Lao PDR - Social Indicator Survey II 2017

Government of Lao PDR, United Nations Children's Fund

Report generated on: January 11, 2019

Sampling

Sampling Procedure

The major features of the sample design are described in this appendix. Sample design features include defining the sampling frame, target sample size, sample allocation, listing in sample clusters, choice of domains, sampling stages, stratification, and the calculation of sample weights.

The primary objective of the sample design for the 2017 Lao Social Indicator Survey (LSIS 2017) was to produce statistically reliable estimates of most indicators, at the national level, for urban and rural areas, and for the 18 provinces of the country.

A multi-stage, stratified cluster sampling approach was used for the selection of the survey sample. The primary sampling units (PSUs) selected at the first stage were villages (PSU and Village are used interchangeably in this Chapter). A listing of households was conducted in each sample village, and a sample of households was selected at the second stage.

SAMPLING FRAME AND STRATIFICATION

The sampling frame for this survey consisted of a list of all villages in the country, arranged by province, with appropriate size estimates (number of households) and other relevant information about each village. The village register is maintained by Lao Statistics Bureau (LSB). It is updated in December each year. The version used as sampling frame was the village register of December 2015.

The 18 provinces were defined as the sampling strata. Within provinces a further, implicit, stratification - on village category - was achieved by systematic sampling from a list of villages ordered by village category.

SAMPLE SIZE AND SAMPLE ALLOCATION

The overall sample size for the 2017 Lao Social Indicator Survey was calculated as 23,400 households. For the calculation of the sample size, the key indicator used was the underweight prevalence among children age 0-4 years. Since the survey results are tabulated at the provincial level, it was necessary to determine the minimum sample size for each province.

The number of households selected per cluster for the survey was determined as 20 households, based on a number of considerations, including the design effect, the budget available, and the time that would be needed per team to complete one cluster. Dividing the total number of households by the number of sample households per cluster, it was calculated that 1,170 sample clusters would need to be selected for the survey.

The sample allocation over provinces was determined by a procedure where the sample at first was allocated proportionally to the square root of the number of households in each province. This allocation was further adjusted so that provinces getting less than 1,100 households in the preliminary allocation were given additional households up to 1,100. These additional households were taken from the three provinces that had the largest samples according to the preliminary allocation. The sample sizes for provinces vary between 1,100 and 1,680 households. The justification for using different sample sizes is that the standard errors for national estimates will be lower than the standard errors that would have been achieved with equal sample sizes over the provinces.

Within province the sample was allocated over implicit strata defined by village category. This was achieved by systematic sampling from a list of villages ordered by village category. This way of sampling resulted in approximately proportional allocation of the province sample over the implicit strata urban villages, rural villages with road and rural villages without road.

SELECTION OF VILLAGES (CLUSTERS)

Villages were selected from each of the sampling strata (provinces) by using systematic probability proportional to size (PPS) sampling procedures. The measure of size was the number of households in the village; the number was obtained from the LBS village register. Altogether 32 villages were so large in size so they had the probability equal to one to be selected to the sample. These large villages were thus selected to the sample with certainty.

LISTING ACTIVITIES

A new listing of households was conducted in all the sample villages prior to the selection of households. For this purpose, listing teams were trained to visit all the sampled villages and list all households in the village. The listing operation took place from December 2016 to February 2017 with 70 listing team members. In each Province, there were two teams each

consisting of a lister and a mapper, except in Champasack, where three teams were assigned.

Listing could not be done in four villages. In two of the villages the area had been completely cleared of dwellings due to preparations for dam construction. One village was not accessible by car or motorcycle due to poor roads and one village could not be properly identified due to village mergers.

Large villages, where the number of households exceeded 300 households, were divided into two or more segments, and one segment was picked randomly before listing. Segmentation was done in 216 villages.

SELECTION OF HOUSEHOLDS

Lists of households were prepared by the listing teams in the field for each village. The households were then sequentially numbered from 1 to Mhi (the total number of households in each village or segment) at the Lao Bureau of Statistics, where the selection of 20 households in each village was carried out using random systematic selection procedures. The MICS6 spreadsheet template for systematic random selection of households was adapted for this purpose.

The survey also included a questionnaire for individual men that was to be administered in half of the sample of households. The MICS household selection template includes an option to specify the proportion of households to be selected for administering the individual questionnaire for men, and the spreadsheet automatically selected the corresponding subsample of households. All men age 15 to 49 years in the selected households were eligible for interview.

LSIS 2017 also included water quality testing for a subsample of households within each sample cluster. A subsample of 3 of the 20 selected households was selected in each sample cluster using random systematic sampling for conducting water quality testing, for both water in the household and at the source. The MICS household selection template includes an option to specify the number of households to be selected for the water quality testing, and the spreadsheet automatically selected the corresponding subsample of households.

Response Rate

Of the 23,299 households selected for the sample, 22,443 were found to be occupied. Of these, 22,287 were successfully interviewed for a household response rate of 99 percent.

The Water Quality Testing Questionnaire was administered to 3,495 randomly selected households, three from each cluster. Of these, 3,346 were successfully tested for household drinking water yielding a response rate of 96 percent. Also, 3,292 were successfully tested for source drinking water quality yielding a response rate of 94 percent.

In the interviewed households, 26,103 women (age 15-49 years) were identified. Of these, 25,305 were successfully interviewed, yielding a response rate of 97 percent within the interviewed households.

The survey also sampled men (age 15-49) but required only a subsample. All men (age 15-49) were identified in every other household. 12,694 men (age 15-49 years) were listed in the household questionnaires. Questionnaires were completed for 12,017 eligible men, which corresponds to a response rate of 95 percent within eligible interviewed households.

There were 11,812 children under age five listed in the household questionnaires. Questionnaires were completed for 11,720 of these children, which corresponds to a response rate of 99 percent within interviewed households.

A sub-sample of children 5-17 years was used to administer the questionnaire for children of 5-17 years. Only one child has been selected randomly in each household interviewed, and there were 31,339 children (5-17 years) listed in the household questionnaires. Of these, 15,494 children (5-17 years) were selected, and questionnaires were completed for 15,435 which correspond to a response rate of 99.6 percent within the interviewed households.

Weighting

The LSIS 2017 sample is not self-weighting. For this reason, sample weights were calculated and these were used in the subsequent analyses of the survey data.

The major component of the weight is the reciprocal of the sampling fraction employed in selecting the number of sample households in that particular sampling stratum (h) and PSU (i).

The term fhi, the sampling probability for the i-th sample PSU in the h-th stratum, is the product of probabilities of selection at every stage in each sampling stratum:

where pshi is the probability of selection of the sampling unit at stage s for the i-th sample PSU in the h-th sampling stratum.

Since the number of households in each village from the frame used for the first stage selection and the updated number of households in the village from the listing are generally different, individual overall probabilities of selection for households in each sample village (cluster) were calculated.

A final component in the calculation of sample weights takes into account the non-response. In LSIS 2017 there was non-response at three levels: village, household and individual level. The sample weights must be adjusted to compensate for the non-response.

Field work could not be conducted in five villages. In two of these villages the reason was that the area had been evacuated due to dam construction. So, the village was in fact surveyed but found to have no households. The loss of these two villages was not considered non-response, and it did not call for weight adjustment, as the households which had lived in these villages still had a chance of being selected in their new places of living.

After the completion of fieldwork, response rates were calculated for each sampling stratum. These were used to adjust the sample weights calculated for each cluster.

The non-response adjustment factors for the individual women and under-5 questionnaires were applied to the adjusted household weights. Numbers of eligible women and under-5 children were obtained from the list of household members in the Household Questionnaire for households where interviews were completed.

The weights for the questionnaire for individual men were calculated in a similar way. In this case the number of eligible men in the list of household members in all the LSIS sample households in the stratum was used as the numerator of the non-response adjustment factor, while the number of completed questionnaires for men in the stratum was obtained from the 50% subsample of households. Therefore, this adjustment factor includes an implicit subsampling weighting factor of 2 in addition to the adjustment for the non-response to the individual questionnaire for men.

In the case of the questionnaire for children age 5 to 17 years, one child was selected from all the children in this age group recorded in the list of household members. The weight for the corresponding data will be equal to the adjusted household weight multiplied by the number of children age 5 to 17 years recorded in the list of household members. Therefore, the weights for the children age 5 to 17 years will vary by sample household. This weighting is implemented in the tabulation programs for the corresponding tables. However, an additional household weight adjustment factor is applied at the stratum level to account for any nonresponse for the module of children age 5 to 17 years.

For the water quality testing (both in household and at source) a subsample of 3 households was selected from the 20 LSIS sample households in each sample cluster.

The full (raw) weights for the households were calculated by multiplying the inverse of the probabilities of selection by the non-response adjustment factor for each stratum. These weights were then standardized (or normalized), one purpose of which is to make the weighted sum of the interviewed sample units equal to the total sample size at the national level. Normalization is achieved by dividing the full sample weights (adjusted for nonresponse) by the average of these weights across all households at the national level. This is performed by multiplying the sample weights by a constant factor equal to the unweighted number of households at the national level divided by the weighted total number of households (using the full sample weights adjusted for non-response). Standardized (normalized) household weights varied between 0.1733 and 3.6787 in the 1,165 surveyed sample villages.

A similar standardization procedure was followed in obtaining standardized weights for individuals (women, men, children 5-17 and under-5) and water quality tests.

Sample weights were appended to all data sets and analyses were performed by weighting survey data with these sample weights.

Questionnaires

Overview

Six questionnaires were used in the survey: 1) a household questionnaire which was used to collect basic demographic information, the household, and the dwelling; 2) a water quality testing questionnaire administered in three households in each cluster of the sample; 3) a questionnaire for individual women; 4) a questionnaire for individual men; 5) an under-5 questionnaire, administered to mothers (or caretakers) of all children under 5 living in the household; and 6) a questionnaire for children age 5-17 years, administered to the mother (or caretaker) of one randomly selected child age 5-17 years living in the household.

Questionnaires to capture anthropometry measurements among children under 5 years and to record anaemia test results for children under 5 years and women age 15-19 years also form part of the LSIS II questionnaires.

Data Collection

Data Collection Dates

Start	End	Cycle
2017-07	2017-11	N/A

Data Collection Mode

Face-to-face [f2f]

DATA COLLECTION NOTES

Training for the fieldwork was conducted for 31 days during June and July, 2017. Training included lectures on interviewing techniques and the contents of the questionnaires, and mock interviews between trainees to gain practice in asking questions. Participants were trained to collecting data using paper questionnaires as well as tablets/CAPI application. The trainees spent three days in field practice and one day on a full pilot survey in Vientiane province. The standard MICS training agenda was customized for LSIS II training.

Measurers received dedicated training on anthropometric measurements and water quality testing for a total of 9 days, including three days in field practice and pilot survey.

Field Supervisors attended additional training on the duties of team supervision and responsibilities. The data were collected by 25 teams; each was comprised of four interviewers, one driver, two measurers and a supervisor. Fieldwork began in July, 2017 and concluded in November, 2017. Data was collected using tablet computers running the Windows 10 operating system, utilizing a Bluetooth data transfer application for field operations, enabling transfer of assignments and completed questionnaires between supervisor’s and interviewer’s tablets.

SUPERVISION

Team supervisors were responsible for daily monitoring of the fieldwork. Forced re-interviewing was implemented on one randomly selected household per cluster. Daily observations of interviewer skills and performance was conducted.

During the fieldwork period, each team was visited multiple times by survey management team members and field visits were arranged for UNICEF MICS Team members.

The Field check tables (FCTs) were being produced for analysis and action with field teams.

Data Processing

Data Editing

Data were received at the LSB via Internet File Streaming System (IFSS) integrated into the management application on the supervisors' tablets. The central office communicated application updates through this system to field teams.

During data collection and following completion of fieldwork, data were edited according to editing process described in detail in the Guidelines for Secondary Editing, a customized version of the standard MICS6 documentation.

Data were analyzed using the Statistical Package for Social Sciences (SPSS) software, Version 23.

Data Appraisal

No content available

Related Materials

Questionnaires

Lao PDR- Social Indicator Survey II 2017: Questionnaire

Title	Lao PDR- Social Indicator Survey II 2017: Questionnaire
Filename	Questionnaire.pdf

Reports

Lao PDR- Social Indicator Survey II 2017: Report

Title	Lao PDR- Social Indicator Survey II 2017: Report
Country	Lao PDR
Language	English
Filename	Lao PDR 2017 Survey Findings Report_English.pdf

Technical documents

MICS6 Survey Planning Tools

Title	MICS6 Survey Planning Tools
Filename	http://mics.unicef.org/tools?round=mics6

MICS6 Indicator List

Title	MICS6 Indicator List
Filename	http://mics.unicef.org/tools?round=mics6

MICS6 Sampling Tools

Title	MICS6 Sampling Tools
Filename	http://mics.unicef.org/tools?round=mics6