of the sample EDs by sample municipality is shown in Table A.

F. *Estimation Procedure*

Samples were selected in each stratum in two stages. The first stage which is the primary sampling unit (PSU) was selected with a probability proportionate to the 1970 population size. The second stage of the sampling is the enumeration district in a sample municipality. All the persons in the sample ED were enumerated.

In general, the estimation procedure used to estimate the regional crude rates is illustrated on page 14. The total estimate for the country is merely the summation of estimates at regional levels.

III. FIELD AND OFFICE PROCEDURES

A. *Field Procedure*

1. CRS Field Procedures

During the past three years, the CRS procedures in gathering vital events from sample areas have

undergone innovations. The observation noted for the midyear survey conducted in 1971 was that, the number of events from the CRS were comparatively lower than the returns of the PHE. It was therefore necessary to monitor closely the work of the Local Civil Registrar and Barrio Captain/ Special Reporter to achieve coverage in reporting and improve quality of data gathered.

The hiring in 1971 of the Municipal Liaison Man who liaisoned between the reporters of the CRS did help the Project, although not as much as was hoped for. Coverage in reporting is affected by the difficulty in locating residences of households where the events occurred. This major difficulty led to the revision of reporting froms so that household serial number and building number identification were included in an integrated form for births and deaths to record both events.

Table A. Distribution of Sample Enumeration Districts in the Sample Registration Areas by Region

Region	City/Municipality	No. of ED's	Region	City/Municipality	No. of ED's
	PHILIPPINES	464			
I	Manila & Suburbs	55	VI	Bicol Region	56
	Manila	23		Legaspi City	11
	Quezon City	7		Irosin	9
	Caloocan City	10		San Jacinto	6
	Navotas	1		Ragay	17
	San Juan	2		Camalig	13
	Mandaluyong	5			
	Pasay City	4			
	Makati	3			
II	Ilocos & Mt. Province	30	VII	Western Visayas	56
	Baguio City	12		Iloilo City	21
	Bangued	9		Panay	12
	Sta. Marcela	2		Murcia	5
	Sagada	4		Barotac Viejo	11
	Burgos	3		Balasan	7

III	Cagayan Valley and Batanes	36	VIII	Eastern Visayas	66
	Tuguegarao	7		Cebu City	21
	Solana	9		Burauen	22
	Bayombong	6		Badian	8
	Sta. Teresita	3		Sta. Catalina	6
	San Mateo	11		Carmen	9
IV	Central Luzon	61	IX	Northern Mindanao	32
	Dagupan City	15		Cagayan de Oro City	13
	Cuyapo	15		Cabadbaran	10
	Guimba	21		Sison	3
	Pilar	4		Dancagan	3
	Masinloc	6		Kauswagan	3
V	Southern Tagalog	37	X	Southern Mindanao	35
	San Pablo City	17		Cotabato City	9
	Muntinglupa	4		Liloy	8
	Pinamalayan	8		Mutia	3
	Taguig	3		Pigkawayan	8
	General Nakar	5		Asuncion	7

ESTIMATION PROCEDURE

REGIONAL ESTIMATE OF CRUDE RATES —

Both Areas:

$$R_i = \sum_{j=1}^{4} \left[\left\{ \frac{\sum_{c=1}^{2} \frac{1}{f_{cij}} \cdot \frac{N_{cij}}{n_{cij}} \sum_{k=1} x_{cij}}{\sum_{c=1}^{2} \frac{1}{f_{cij}} \cdot \frac{N_{cij}}{n_{cij}} \sum_{k=1} Y_{cijk}} \times 1000 \right\} W_{ij} \right] + \left\{ \frac{\sum_{c=1}^{2} \frac{N_{ci5}}{n_{ci5}} \sum_{k=1} x_{ci5k}}{\sum_{c=1}^{2} \frac{N_{ci5}}{n_{ci5}} \sum_{k=1} Y_{ci5k}} \times 1000 \right\} W_{i5}$$

Urban/Rural Areas:

$$R_{ci} = \sum_{j=1}^{4} \left[\left\{ \frac{\frac{1}{f_{cij}} \cdot \frac{N_{cij}}{n_{cij}} \sum_{k=1} X_{cijk}}{\frac{1}{f_{cij}} \cdot \frac{N_{cij}}{n_{cij}} \sum_{k=1} Y_{cijk}} \times 1000 \right\} W_{cij} \right] + \left\{ \frac{\frac{N_{ci5}}{n_{ci5}} \sum_{k=1} x_{ci5k}}{\frac{N_{ci5}}{n_{ci5}} \sum_{k=1} Y_{ci5k}} \times 1000 \right\} W_{ci5}$$

Since the raising factors for the X- and Y- characteristics are the same for urban/rural areas, R_{ci} can be written as:

$$R_{ct} = \sum_{j=1}^{4} \left[\left\{ \frac{\sum_{k=1}^{n_{cij}} X_{cijk}}{\sum_{k=1}^{n_{cij}} Y_{ci5k}} \times 1000 \right\} W_{cij} \right] + \left\{ \frac{\sum_{k=1}^{n_{ci5}} X_{ci5k}}{\sum_{k=1}^{n_{ci5}} Y_{ci5k}} \times 1000 \right\} W_{ci5}$$

$$R_{ci} = \sum_{j=1}^{5} \left[\left\{ \frac{\sum_{k=1}^{n_{cij}} X_{cijk}}{\sum_{k=1}^{n_{cij}} Y_{cijk}} \times 1000 \right\} W_{cij} \right]$$

Where: $c = 1$ refers to urban areas

$c = 2$ refers to rural areas

X_{cijk} is the number of vital events of urban/rural areas in the k^{th} sample ED of the j^{th} stratum of the i^{th} region.

Y_{cijk} is the population of urban/rural areas in the k^{th} sample ED of the j^{th} stratum of the i^{th} region.

f_{cij} is the probability of selection of the primary sampling unit (PSU) of the ij^{th} stratum, that is, the ratio of the 1970 population in sample municipality of the j^{th} stratum of the i^{th} region to the 1970 population in the j^{th} stratum of the i^{th} region.

N_{cij} is the total number of EDs in the PSU of j^{th} stratum of the i^{th} region where j=1, 2, 3, 4.

N_{ci5} is the total number of EDs in the 5th stratum which consists of all chartered cities in the i^{th} region.

n_{cij} is the total number of sample EDs selected as second stage samples from N_{cij} in the PSU in the j^{th} stratum of the i^{th} region.

n_{ci5} is the total number of sample EDs selected as second stage samples from the total number of EDs of the PSU in the 5^{th} stratum.

$c = 1$ refers to urban areas

$c = 2$ refers to rural areas

W_{ij} is the ratio of the 1970 population in the j^{th} stratum of the i^{th} region to the 1970 population of the i^{th}region.

W_{cij} is the ratio of the 1970 urban/rural population in the j^{th} stratum of the i^{th} region to the 1970 urban/rural population in the i^{th} region.

NATIONAL ESTIMATES OF CRUDE RATES —

Both Areas:

$$R = \sum_{i=1}^{10} R_i W_i$$

Urban/Rural Areas:

$$Rc = \sum_{i=1}^{10} R_{ci} W_{ci}$$

Where:

W_i is the ratio of the 1970 population in the i^{th} region to the 1970 population of the Philippines.

W_{ci} is the ratio of the 1970 urban/rural population in the i^{th} region to the 1970 urban/rural population of the Philippines.

Field verification of non-matched events was greatly facilitated with the use of improved ED maps, available in June 1972 in which the names of heads of households were indicated.

To improve coverage, the MLM utilized the "hilots" as informants. He verified whether these events were registered or not; if not, he prepared birth certificates for filing in the LCR's office. A list of expectant or pregnant mothers was maintained by the reporters to serve as reference for collection rounds. One positive way which contributed to improved level of registration is the furnishing of Municipal Form for births/deaths registration by the Project.

2. *PHE Field Procedures*

The prediodic household enumeration phase of the dual records system conducts an annual and mid-year survey. The first annual survey conducted in January 1, 1971 was to establish the base population of the sample registration areas. Subsequent annual surveys to update the base population were

conducted in January, 1972, 1973 and 1974. Mid-year surveys are usually undertaken in June because there are more problems in logistics for field operations conducted in July due to budgetary drawbacks and also because it is a wet month.

A massive verification of events gathered in both systems was launched in June, 1973 instead of the usual mid-year survey. Also in June, 1974, the mid-year survey was not conducted. In its stead, an evaluation survey was conducted among the reporters of the CRS to form part of the evaluation of all data gathered by the Project for the last four years.

B. *Office Processing Procedure*

On the CRS leg of the dual records system, processing consists of matching done on a monthly basis of vital events reported by the LCRs andBCs/SRs by the MLM. These events are then indexed and verified against the master index file also known as the base population file. Non-matched events are verified by the MLM and those found to be out-of-scope are deleted. Masterlists at ED level are prepared from which tabulations are made.

On the PHE, the other leg of the dual records system, information on the base population was gathered using the Household Questionnaire. Each person enumerated during the initial survey of 1971 was indexed and a master file on the population was updated every subsequent annual survey. This was done by removing from the file, cards of deceased persons and out-migrants, then adding the cards of in-migrants and births to this file.

Vital events from both the CRS and PHE are again matched to get the total number of events (unadjusted) from the dual records system. With these as numerators, the crude rates are calculated using the base population for the particular years as the denominators. For permanent residents, in- and out- migrants of current years are excluded from the denominator and their pertinent events from the numerator.

IV. ANALYSIS OF RESULTS

Presented in this report are summary tables based on the final computations using the results of the first three years of operation 1971, 1972, and 1973.

A. *National Estimates*

A national summary of estimated crude vital rates making use of the concept of permanent residence is shown in Table B on the succeeding page.

Table B. Estimated National Crude Rates of Permanent Residents in Sample Areas Obtained From the Dual Records System (Unadjusted), Philippines: 1971-1973

Table B. Estimated National Crude Rates of Permanent Residents in Sample Areas Obtained From the Dual Records System (Unadjusted), Philippines: 1971-1973

Area	Crude Rates per 1000 Population								
	1971			1972			1973		
	Birth	Death	Growth	Birth	Death	Growth	Birth	Death	Growth
Urban & Rural	37.91	6.55	31.36	35.30	8.66	26.64	33.87	8.63	25.24
Urban	33.46	5.48	27.98	27.76	6.96	20.80	28.39	7.32	21.07
Rural	39.99	7.05	32.94	38.81	9.45	29.36	36.43	9.24	27.19

Unadjusted data from the dual records system seem to show that the birth rate is gradually declining from 37.91 births per thousand in 1971 to 35.30 in 1972, to 33.87 in 1973. The same declining trend is noted for both urban and rural sectors although a faster decline is noted for the urban sector.

This decline may be expected considering that family planning programmes started to be in operation since the early sixties and considering further that population control programmes have been given

full support by the government. Whether this birth decline is indicative of a real trend still needs a continuing study.

The crude death rates on the other hand seem to have risen from 6.55 deaths per thousand to 8.66 in 1972 and have remained around this level in 1973. This rise in the number of deaths should not be interpreted on its face value because it is more attributable to better controls instituted by the Project in the gathering of events for the succeeding years, 1972-1973.

The growth rates which are simply the difference between the vital rates, seem to have likewise declined from 31.36 persons per thousand in 1971 to 26.64 in 1972, to 25.24 in 1973. The urban-rural growth differentials are quite substantial.

B. *Regional Estimates*

Regional variations in the crude rates (unadjusted) are shown in Appendix Table 1. Urban-rural differences in fertility are not shown in this table but are shown in detailed tables of the unabridged report. It may be worth mentioning that urban-rural differences are noticeable in the more fertile regions like Northern Mindanao and Cagayan Valley and Batanes. We are of the opinion that these observed large differentials really exist and they are not merely spurious situations due to differences in coverage.

At regional level, the death rates appear fluctuating from year to year. Expectedly, Manila has very low death rates because as general observations indicate, industrialization and urbanization go hand in hand with low mortality and fertility rates. However, the lowest death rate of 3.90 deaths per thousand for Southern Mindanao is really low.

It is suspected that the coverage, particularly the registration phase in this region was inadequate which perhaps also explains why the birth rate based on the CRS is lowest in 1971.

C. Adjusted Estimates

Attempts were also made to estimate vital rates using the Chandrasekhar-Deming formula. The estimated rates taking into account the events supposedly missed by both CRS and PHE are shown in table C.

Table C. Estimated National Crude Rates of Permanent Residents in Sample Aras Obtained From the Dual Records System (Adjusted), Philippines: 1971-1973

Area	Crude Rates per 1000 Population								
	1971			1972			1973		
	Birth	Death	Growth	Birth	Death	Growth	Birth	Death	Growth
Urban & Rural	41.86	7.58	34.28	35.82	8.97	26.85	36.67	9.55	26.97
Urban	36.77	6.43	30.34	28.22	7.17	21.02	30.72	8.06	22.66
Rural	44.24	8.12	36.12	39.37	9.81	29.56	39.44	10.24	28.98

Adjusted data show: that the 1971 events missed by both systems seem quite large. This is not surprising since the dual system was yet on an experimental stage and a significant number of events were not properly reported resulting in a large proportion of non-matches, either through inclusion of out-of-scope events in one system, or use of too stringest matching criteria so that the estimate of "missed events" become inflated.

In 1972, possible collusion between the two systems could explain the apparently low missed events but the estimated missed events for 1973 seems reasonable since extra care was exercised to maintain independence between the two systems.

This comparison of the unadjusted and adjusted rates points out the deficiency of the Chandrasekhar-Deming formula. Ordinarily, the missed rate should decline over the year as improvements are effected in both legs of the system. But, our results do not show this primarily because the conditions embodied in the formula are too ideal for practical use. It is thus suggested that the adjusted rates be taken only as upper limits of the unadjusted rates:

Crude Rates Per 1000 Population

Vital Rate	1971		1972		1973	
	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted
Birth	37.91	41.86	35.30	35.82	33.87	36.67
Death	6.55	7.58	8.66	8.97	8.63	9.55
Growth	31.36	34.28	26.64	26.85	25.24	26.97

The results of an Evaluative Survey, the first part of which was conducted last June and the second in September, will be scrutinized and then we can make more definitive statements on the limitations of our data and at the same time confirm the reliability of our estimates.

D. *Level of Registration*

Appendix Table 2 shows the percentage level of birth and death registration of permanent residents from 1971 to 1973. It must be recalled that the corollary objective of the Project is to come out with an acceptable level of registration coverage of at least 90 per cent. During the first year of the Project, only Regions III and I attained this level for birth and deaths, respectively.

In 1972, Regions II, III and IV attained it for births and deaths. In 1973, only Regions II, III and IX maintained this 90 per cent level for both birth and death registration. Other regions showed declines but Regions VI, VII and VIII were way below the 90 per cent level.

V. CONCLUDING OBSERVATIONS.

Despite the various problems and technical drawbacks, the Project in its efforts to produce demographic rates, was able to yield results apparently more satisfactory and useful than would otherwise have been obtained by legal civil registration alone. At any rate, it is still the aim of the Project to improve the Vital Registration System to the point where it can independently produce reliable demographic statistics needed by various planning agencies — both public and private. As it is, Civil Registration, particularly the registration of births and deaths, is still

inadequate because of the following reasons:

1. Lack of interest among parents;
2. Ignorance about the law requiring the compulsory registration of birth and death events;
3. Customs not to register vital events especially among the cultural minorities;
4. Distance from place of occurrence to the registration center; and,
5. Common belief that baptism is already registration

Thus, it is clear that the attainment of a satisfactory Civil Registration System is still a long way off. Massive education campaign, that entails considerable time, effort and money, has to be effected if the objective is to be reached. Indeed, the improvement of Civil Registration is a long-term goal. For any short-term effort, this will have to remain a worthy hope.

Appendix Table I

SUMMARY OF ESTIMATED REGIONAL CRUDE RATES OF PERMANENT RESIDENTS IN SAMPLE REGISTRATION AREAS OBTAINED FROM THE DUAL RECORDS SYSTEM (UNADJUSTED) PHILIPPINES: 1971-1973

Crude Rates per 1000 Population

Region	1971			1972			1973		
	Birth	Death	Growth	Birth	Death	Growth	Birth	Death	Growth
PHILIPPINES	37.91	6.55	31.36	35.30	8.66	26.64	33.87	8.63	25.24
I — Manila & Suburbs	35.46	4.11	31.35	26.76	5.96	20.80	29.51	5.83	23.68
II — Ilocos & Mt. Province	32.29	7.52	24.77	28.93	11.25	17.68	29.15	8.52	20.63
III — Cagayan Valley & Batanes	38.58	8.90	29.68	42.22	13.02	29.21	36.08	10.99	25.09
IV — Central Luzon	40.64	6.86	33.78	33.60	8.78	24.82	37.07	9.21	27.86
V — Southern Luzon	38.69	6.25	32.44	34.75	7.34	27.41	35.74	9.16	26.58
VI — Bicol	38.51	8.41	30.10	40.85	9.49	31.36	33.38	11.01	22.37
VII — Western Visayas	34.79	6.33	28.46	36.92	8.72	28.20	35.04	8.23	26.81
VIII — Eastern Visayas	39.96	9.34	30.62	34.54	9.70	24.84	35.42	10.64	24.78
IX — Northern Mindanao	42.44	5.65	36.79	38.12	8.99	29.13	38.74	7.43	31.31
X — Southern Mindanao	31.86	3.90	27.96	37.29	7.55	29.74	29.82	7.02	22.80

Appendix Table 2

PERCENTAGE LEVEL OF REGISTRATION OF BIRTHS AND DEATHS OCCURING AMONG PERMANENT RESIDENTS OF SAMPLE REGISTRATION AREAS, PHILIPPINES: 1971-1973

Region	Percent Level of Registration					
	Birth			Death		
	1971	1972	1973	1971	1972	1973
PHILIPPINES	67.13	80.45	79.37	70.51	79.36	77.01
I — Manila & Suburbs	81.47	92.14	90.33	90.56	91.08	80.42
II — Ilocos & Mt. Province	89.42	97.51	97.12	76.34	89.11	91.85
III — Cagayan Valley & Batanes	90.54	94.46	94.80	85.10	87.93	91.77
IV — Central Luzon	78.47	91.52	73.66	73.70	85.64	71.26
V — Southern Luzon	76.68	87.47	84.37	69.61	83.70	88.56
VI — Bicol	76.29	84.53	65.80	82.69	85.15	60.04
VII — Western Visayas	44.75	71.74	60.85	62.70	76.44	69.35
VIII — Eastern Visayas	57.68	69.31	68.14	60.36	67.84	70.41
IX — Northern Mindanao	63.02	77.92	92.62	82.50	78.06	91.39
X — Southern Mindanao	42.42	61.65	88.24	37.15	59.84	77.76