Mongolia - Multiple Indicator Cluster Survey 2005

National Statistical Office of Mongolia

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Sampling

Sampling Procedure

The principal objective of the sample design was to provide current and reliable estimates on a set of indicators covering the four major areas of the World Fit for Children declaration, including promoting healthy lives; providing quality education; protecting against abuse, exploitation and violence; and combating HIV/AIDS. The population covered by the MICS - 3 is defined as the universe of all women aged 15-49 and all children aged under 5. A sample of households was selected and all women aged 15-49 identified as usual residents of these households were interviewed. In addition, the mother or the caretaker of all children aged under 5 who were usual residents of the household were also interviewed about the child.

The MICS - 3 collected data from a nationally representative sample of households, women and children. The primary focus of the MICS - 3 was to provide estimates of key population and health, education, child protection and HIV related indicators for Mongolia as a whole and for urban and rural areas separately. In addition, the sample was designed to provide estimates for each of the 5 regions for key indicators. Mongolia is divided into 5 regions. Each region is subdivided into provinces (aimags) and a capital city, and each province into soums, a capital city into districts, each soum into bags and each district into khoroos. As bag and khoroo household and population listing is annually updated, these were taken as primary sampling units. Bags and khoroos with a large population were divided into 2-3 primary sampling units in order to keep the similar number of households for sampling units. Bags and khoroos (primary sampling units) were selected with probability proportional to size and 25 households within each of these selected units were sampled using the systematic method. The primary sampling unit variable is the cluster (HH1).

The survey estimates the indicators on the child and women situation by national level, rural, urban areas and regions. Five regions (Western, Khangai, Central, Eastern and Ulaanbaatar) were the main sampling domains and a two stage sampling design was used. Within each region households were selected with probability proportional to size.

A total of 6325 households in 253 primary sampling units were selected to represent 21 aimags and Ulaanbaatar city. Sample weights were used for estimating the data collected from each of the sampled households.

No replacement of households was permitted in case of non-response or non-contactable households. Adjustments were made to the sampling weights to correct for non-response, according to MICS standard procedures.

Deviations from Sample Design

No major deviations from the original sample design were made. All primary sampling units were accessed and successfully interviewed with good response rates.

Response Rate

6325 households were selected for the sample. Of these, 6325 were occupied households and 6220 were successfully interviewed for a response rate of 98.3%. Within these households, 8057 eligible women aged 15-49 were identified for interview, of which 7459 were successfully interviewed (response rate 92.6%), and 3568 children aged 0-4 were identified for whom the mother or caretaker was successfully interviewed for 3547 children (response rate 99.4%). These give overall response rates (household response rate times individual response rate) for the women's interview of 91.0% and for the children's interview of 97.8%.

Weighting

Sample weights were calculated for each of the datafiles.

Sample weights for the household data were computed as the inverse of the probability of selection of the household, computed at the sampling domain level (urban/rural within each region). The household weights were adjusted for non-response at the domain level, and were then normalized by a constant factor so that the total weighted number of households equals the total unweighted number of households. The household weight variable is called HHWEIGHT and is used with the HH data and the HL data.

Sample weights for the women's data used the un-normalized household weights, adjusted for non-response for the women's questionnaire, and were then normalized by a constant factor so that the total weighted number of women's cases equals the total unweighted number of women's cases.

Sample weights for the children's data followed the same approach as the women's and used the un-normalized household weights, adjusted for non-response for the children's questionnaire, and were then normalized by a constant factor so that the total weighted number of children's cases equals the total unweighted number of children's cases.

Questionnaires

Overview

The questionnaires for the MICS were structured questionnaires based on the MICS - 3 Model Questionnaire with some modifications and additions. A household questionnaire was administered in each household, which collected various information on household members including sex, age, relationship, and orphanhood status. The household questionnaire includes household's characteristics, household members listing, education, water and sanitation, child labour, child discipline and behavior, child disability, household income and salt iodization.

To reflect the country specific characteristics, module “Salt iodization” of household questionnaire was enlarged by the questions about the vitamin enriched flour and module “child discipline and behavior” was added. These additions were made based on the decisions made by work group members and Steering Committee.

In the meantime, the salt used for household cooking was on site tested to measure the iodine content.

Household questionnaire was administered to an adult household member who can best represent other members, women questionnaire to women themselves and under-five questionnaire to mothers or caretakers of children under 5 years. Child weights and heights were measured during the interviews.

The women's questionnaire includes women's characteristics, women listing, child mortality, maternal and newborn health, marriage, contraception, attitudes toward family violence and HIV/AIDS knowledge.

The children's questionnaire includes children's characteristics, children listing, birth registration and early learning, child development , vitamin A, breastfeeding, care of illness, immunization and anthropometry.

The questionnaires were developed in Mongolian from the MICS - 3 Model Questionnaires, and were translated into English.

In order to check the clarity and logical sequence of questions and determine the interview duration per household, the pretest of questionnaires was made in September 2005 covering the selected households in Erdene soum of Tuv aimag. Based on the findings of the pretest, wording and logical sequence of the questions were improved.

Data Collection

Data Collection Dates

Start	End	Cycle
2005-11	2005-12	N/A

Data Collection Mode

Face-to-face [f2f]

DATA COLLECTION NOTES

10 days training for field work was conducted at the National Statistical Office of Mongolia in October and November, 2005. Training included lectures on interviewing techniques on a chapter to chapter basis at the end of which trainees were put to practice the interviewing techniques. The trainees who scored the highest in the exam were selected as enumerators.

Each team comprised of a supervisor, an editor and 5 enumerators. A total of 11 teams worked in the field.

Data was collected in November and December, 2005 and the monitoring over the data collection procedure was made by the staff of the NSO, UNICEF and members of Steering Committee. The monitoring team assessed the data collection procedure and gave instructions of correction and ensured they were fulfilled in case of mistakes found.

Data Collectors

Name	Abbreviation	Affiliation
National Statistical Office of Mongolia	NSO of Mongolia	

SUPERVISION

Interviewing was conducted by teams of interviewers. Each interviewing team comprised of 3-4 female interviewers, a field editor and a supervisor, and a driver. Each teams used a 4 wheel dirve vehicle to travel from cluster to cluster and where necessary within cluster.

The role of the supervisor was to coordinator field data collection activities, including management of the field teams, supplies and equipment, finances, maps and listings, coordinate with local authorities concerning the survey plan and make arrangements for accomodation and travel. Additionally, the field supervisor assigned the work to the interviewers, spot checked work, maintained field control documents, and sent completed questionnaires and progress reports to the central office.

The field editor was responsible for reviewing each questionnaire at the end of the day, checking for missed questions, skip errors, fields incorrectly completed, and checking for inconsistencies in the data. The field editor also observed interviews and conducted review sessions with interviewers.

Responsibilities of the supervisors and field editors are described in the Instructions for Supervisors and Field Editors, together with the different field controls that were in place to control the quality of the fieldwork. Field visits were also made by a team of central staff on a periodic basis during fieldwork. The senior staff of the NSO also made 3 visits to field teams to provide support and to review progress.

Data Processing

Data Editing

Data editing took place at a number of stages throughout the processing (see Other processing), including:

a) Office editing and coding
b) During data entry
c) Structure checking and completeness
d) Secondary editing
e) Structural checking of SPSS data files

Detailed documentation of the editing of data can be found in the Data Processing Guidelines in the MICS manual which can be found in http://www.childinfo.org/mics/mics3/manual.php website.

Other Processing

Data were processed in clusters, with each cluster being processed as a complete unit through each stage of data processing. Each cluster goes through the following steps:

1) Questionnaire reception
2) Office editing and coding
3) Data entry
4) Structure and completeness checking
5) Verification entry
6) Comparison of verification data
7) Back up of raw data
8) Secondary editing
9) Edited data back up
After all clusters are processed, all data is concatenated together and then the following steps are completed for all data files:
10) Export to SPSS in 4 files (hh - household, hl - household members, wm - women, ch - children under 5)
11) Recoding of variables needed for analysis
12) Adding of sample weights
13) Calculation of wealth quintiles and merging into data
14) Structural checking of SPSS files
15) Data quality tabulations
16) Production of analysis tabulations

Details of each of these steps can be found in the Data Processing Guidelines, Data Editing Guidelines, data processing programs in CSPro and SPSS, and Tabulation Guidelines in the MICS manual which can be found in http://www.childinfo.org/mics/mics3/manual.php website.

Data entry was conducted by 8 data entry operators in tow shifts, supervised by 1 data entry supervisors, using a total of 9 computers (8 data entry computers plus one supervisor's computer). All data entry was conducted at the NSO using manual data entry. For data entry, CSPro version 2.6.007 was used with a highly structured data entry program, using system controlled approach that controlled entry of each variable. All range checks and skips were controlled by the program and operators could not override these. A limited set of consistency checks were also included in the data entry program. In addition, the calculation of anthropometric Z-scores was also included in the data entry programs for use during analysis. Open-ended responses ("Other" answers) were not entered or coded, except in rare circumstances where the response matched an existing code in the questionnaire.

Structure and completeness checking ensured that all questionnaires for the cluster had been entered, were structurally sound, and that women's and children's questionnaires existed for each eligible woman and child.

100% verification of all variables was performed using independent verification, i.e. double entry of data, with separate comparison of data followed by modification of one or both datasets to correct keying errors by original operators who first keyed the files.

After completion of all processing in CSPro, all individual cluster files were backed up before concatenating data together

using the CSPro file concatenate utility.

For tabulation and analysis SPSS versions 13.0 and 14.0 were used. Version 13.0 was originally used for all tabulation programs, except for child mortality. Later version 14.0 was used for child mortality, data quality tabulations and other analysis activities.

After transferring all files to SPSS, certain variables were recoded for use as background characteristics in the tabulation of the data, including grouping age, education, and geographic areas as needed for analysis. In the process of recoding ages and dates some random imputation of dates (within calculated constraints) was performed to handle missing or "don't know" ages or dates.

Additionally, a wealth (asset) index of household members was calculated using principal components analysis, based on household assets, and both the score and quintiles were included in the datasets for use in tabulations. Conventionally, household economic status is being is defined by the data of household income and expenditure. This conventional method of data collection is time consuming (each household member is asked numerous questions by each of income sources). Besides such a method can result in incompleteness of data (interviewee may be unaware of income and expenditures of other members) and be challenged by irregularity of household economic activities and difficulties of capturing the higher incomes. Therefore, the current survey has estimated the indicator “wealth Index” to measure the household wealth which can be captured by a few and simple questions. For this purpose, it is quite possible to use the questions asked to measure other indicators (drinking water, sanitation facilities, housing type, access to electricity). One advantage of this index is to lessen the data effect of seasonal and temporary income sources as the index concentrates on assets or capitals accumulated over the longer period. (Rutstein & Johnson, 2004). The survey results were estimated by five equally weighted groups of wealth index. This includes the indicators of household type, condition, drinking water, sanitation facility, access to electricity, household consumerables (communications and transportation means, household electrical appliances). Using these indicators, each household was then weighted by the number of household members, and the household population was divided into five groups of equal size, from the poorest quintile to the richest quintile, based on the wealth scores of households they were living in. Total households were put in five groups with the following categories: poorest (I), second (II), middle (III), fourth (IV), richest (V).

The survey data has been disaggregated by national average, regions, urban and rural areas with household location and estimated by women education level and five wealth groups of household with equal weighting.
Regions: Western, Khangai, Central, Eastern and Ulaanbaatar
Location: Capital city, Aimag center, Soum center, Countryside
Urban, rural areas: Capital city and aimag centers are counted for urban areas and soum centers and the countryside makes up the category of rural areas.
Wealth index quintiles: Poorest (I), Second (II), Middle (III), Fourth (IV), Richest (V)

Data Appraisal

Estimates of Sampling Error

Estimates from a sample survey are affected by two types of errors: 1) non-sampling errors and 2) sampling errors. Non-sampling errors are the results of mistakes made in the implementation of data collection and data processing. Numerous efforts were made during implementation of the MICS - 3 to minimize this type of error, however, non-sampling errors are impossible to avoid and difficult to evaluate statistically.

Sampling errors can be evaluated statistically. The sample of respondents to the MICS - 3 is only one of many possible samples that could have been selected from the same population, using the same design and expected size. Each of these samples would yield results that different somewhat from the results of the actual sample selected. Sampling errors are a measure of the variability in the results of the survey between all possible samples, and, although, the degree of variability is not known exactly, it can be estimated from the survey results. The sampling errors are measured in terms of the standard error for a particular statistic (mean or percentage), which is the square root of the variance. Confidence intervals are calculated for each statistic within which the true value for the population can be assumed to fall. Plus or minus two standard errors of the statistic is used for key statistics presented in MICS, equivalent to a 95 percent confidence interval.

If the sample of respondents had been a simple random sample, it would have been possible to use straightforward formulae for calculating sampling errors. However, the MICS - 3 sample is the result of a two-stage stratified design, and consequently needs to use more complex formulae. The SPSS complex samples module has been used to calculate sampling errors for the MICS - 3. This module uses the Taylor linearization method of variance estimation for survey estimates that are means or proportions. This method is documented in the SPSS file CSDescriptives.pdf found under the Help, Algorithms options in SPSS.

Sampling errors have been calculated for a select set of statistics (all of which are proportions due to the limitations of the Taylor linearization method) for the national sample, urban and rural areas, and for each of the five regions. For each statistic, the estimate, its standard error, the coefficient of variation (or relative error -- the ratio between the standard error and the estimate), the design effect, and the square root design effect (DEFT -- the ratio between the standard error using the given sample design and the standard error that would result if a simple random sample had been used), as well as the 95 percent confidence intervals (+/-2 standard errors).

Details of the sampling errors are presented in the sampling errors appendix to the report and in the sampling errors table.

Other forms of Data Appraisal

A series of data quality tables and graphs are available to review the quality of the data and include the following:

Age distribution of the household population
Age distribution of eligible women and interviewed women
Age distribution of eligible children and children for whom the mother or caretaker was interviewed
Age distribution of children under age 5 by 3 month groups
Age and period ratios at boundaries of eligibility
Percent of observations with missing information on selected variables
Presence of mother in the household and person interviewed for the under 5 questionnaire
School attendance by single year age
Sex ratio at birth among children ever born, surviving and dead by age of respondent
Distribution of women by time since last birth
Population pyramid

The results of each of these data quality tables are shown in the appendix of the Final Report.

The general rule for presentation of missing data in the final report tabulations is that a column is presented for missing data if the percentage of cases with missing data is 1% or more. Cases with missing data on the background characteristics (e.g. education) are included in the tables, but the missing data rows are suppressed and noted at the bottom of the tables in the report (not in the SPSS output, however).

Related Materials

Questionnaires

Questionnaire_MICS2005.

Title	Questionnaire_MICS2005.
Filename	Questionnaire_MICS2005.pdf

Questionnaire_MICS2005_Child [en]

Title	Questionnaire_MICS2005_Child [en]
Filename	Questionnaire_MICS2005_Child [en].pdf

Questionnaire_MICS2005_HH [en]

Title	Questionnaire_MICS2005_HH [en]
Filename	Questionnaire_MICS2005_HH [en].pdf

Questionnaire_MICS2005_Woman [en]

Title	Questionnaire_MICS2005_Woman [en]
Filename	Questionnaire_MICS2005_Woman [en].pdf

Reports

Final Report_MICS2005 [en]

Title	Final Report_MICS2005 [en]
Filename	Final Report_MICS2005 [en].pdf