# Multiround Vital Statistics Survey in the Lao People's Democratic Republic*

Because reliable estimates of the population and related data are needed to guide national development planning, the first population census of the Lao People's Democratic Republic in 1985 was very important as a way of providing valuable statistics on the size, distribution and characteristics of the population. However, while the census provided good estimates of the population size and related measures such as fertility and mortality, it was less useful as a means of identifying the speed and manner in which the population was changing. Thus, a project was developed by the ESCAP secretariat with funding from UNFPA (United Nations Population Fund) to assist the Government in improving civil registration and vital statistics. The project had two broad objectives. The first was to provide training and support to selected village chiefs as a way of strengthening their role as civil registrars in the hope that this would lead to eventual improvement in the national registration system. The second broad objective was to set up a system of statistical collection, involving regular visits to selected households, to provide good estimates of vital statistics. This system is referred to as a multiround survey. Although it has many methodological weaknesses, this type of survey can provide some valuable population data in a country where financial resources for conducting censuses and surveys are limited.

The first visit to selected villages was made in mid-1988. During this visit, basic information was obtained for every usual member of the sample households. In the State Statistical Centre (SSC), these records were read to

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computer to establish a statistical baseline against which future change could be measured. Questions were asked about vital events that had occurred in each household during the preceding year. In an evaluation of the results, it appears that the responses on births were very good and provide useful guidelines for measuring change. The responses on deaths, universally more difficult to obtain, were less reliable, although it is possible to provide some estimates using indirect techniques.

The survey design was most basic, intended to provide broad estimates at the national level. For operational reasons, the sample was drawn from compact clusters, which, as far as practicable, comprised entire villages. However, in order to reduce size variation, large villages were divided into approximately equal clusters. While the clustering effects increase sampling errors, the approach has some important benefits for this type of survey. Since the boundaries of each enumeration area are clear, there is little difficulty in incorporating new households formed during the project life into the sample. The results for any village or cluster can be compared with civil registration records obtained from other sources. More importantly, the approach simplifies fieldwork, including supervision and control, and helps to improve the essential quality of the data.

The sample involved the selection of 300 villages or urban clusters. A sample of this size should provide reasonable estimates at the national level. Some basic national rates have already been produced from this survey, but in general the sample size is too small to provide detailed geographical data. However, to provide more data for this note, records of births and deaths for the two-year period 1988-1990 have been combined. This has effectively created a larger sample and has permitted limited geographical disaggregation of data. In addition, a population count was conducted in late 1990 using the village chiefs as enumerators.

A number of factors should be borne in mind in interpreting the data presented in this note. Limitations in funding and the inability to provide as much supervision or control over operations as desired have meant that, while the data should be very useful, the precision of all figures cannot be assured. Problems with sample size for the multi-round survey have meant that figures are subject to both random fluctuations and sampling errors. Also, it needs to be recognized that many of the approaches used are novel and results are still somewhat experimental; techniques and procedures are still in development. Nevertheless it is hoped that these provisional data will go some way to suggest broad patterns of demographic behaviour and will meet a growing need for basic population data.

## Evaluation of data

Fortunately the 300 villages included in the multiround survey provided an excellent resource for estimating under-enumeration in the 1990 census or population count. Weighted provincial populations for the 300 villages provided the key control values; weights were derived from the 1985 census. In 1.5 provinces the actual census counts were used in the procedure; in the remaining two provinces, some adjustment was needed to align areas used for census and multiround surveys.

Based on this procedure, the weighted population of Lao PDR was about 4.20 million, compared with an actual census count of 4.14 million, implying omissions of the order of 1.4 per cent. Dividing the control total by the actual count, a correction factor was obtained. This factor was applied as a constant to all figures, since little was known about the actual distribution of under-enumeration.

## Population size and distribution

Given the aforementioned limitations, it has been possible only to provide data for specified geographic areas. Lao PRD has been divided into six regions as shown below, based on similarity in recorded vital rates, to enable spatial distributions to be provided. (See map on p. 61.)

| Region | Provinces | Location on map | Region | Provinces | Location on map |
|---|---|---|---|---|---|
| I | Phongsaly | 2 | IV | Vientiane | |
| | Luangnamtha | 3 | | Municipality | 1 |
| | Oudomsay | 4 | V | Khammuane | 12 |
| | Bokeo | 5 | | Suvannakhet | 13 |
| II | Luangprabang | 6 | VI | Saravane | 14 |
| | Houaphanh | 7 | | Sekong | 15 |
| | Sayaburi | 8 | | Champasak | 16 |
| | Xiengkhuang | 9 | | Attapeu | 17 |
| III | Vientiane | 10 | | | |
| | Bolikhamsay | 11 | | | |

The extent to which data can be shown separately for each of these regions depends upon the size and underlying precision of estimates. Thus for the population distribution by sex, shown in table 1, figure for all regions are given. The total population of 4.2 million comprised 2.06 million males and 2.14 million females. The population of Vientiane Municipality is approaching half a million people. The relatively high sex ratio recorded reflects the importance of migration to the growth of Vientiane and the predominance of males among migrants. Conversely, the low sex ratios in rural areas is in part explained by out-migration, particularly by males.

**Table 1: Population by sex and region, 1990**

| Region | Males | Females | Total | Sex ratio* |
|---|---|---|---|---|
| I | 297,663 | 317,619 | 615,282 | 93.7 |
| II | 461,813 | 478,103 | 939,916 | 96.6 |
| III | 225,849 | 228,022 | 453,871 | 99.0 |
| IV | 242,028 | 226,660 | 468,688 | 106.8 |
| V | 436,781 | 460,411 | 897,192 | 94.9 |
| VI | 397,437 | 429,274 | 826,711 | 92.6 |
| Lao PDR | 2,061,571 | 2,140,089 | 4,201,660 | 96.3 |

* Number of males per thousand females

## Population growth

The combined influences of migration, fertility and mortality are reflected in growth rates. The population census of 1985 provides a useful benchmark against which growth can be measured. For Lao PDR as a whole, the mean annual rate of growth was a little below 2.9 per cent, which is very high by global standards.

Not surprisingly, the highest growth is recorded for Vientiane Municipality at a mean average rate of 4.6 per cent. This high rate is the consequence of the net migration flows into Vientiane from the more rural provinces of the country. Nevertheless, while the effects of migration on growth for Vientiane is very significant, the effects on rural areas is more evenly distributed. Thus, in all regions, growth remains high, i.e. between 2 and 3 per cent per annum. Indeed the pattern shown is consistent with the effects of fertility on growth. In the more remote areas in the north-eastern and southern parts of the country, rates of growth are highest. In the provinces closest to Vientiane Municipality, namely, Xiengkhuang, Vientiane, Bolikhamsay and Khammuane, the growth rates are considerably lower.

This pattern is largely supported by evidence from the multiround survey. Some data from this survey are presented below. Processing is continuing but some provisional rates have been calculated: a crude birth rate of about 45 births per thousand population has been obtained. The corresponding mortality rate is about 16 deaths per thousand population. These rates are thus entirely consistent with the growth rate of 2.8 - 2.9 per cent recorded between 1985 and 1990.

**Table 2: Mean annual birth and death rates, 1988-1990, by region**

| Region | Birth rate | Death rate |
|---|---|---|
| I | 49.6 | 16.5 |
| II | | |
| III | 38.0 | 12.0 |
| IV | | |
| V | 41.9 | 17.3 |
| VI | 47.4 | |
| Lao PDR | 45.0 | 16.0 |

Mortality estimates are most subject to sampling error and as a result the number of regions presented has been reduced to three. For fertility, the figures are larger and more stable and rates for five regions are presented.

Fertility rates are clearly highest in the north-eastern and southern provinces, remote from the main service centres in Vientiane Municipality. The relatively low fertility in Region V is interesting. These provinces have reasonable access to Vientiane, which helps to explain falling rates. But relatively low rates were also recorded in Bokeo, Sayaburi and Champasak provinces, which in common with Region V, border on Thailand, suggesting that some influences of reduced fertility in that country might have been felt in Lao PDR. It is also of interest to note that during the three years of observation in the multiround survey, some evidence of declining fertility has appeared.

From the evidence available, mortality for Lao PDR seems to have remained persistently high, although a slight decline has most likely occurred. The advantage enjoyed by Vientiane Municipality is very apparent, with its much more elaborate infrastructure of health services.

## Concluding comment

Dispite its many difficulties, the vital statistics project has been able to produce some revealing and valuable data on the size, distribution and growth of population. The high levels of fertility and mortality and their uneven distribution should provide useful guidelines to health and population planners.