

*Monitoring the Situation of
Children and Women*

Findings from the
Mongolia Child and
Development Survey 2005
(Multiple Indicator Cluster Survey 3)

PRELIMINARY REPORT

September 2006

National
Statistical
Office of
Mongolia



Summary Table of Findings

MICS and MDG Indicators, Mongolia, 2005

TOPIC	MICS3 Indicator number	MDG Indicator number	INDICATOR	VALUE	UNIT
Child Mortality	1	13	Under-five mortality rate (MDG)	51	Per 1000 live births
	2	14	Infant mortality rate	41	Per 1000 live births
Nutrition	6	4	Underweight prevalence	6.3	percent
	7		Stunting prevalence	20.9	percent
	8		Wasting prevalence	2.2	percent
	15		Exclusive breastfeeding rate (<6 mths)	57.2	percent
	16		Continued breastfeeding rate (12-15 mths)	82.3	percent
	17		Timely complementary feeding rate (6-9 mths)	57.4	percent
Child health	25	15	Tuberculosis immunization coverage	97.5	percent
	26		Polio immunization coverage	93.0	percent
	27		DPT immunization coverage	91.5	percent
	28		Measles immunization coverage	75.7	percent
	31		Fully immunized children	67.3	percent
	22	Antibiotic treatment of suspected pneumonia	71.1	percent	
	24	29	Solid fuel use	76.1	percent
Environment	11	30	Use of improved drinking water sources	71.6	percent
	12	31	Use of improved sanitation facilities	77.2	percent
Reproductive health	21	19c	Contraceptive prevalence	66.0	percent
	4	17	Skilled attendant at delivery	99.2	percent
	5		Institutional deliveries	98.6	percent
Education	55	6	Net primary school attendance rate	95.2	percent
	61	9	Gender parity index	1.02	percent
Child protection	62		Birth registration	98.3	percent
	67		Marriage before age 18	7.7	percent
HIV/AIDS	82	19b	Comprehensive knowledge about HIV prevention among young people	35.2	percent

Table of Contents

SUMMARY TABLE OF FINDINGS MICS AND MDG INDICATORS, MONGOLIA, 2005.....	I
LIST OF TABLES	IV
LIST OF ABBREVIATIONS.....	V
DEFINITIONS AND TERMINOLOGY.....	VI
ACKNOWLEDGEMENTS	VII
PART I BACKGROUND AND SURVEY OBJECTIVES.....	1
INTRODUCTION.....	2
SURVEY OBJECTIVES.....	3
PART II SAMPLE AND SURVEY METHODOLOGY.....	5
SAMPLE DESIGN.....	6
QUESTIONNAIRES.....	7
FIELDWORK AND PROCESSING.....	8
SAMPLE COVERAGE	8
DESCRIPTION OF SAMPLE.....	9
DISAGGREGATION OF DATA	10
PART III RESULTS	13
CHILD MORTALITY.....	14
<i>Comparison with other sources.....</i>	14
<i>Comparison with routine data – undercounting and underreporting of neonatal deaths.....</i>	15
<i>Comparison of survey data – potential biases</i>	19
<i>Comparison with RHS.....</i>	21
<i>Infant and Under Five Mortality Rates by Geographic Location.....</i>	23
NUTRITIONAL STATUS	25
<i>Trends In Malnutrition Over Time.....</i>	26
<i>Stunting</i>	27
<i>Underweight.....</i>	28
<i>Wasting.....</i>	29
<i>Malnutrition Levels By Socio-Economic Background.....</i>	29
<i>Overweight</i>	30
BREASTFEEDING	31
<i>Exclusive Breastfeeding</i>	31
<i>Continued Breastfeeding.....</i>	32
<i>Trends Over Time.....</i>	32
<i>Timely Complimentary Feeding.....</i>	33
IMMUNIZATION	34
<i>Trend Over Time</i>	34
<i>Current Situation.....</i>	35
<i>Comparison with Ministry of Health Records.....</i>	36
ANTIBIOTIC TREATMENT OF CHILDREN WITH SUSPECTED PNEUMONIA.....	37
SOLID FUEL USE	38
WATER AND SANITATION.....	40

SANITATION.....	43
CONTRACEPTION.....	44
<i>Trend in use of contraception</i>	44
<i>Who Is Most Likely To Use Contraception?</i>	44
<i>Modern Versus Traditional Contraception</i>	45
<i>Use of modern contraception by background characteristics</i>	45
ASSISTANCE AT DELIVERY.....	47
PRIMARY SCHOOL ATTENDANCE.....	49
BIRTH REGISTRATION.....	52
<i>Reasons For Not Registering</i>	52
EARLY MARRIAGE.....	53
KNOWLEDGE OF HIV/AIDS TRANSMISSION	55
PART IV APPENDICES	59
BIBLIOGRAPHY.....	60

List of Tables

Table 1: HH.1: Results of household and individual interviews

Table 2: CM.1: Child mortality

Table 3: NU.1: Child malnourishment

Table 4: NU.3: Breastfeeding

Table 5: CH.1: Vaccinations in first year of life

Table 6: CH.7: Antibiotic treatment of pneumonia

Table 7: CH.8: Solid fuel used

Table 8: EN.1: Use of improved water sources

Table 9: EN.5: Use of sanitary means of excreta

Table 10: RH.1: Use of contraception

Table 11: RH.5: Assistance during delivery

Table 12: ED.3: Primary school net attendance ratio

Table 13: ED.7: Education gender parity

Table 14: CP.1: Birth registration

Table 15: CP.5: Early Marriage

Table 16: HA.3: Comprehensive knowledge of HIV/AIDS transmission

Table 17: HA.12 School Attendance of orphaned and vulnerable children

List of Abbreviations

IMR	Infant Mortality Rate
JMP	WHO/UNICEF Joint Monitoring Programme of Water Supply and Sanitation
MDG	Millennium Development Goals
MICS	Multiple Indicator Cluster Survey
MoH	Ministry of Health
NSO	National Statistical Office
PSU	Primary Sampling Unit
RHS	Reproductive Health Survey
U5MR	Under Five Mortality Rate
UB	Ulaanbaatar
UNDP	United Nations Development Programme
UNGASS	United Nations General Assembly Special Session on HIV/AIDS
UNICEF	United Nations Children's Fund
WFFC	World Fit For Children

Definitions and Terminology

Child mortality	The probability of dying between the exact ages of one and five years
Infant mortality	The probability of dying between birth and the first birthday
Neonatal mortality	The probability of dying within the first month of life
Post neonatal mortality	The difference between infant and neonatal mortality
Under five mortality	The probability of dying between birth and the fifth birthday

Acknowledgements

The Mongolia Child and Development Survey 2005 was conducted by the Government of Mongolia in close collaboration with UNICEF covering a broad range of issues affecting the health, development and living conditions of Mongolian women and children. The Mongolia Child and Development Survey 2005 is Mongolia's third and most comprehensive Multiple Indicator Cluster Survey (MICS 3) with the two former surveys conducted in 1995 (MICS1) and 2000 (MICS 2).

The current survey was designed to collect information on a large number of indicators required for monitoring the goals and targets of the Millennium Declaration, The World Fit for Children Declaration and Plan of Action, and the goals of the United Nations General Assembly Special Session on HIV/AIDS. The survey will not only serve as an up-to-date source of information on the current situation of infants, children and women in Mongolia but also provide valuable feed-back on the impact of the Mongolian National Plan of Action for Children. The results of the survey will serve as the key source of data when preparing the national report from the Government of Mongolia, for the United Nations 'A World Fit for Children Commemorative Session' in 2007 where national, regional and global progress reporting will be done.

The organisation of the survey, data collection, processing and report writing was carried out in close collaboration between NSO staff, professionals from relevant government ministries and agencies, UNICEF programme officers and international and national consultants. We would like to acknowledge the technical and financial support provided by UNICEF Mongolia and the UNICEF East Asia and Pacific Regional Office, and the contribution of programme officers and consultants of UNICEF Mongolia to undertake this survey successfully for the third time. We also appreciate the support from UNICEF Headquarters in providing training, guidance and template data collection and analysis tools.

We would like to express our sincere gratitude to the the Ministry of Education, Culture and Science; Ministry of Health; Public Health Institute; Ministry of Social Welfare and Labour; Ministry of Finance; National Authority for Children; UNICEF Mongolia and the General Police Department, who all worked as Members of the Survey Steering Committee and/or Working Group, for their valuable advice and comments made during the organisation of the survey, questionnaire development and report writing.

A special vote of thanks goes to the National Statistical Office of Mongolia and their staff for their hard work and long working hours committed to complete all the steps of the survey from its initial design to the dissemination of its findings. This includes the 11 fieldwork teams travelling country wide during the cold winter months to complete the data collection in a timely and professional manner.

Our appreciation also goes to the local authorities at Aimag, soum, district, bagh and khoroo level for facilitating the implementation of the survey.

Finally, we would like to express our genuine thankfulness to all of the people in baghs and khoroos all over Mongolia who participated in the study, giving their time and showing their willingness to share their information. Without their collaboration there would have been no survey.

Part I

Background and

Survey Objectives

Introduction

This preliminary report is based on the Mongolia Multiple Indicator Cluster Survey (MICS3), or 'Mongolia Child and Development Survey 2005' as it has been termed, conducted in 2005 by the National Statistical Office of Mongolia with the collaboration of UNICEF. The survey was based, in large part, on the needs to monitor progress towards goals and targets emanating from recent international agreements: the Millennium Declaration, adopted by all 191 United Nations Member States in September 2000, and the Plan of Action of A World Fit For Children, adopted by 189 Member States at the United Nations Special Session on Children in May 2002. Both of these commitments build upon promises made by the international community at the 1990 World Summit for Children.

In signing these international agreements, governments committed themselves to improving conditions for their children and to monitoring progress towards that end. UNICEF was assigned a supporting role in this task (see Box 1).

Box 1 A Commitment to Action: National and International Reporting Responsibilities

The governments that signed the Millennium Declaration and the World Fit for Children Declaration and Plan of Action also committed themselves to monitoring progress towards the goals and objectives they contained:

"We will monitor regularly at the national level and, where appropriate, at the regional level and assess progress towards the goals and targets of the present Plan of Action at the national, regional and global levels. Accordingly, we will strengthen our national statistical capacity to collect, analyse and disaggregate data, including by sex, age and other relevant factors that may lead to disparities, and support a wide range of child-focused research. We will enhance international cooperation to support statistical capacity-building efforts and build community capacity for monitoring, assessment and planning." (**A World Fit for Children**, paragraph 60)

"...We will conduct periodic reviews at the national and subnational levels of progress in order to address obstacles more effectively and accelerate actions..." (**A World Fit for Children**, paragraph 61)

The Plan of Action (paragraph 61) also calls for the specific involvement of UNICEF in the preparation of periodic progress reports:

"... As the world's lead agency for children, the United Nations Children's Fund is requested to continue to prepare and disseminate, in close collaboration with Governments, relevant funds, programmes and the specialized agencies of the United Nations system, and all other relevant actors, as appropriate, information on the progress made in the implementation of the Declaration and the Plan of Action."

Similarly, the **Millennium Declaration** (paragraph 31) calls for periodic reporting on progress:

"...We request the General Assembly to review on a regular basis the progress made in implementing the provisions of this Declaration, and ask the Secretary-General to issue periodic reports for consideration by the General Assembly and as a basis for further action."

This Mongolia Child and Development Survey 2005 will not only serve as a key of data for monitoring the Millennium Development Goal (MDG), for preparing the progress report for Mongolia on A World Fit for Children to be discussed at the Commemorative Session in September 2007 and for monitoring other international commitments such as the UNGASS (United Nations General Assembly Special Session on HIV/AIDS) targets. It also provides valuable information on the impact of the Mongolian National Plan of Action for Children, as

well as on a whole host of policies and programmes in the areas of health, nutrition, education and protection of children covered in this survey.

This preliminary report presents selected results on some of the principal topics covered in the survey and on a subset of indicators¹. The results in this report are preliminary and are subject to change, although major changes are not expected. A comprehensive full report is scheduled for publication in February 2007.

Survey Objectives

The 2006 Mongolian Multiple Indicator Cluster Survey has as its primary objectives:

- To provide up-to-date information for assessing the situation of children and women in Mongolia;
- To furnish data needed for monitoring progress toward goals established by the Millennium Development Goals and the goals of *A World Fit For Children* (WFFC) as a basis for future action;
- To contribute to the improvement of data and monitoring systems in Mongolia and to strengthen technical expertise in the design, implementation, and analysis of such systems.

¹ For more information on the definitions, numerators, denominators and algorithms of Multiple Indicator Cluster Surveys (MICS) and Millennium Development Goals (MDG) indicators covered in the survey: see Chapter 1, Appendix 1 and Appendix 7 of the MICS Manual – *Multiple Indicator Cluster Survey Manual 2005: Monitoring the Situation of Children and Women*, also available at www.childinfo.org.

Part II

Sample and Survey

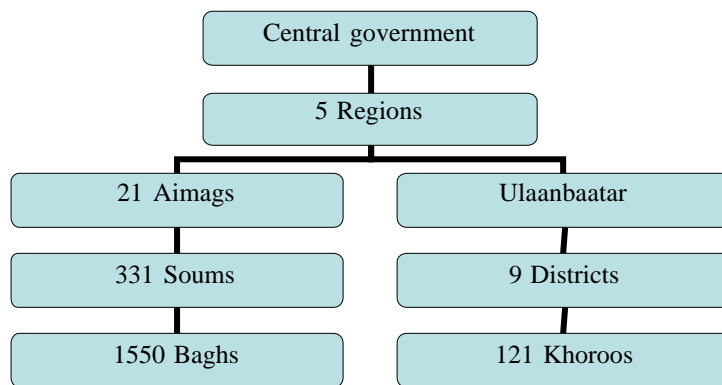
Methodology

Sample Design

The sample for the Mongolian Multiple Indicator Cluster Survey (MICS) was designed to provide estimates on a large number of indicators on the situation of children and women at the national and the regional level, as well as for urban and rural areas. The sub-national estimates are subject to somewhat wider margins of error than applies at the national level. The five regions - West, Khangai, East, Central and Ulaanbaatar - were identified as the main sampling domains with the sample selected in two stages. Within each region the lowest administrative units of baghs (in regions) and khoroots (in Ulaanbaatar) were selected with probability proportional to size.

The lowest level of administrative units were used for drawing the sample rather than the Census enumeration areas, as experience from recent surveys had proven some Census enumeration area boundaries to be unclear. The administrative units updating their population data annually was therefore considered a more reliable source. In Ulaanbaatar where the size of khoroots differ significantly, the largest khoroots were divided into two or three, to obtain more similarly sized units from which to draw the selection for the survey.

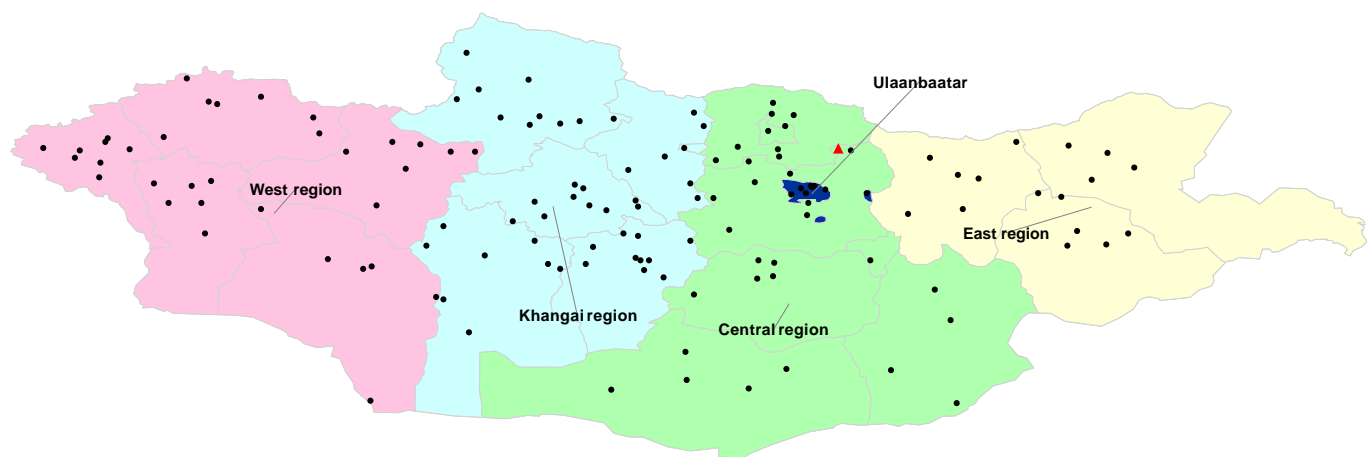
Figure 1 Administrative structure of Mongolian central and local government



A total of 253 clusters were selected, representing all 21 Aimags and Ulaanbaatar. After a household listing was carried out within the selected administrative units, a systematic sample of 25 households was drawn

from each of the 253 selected clusters. The sample was stratified by region and is not self-weighting. For reporting national level results, sample weights are used.

Figure 2 Map of soums covered within each region



Questionnaires

Three questionnaires were used in the survey. Firstly, a household questionnaire was completed to collect information on all household members, the household, and the dwelling - questions which could be answered by any adult residing in the household, as well as information on child labour, child discipline and child disability – questions which were to be answered by the mother or caretaker of the child(ren) in question. Secondly, questionnaires were administered in each household to all women aged 15-49 on issues related to child mortality, reproduction, recent childbirth and knowledge of HIV/AIDS and. Thirdly, the mother or caretaker of each child under the age of 5 in the household were interviewed on issues pertaining to child protection, health, nutrition and development. The questionnaires included the following modules:

Household Questionnaire	Questionnaire for Individual Women (15-49 years)	Questionnaire for Children Under Five
<ul style="list-style-type: none"> ○ Household listing ○ Education ○ Water and Sanitation ○ Household characteristics ○ Child Labour ○ Child Discipline ○ Child Disability, behaviour and habits ○ Household income ○ Salt Iodization 	<ul style="list-style-type: none"> ○ Child Mortality ○ Maternal and Newborn Health ○ Marriage/Union ○ Contraception ○ Attitudes toward domestic violence ○ HIV/AIDS 	<ul style="list-style-type: none"> ○ Birth Registration and Early Learning ○ Child Development ○ Vitamin A ○ Breastfeeding ○ Care of Illness ○ Immunization ○ Anthropometry

The questionnaires are based on the MICS3 model questionnaire. Modifications were made to some of the response categories to suit the Mongolian situation. Additional questions and one additional module were also added under the supervision of the survey Working Group and Steering Committee. The additions included:

Module	Questions / issues added
Household Characteristics	<ul style="list-style-type: none"> ● Type of dwelling ● Size of dwelling (m2, no of rooms/ger walls) ● Ownership of dwelling ●
Child Discipline	<ul style="list-style-type: none"> ● Where do parents obtain information on child discipline ● Child rearing practices, ● Incidents and cause of accidents, ● Hygiene and health aspects of child rearing
Household Income (New)	<ul style="list-style-type: none"> ● Paid, ● Income derived from household production and services, ● Other income
Salt iodization	<ul style="list-style-type: none"> ● Knowledge about and use of enriched flour

- Marriage / Union
- Care of illness
- First sexual intercourse
- Use, source and cost of antibiotics

From the MICS3 English model version, the questionnaires were translated into Mongolian and were pre-tested during September 2005 in the Erdene soum of Tuv aimag in order to test both the questionnaire and the data processing program. Based on the results of the pre-test, modifications were made to the wording and translation of the questionnaires. It was also decided to leave out the module on sexual behaviour due to problems of ensuring adequate privacy required for the sensitive questions contained in this module. Ensuring privacy was particularly difficult as data collection was done during winter when all household members living in a ger, share the same space.

Fieldwork and Processing

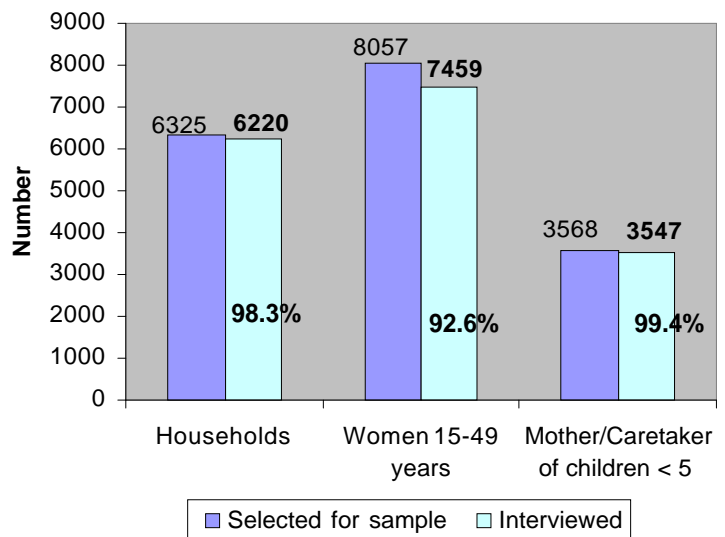
The field staff and data entry staff were trained during 10 days in October and November 2006 in a training course organised by the National Statistical Office (NSO) of Mongolia. The training was conducted by a key NSO staff involved in MICS3 as well as subject experts from line ministries or specialised agencies and was based on a combination of lecturers and hands-on training in the field. The data was collected by 11 teams; each comprising of 5 interviewers, two drivers, one editor/measurer and a supervisor. Fieldwork began in November 2005 and concluded in December 2005. Survey monitoring was primarily done by the MICS coordinator supported by UNICEF, the Steering Committee and the Working Group to the survey.

Data were entered on 6 microcomputers using the CSPro software. In order to ensure quality control, all questionnaires were double entered and internal consistency checks were performed. Procedures and standard programs developed under the global MICS3 project and adapted to the Mongolian questionnaire were used throughout. Data processing began simultaneously with data collection in December 2005 and finished in April 2006. Data were analysed using the SPSS software program and the model syntax and tabulation plans developed for this purpose.

Sample Coverage

Of the 6325 households selected for the sample, 6220 were successfully interviewed for a household response rate of 98.3 percent. In the interviewed households, 8057 women (age 15-49) were identified. Of these, 7459 were successfully interviewed, yielding a response rate of 92.6 percent. In addition, 3568 children under age five were listed in the household questionnaire. Of these, questionnaires were completed for 3547 which corresponds to a response rate of 99.4 percent (see Figure 3).

Figure 3 Number of households, women (15-49 years) and children <5 covered in MICS3

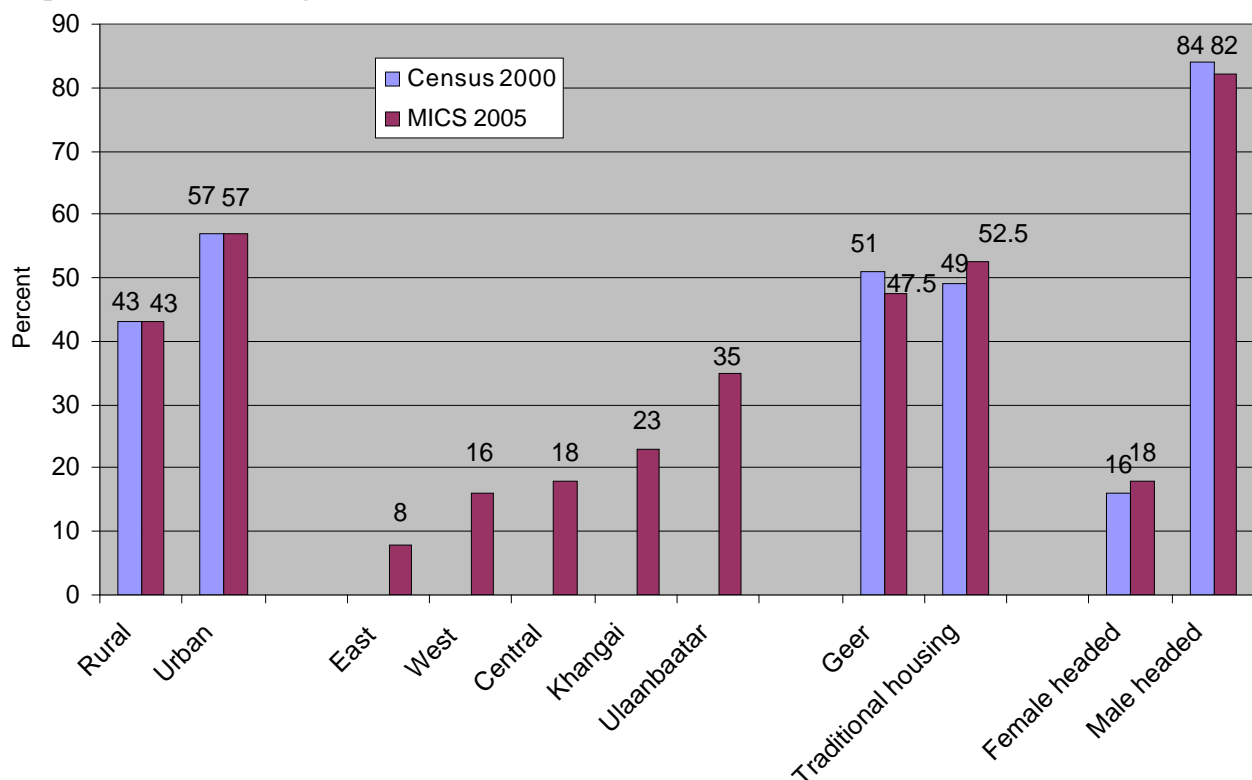


The overall response rates were also calculated showing how many women aged 15-49 and children under five were covered in the interviews, out of the total number of women aged 15-49 and children under five that could have been covered had every sampled household participated. The overall response rate for the women’s questionnaire comes to 91% and for the children’s questionnaire 97.8%. See Table 1: HH.1.

Description of sample

In order to check whether the population covered in the survey is likely to be representative of the whole population a few background characteristics of the sample have been compared with the 2000 Housing and Population Census.

Figure 4 Selected background characteristics of survey populations in MICS 2005 compared with Population and Housing Census 2000



As illustrated in Figure 4 the survey population is very similar to that of the Census population. More than half of the population live in urban areas – 57% - the same as recorded in the Census. Regions were represented according to their population size, ranging from 35% of the sample living in Ulaanbaatar down to 8% living in the East region. Close to half the respondents were living in gers (47.5% compared to 51% in the Census) typically associated with poorer access to safe water, sanitation and electricity. One in six households - 16% - are female headed, two percent lower than recorded in the Census. These households are often associated with higher levels of poverty.

Disaggregation of data

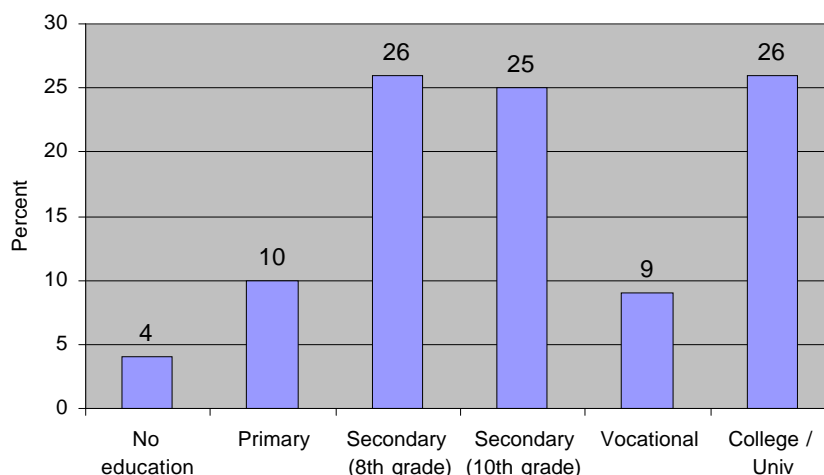
Findings are provided for the national average as well as by location, education level, wealth status and where relevant by age-groups.

By location: In addition to regional data for the five Mongolian regions of West, Khangai, Central, Ulaanbaatar and East, data is broken down by rural urban. Urban has been defined as people living in the capital city Ulaanbaatar and in Aimag centres, whereas rural covers populations residing in soum centres and the countryside. As pointed out in the 2003 Human Development Report for Mongolia which focuses on the urban-rural disparities, this definition of urban areas masks considerable differences between the three largest urban cities Ulaanbaatar, Dorkan and Erdenet compared with small, distant, urban centres, who's physical isolation, like in many rural areas, poses severe challenges of service provision, increasing cost of living and limited income earning opportunities (UNDP & Government of Mongolia, 2003). Similarly, the definition of the rural population lumps together people in very diverse living situations, combining Soum residents, living in small towns, with bagh residents, who mainly lead a nomadic life migrating with their herds in accordance with seasonal changes. To capture these diversities, the survey findings are, where possible, broken down by Capital city (UB), Aimag centres, Soum centres and countryside as also done in the latest "Household Income and Expenditure Survey / Living Standards Measurement Survey 2002-2003."

By education level:

The education level of a mother is often the most important factor affecting the survival, health, nutrition, education and overall development status of a child. It is therefore included as a key background variable. As the education level of the adult population in Mongolia is generally very high for women and men alike across the country, with more than one third of the women in the survey having either tertiary or vocational training, the problem of poorly educated mothers is limited compared with most other developing countries. As illustrated in Figure 5, only 4% had no education (defined as no education or education less than completed primary) and 10% had primary as their highest level of education. When looking at the results for women with no and primary education, it should therefore be kept in mind, that 'only' one in seven women aged 15-49 years fall into these categories.

Figure 5 Education level of women 15-49 years, Mongolia, 2005



By wealth – the wealth index

Economic status is another key factor in explaining and analysing findings. Traditionally economic status is measured through the income or consumption level of a household. However, this information is time consuming to collect (requires many questions to capture all sources of income for all household members), is prone to misstatement (understatement is common as is

lack of precise knowledge of income or expenditure of other household members), provides problems in terms of how to deal with variability in income, how to value home production, and how to capture large but irregular expenditures. Instead a wealth index was created as a measurement of long term wealth of a household. The wealth index is more easily measured as it requires fewer and less sensitive questions, and to a large extent makes use of information which is already collected in health related surveys for other purposes (access to clean water, sanitation, housing materials, number of bedrooms etc). Most importantly it is a better measurement of long term wealth, as it focuses on assets accumulated over time, thus getting around the problems of seasonal or temporary changes in income, which tend to characterise many less developed countries (Rutstein & Johnson, 2004).

An individual wealth index needs to be created for each country to include country specific items. The steps of creating an index involves, 1) identifying the indicators which will be used to provide information on economic status, 2) assigning weights if some indicators are to be given a higher value than others, and 3) calculating the cut-off point for each wealth quintile.

In the Mongolia Child and Development Survey 2005, the level of wealth of a household was based on the quality of housing, access to electricity, possession of selected consumer goods (white goods, communication facilities, transportation) and possession of economic assets such as livestock.

Part III

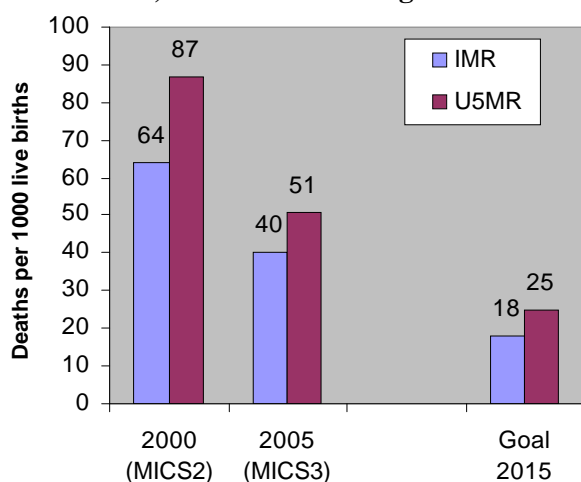
Results

Child Mortality

One of the overarching goals of the MDGs and the World Fit for Children is to reduce infant and under-five mortality. Monitoring progress towards this goal is an important but difficult objective. Measuring childhood mortality may seem easy, but attempts using direct questions, such as “Has anyone in this household died in the last year?” give inaccurate results. On the other hand, using direct measures of child mortality from birth histories is time consuming and complicated. Demographers have therefore had to devise ways to measure childhood mortality indirectly. These ‘indirect methods’ minimize the pitfalls of memory lapses, inexact or misinterpreted definitions, and poor interviewing technique.

The *infant mortality rate* is the probability of dying before the first birthday. The *under five mortality rate* is the probability of dying before the fifth birthday and the *child mortality rate* is the probability of dying between the exact ages of one and five years. In MICS3, infant and under five mortality rates are calculated based on an indirect estimation technique; the so-called Brass method. The data used in the estimation are: the mean number of children ever born for five year age groups of women from age 15 to 49, and the proportion of these children who are dead, also for five year age groups of women. The technique converts these data into

Figure 6 Infant and under five mortality, Mongolia, 2000, 2005 and national goal for 2015



probabilities of dying by taking account of both the mortality risks to which children are exposed and their length of exposure to the risk of dying.

Infant mortality rates (IMR) and under five mortality rates (U5MR) have decreased significantly over the past five years since the last MICS survey was conducted. Infant mortality has declined by 36% from 64 deaths per 1000 live births in 2000 to an estimated 41 deaths per 1000 live births in 2005. Even more positive is the under five mortality rate which has decline by about 41% from 87 to 51 deaths per 1000 live births. If this trend can be sustained it

might just be possible to reach the recently revised and ambitious MDG goals for IMR of 18 and U5MR of 25 by year 2015 (see Figure 6).

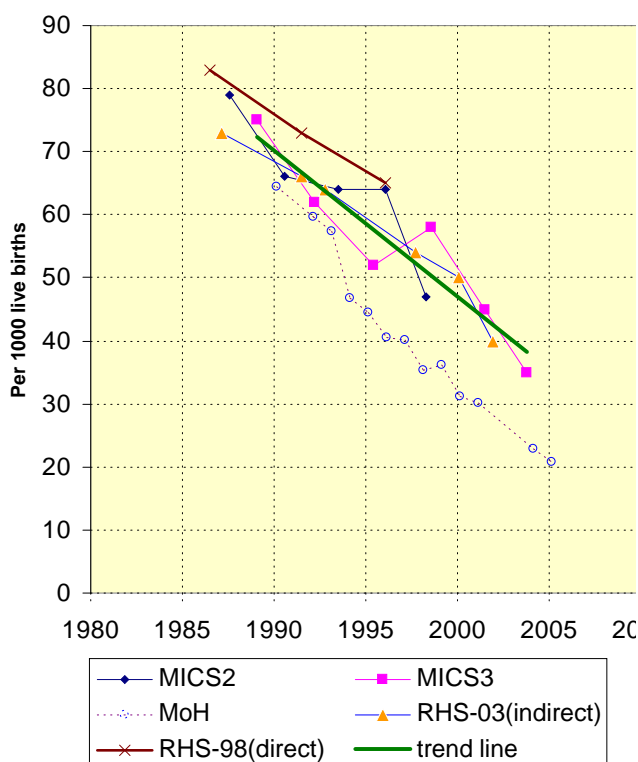
Four out of five children who die before they reach their fifth birthday die within the first year of life. The proportion of infant deaths has grown from 73% in 2000 to 80% of all under five deaths in 2005, as is the common pattern when mortality rates decline.

Comparison with other sources

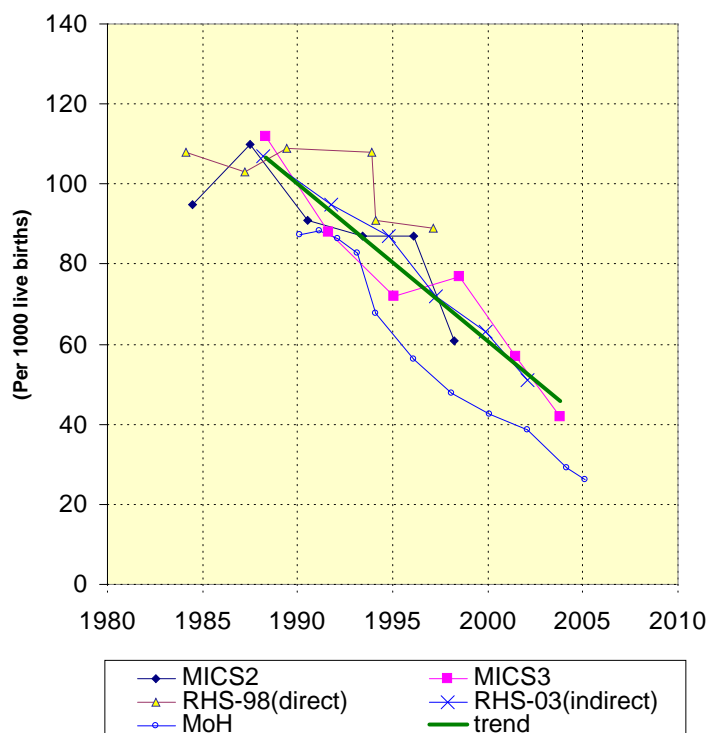
The trend of rapid decline in infant and child mortality rates is consistent with data collected through the Reproductive Health Surveys (RHS) in 2003 and 1998 as well as with official routine data collected by the Ministry of Health (MoH). As illustrated in Figure 7a and b the sources all show the same overall trend of rapid and consistent decline in infant and under five

mortality rates over the past 15-20 years². However, the actual mortality levels reported through survey data are considerably higher than the mortality levels recorded by MoH (or by the Civil Registration System). This difference is particularly pronounced from 1994 and onwards, when the MoH data on infant and under five mortality rates declined significantly by 10 infant deaths and 15 under five deaths for every 1000 live births in just one year, thus suddenly increasing the gap between the two types of data sources significantly.

Figure 7 a and b Infant mortality by different sources, Mongolia, 1987-2005



Under five mortality by different sources, Mongolia, 1987-2005



Because the status of infant and child mortality attract a lot of attention at the international and national level as a key performance indicator of the health and well-being of a nation, the next sections will go into some level of detail to seek to analyse the reasons for differences in data between survey data and routine data, as well as between different surveys and survey methodologies.

Comparison with routine data – undercounting and underreporting of neonatal deaths

In many developing countries survey data and official estimates of infant and under five death only differ modestly, if at all. However, the Mongolian situation mirrors a common trend in many of the transitional countries, particularly in the Caucasus and Central Asia, where survey estimates and official mortality rates based on routine data collection differ considerably, with survey data being up to four times as high as the official data (Aleshina & Redmond, 2003).

² RHS and MICS data for different time periods back in time is obtained by quoting infant and under five mortality patterns recorded for older age groups of women in the surveys.

Researchers analysing the reasons this phenomenon in transition countries, suggest that neonatal deaths are being underreported in routine data for three main reasons related to:

1. The definition of live births
2. Misreporting of pregnancy outcomes by medical staff
3. Under registration by parents of births and infant deaths.

Table 1 Terminology for classifying mortality during early childhood

Under-5 mortality (<5 years)				
Infant mortality (<1 year)			Child mortality (1-4 years)	
Neonatal mortality (0-28 days)		Post neonatal mortality (29-365 days)		
Early neonatal mortality (0-6 days)	Late neonatal mortality (7 – 28 days)			
Live birth	7 days	28 days	1 year	5 years

The definition of ‘live birth’ is a crucial determinant of the infant mortality rate, since a poor pregnancy outcome cannot be registered as an infant death if the foetus was not acknowledged as having been born alive in the first place. This is particularly relevant to Mongolia (and many

other transition countries) as the old Soviet protocols which were in use in Mongolia until 2003 have a narrower definition of live birth than the WHO definition now used almost universally throughout the world.

The Soviet definition differs in two ways: Firstly, the only indicator used to establish if infants are born alive is the presence of breathing; no other signs of life are taken into account. If an infant shows other signs of life before dying, it will be counted as a still birth rather than as an early neonatal death. Secondly, infants born before 28 weeks of gestation, infants who weigh less than 1000 grams and infants who are less than 35 cm in length are designated as ‘live foetuses’ and are only counted as live births if they survive seven days. If they survive less than that they are considered as miscarriages. By contrast the WHO definition developed in 1950 defines any birth irrespective of gestation period, with any signs of life, however insignificant, (breathing or any other evidence of life such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles) which is then followed by death, however quickly, as a live birth and infant death. (Aleshina & Redmond, 2003; Innocenti Social Monitor, 2003). This difference in definition is most likely to affect the proportion of births which are categorised as still births or miscarriages instead of as early neonatal deaths.

Since many infant deaths take place shortly after birth, the differences in definition can greatly influence the recorded level of infant mortality. According to the Mongolia Reproductive Health Surveys 1998 and 2003, (which are based on birth histories and thus allow more in-depth analysis of when exactly children die), close to half of all infant mortality deaths in Mongolia (45 of every 100) take place during the first month of life (National Statistical Office of Mongolia & United Nations Population Fund, 2004). In the majority of cases (75%) these neonatal deaths take place within the first week (early neonatal death) often just within hours or a few days of having been born. In total almost a third or 32% of all under-five deaths in Mongolia occur within the first week of life (National Statistical Office of Mongolia & United Nations Population Fund, 2001). It has been estimated that the proper application of the WHO definition in countries using the old Soviet definition would result in 20-25% higher infant mortality rates. Experience has shown the impact to vary across countries from examples of from 40% in Latvia,

20% in Poland to 5-17% in Moldova (which only incorporated the WHO definition partly) (Aleshina & Redmond, 2003).

In Mongolia the WHO definition was only officially introduced in 2003, and the impact on the infant mortality figures is yet to be seen. A monitoring visit in 2004 revealed that the old definition was still being used in many soums. While the Ministry of Health believe that this has now been rectified it may take time, as experience from when the most advanced industrialised countries started adopting the WHO definition in the 1960s, showed that the adoption of the definition was often slow and partial. The same has applied to some of the transitional countries that started to implement the WHO definition in the 1990s (Aleshina & Redmond, 2003). A comparison of the ratio of still births to early neonatal deaths can help give an indication of whether neonatal deaths are being under counted and stillbirths over counted (one would expect a ratio of roughly 1:1), and whether the balance between the two has changed after the introduction of the WHO definition.

Another explanation for the undercounting of neonatal deaths is **misreporting of deaths**, either intentionally to improve the mortality figures or accidental misreporting due to inadequate knowledge. Since a birth under the Soviet definition had to fulfil several criteria regarding gestation, weight and length in order to be considered a live birth, this gave more discretion in making a final assessment. With pressure on individual medical staff to reduce the number of infants who officially died in their care to avoid investigation and possible punishment, and pressure on hospitals and clinics to play their part in meeting the national goals for the health care system, this provided incentives in some transitional countries to classify deaths as still births rather than as early neonatal deaths whenever there was doubt (Innocenti Social Monitor, 2003). A somewhat similar situation may prevail in Mongolia where aimags and regions are under pressure to perform well in the area of infant, child and maternal mortality figures which are seen as key performance indicators for the health system. While the level of performance is not tied to any resource allocations it is associated with status, ranking and acknowledgement.

The third explanation given is undercounting of neonatal deaths related to **underreporting by parents of births and deaths**. The biggest difference between survey and routine data is found in the neonatal mortality rates, suggesting that this is where most of the underreporting is happening. Two parallel registration systems operate in Mongolia. Ministry of Health publish their own infant and child mortality rates based on records from medical facilities. However, the official data on infant and child mortality rates are based on information from the Civil Registry, where all deaths and births are to be registered. This is the responsibility of parents and the completeness of the system therefore depends on the willingness of parents to comply. Although birth registration is virtually universal for children over the age of one in Mongolia the same does not apply for younger children. Ninety percent of children under the age of one are registered according to MICS3 findings, a coverage rate which declines the younger the child. By law the birth of a child must be registered within a month, but until recently there was little incentive to do so in time, as birth registration was of little practical use until when needed for kindy or school enrolment³. For neonatal deaths occurring within the first month (and thus during the period when birth registration is not yet obligatory) parents who have not yet registered the birth of a child may be unlikely to register the death. Even when the birth has been registered, and although registration of death is legally required to obtain permission for burial,

³ See more information on birth registration and how the recent introduction of the 'Child Money Programme' may provide additional incentive to register births more promptly later in the report.

this is not always practical for people living in remote areas nor considered necessary for very young infants.

When comparing the ratio of neonatal to post neonatal deaths recorded in RHS surveys for Mongolia with the number of neonatal deaths versus number of total infant deaths reported through the health management information system it suggests underreporting of neonatal deaths of about 50% (Kenneth Hill, Mission Report, 2002).

According to Kenneth Hill, the main reason for this underreporting is likely to be found in delays in the registration of child births (and thus underreporting of child deaths) rather than in the quality of MoH monitoring systems in general. He points out that:

- The omission of neonatal deaths is almost universal in developing countries, even in those with generally good civil registration systems in place.
- The recording of post neonatal deaths in Mongolia suggests that the recording system works well in general, particularly in Ulaanbaatar and Central region where there is little difference between MoH and survey data.
- More reliable estimates on infant mortality rates could be obtained from the regular monitoring systems by using the post neonatal mortality rate from MoH and adjust it with the ratio of neonatal to post neonatal deaths observed in surveys. (Kenneth Hill, Mission Report, 2002)

The three explanations offered above seem to affect the **quality of reporting systems, differently across the country**. Mortality rates based on routine data tend to fluctuate a lot from year to year, particularly in the West, Khangai and East region, sliding from having the highest infant mortality rates one year, to almost the lowest the following year, changes which do not seem plausible. The difference between the official infant mortality rates and the RHS and MICS3 survey data is much larger for these same three more distant and sparsely populated regions, than they are for Central Region and Ulaanbaatar. This confirms the expectation that any problems of underreporting would be expected to be greater in the remoter regions.

The high relative concentration of deaths very soon after birth is common in many countries around the world and often increases as the infant mortality rate declines (Innocenti Social Monitor, 2003). This is because many infant mortality deaths particularly those happening shortly after birth are related to prenatal causes such as the health status of the mother, birth trauma, congenital effects inadequate functioning of key body parts, and genetic effects. These deaths are harder to prevent than deaths related to environmental factors such as disease, malnutrition and accidents, typically responsible for most of the later infant and child deaths.

As the ratio of early neonatal deaths increases as a proportion of total infant deaths, any undercounting of these neonatal deaths will tend to further bias infant mortality and under five mortality rates.

Table 2 shows how high the official infant mortality data would be if the full introduction of the WHO definition of live births was to lead to an increase of 20%, and if the 50% underreporting of neonatal deaths was to be taken into account. If both potential sources of error were to be included, the official infant mortality rates would indeed be at the same level as the infant mortality rates found in MICS 2005.

Table 2: Comparison of IMR according to MICS 2005 (reference dates 2002/2003) and official rates for the same two years, adjusted for the effect of introducing the WHO definition of live births and for underreporting of neonatal deaths

	IMR	Introduction of WHO def: +20%	IMR adjusted for WHO def.	Neonatal deaths (45% of IMR)	Neonatal deaths not reported (50% of neonatal deaths)	IMR adjusted for under-reporting of neonatal deaths	IMR adjusted for both WHO def and underreporting of neonatal deaths
MICS 05*)	40.5		40.5			40.5	40.5
MoH 2002	30.4	6.1	36.5	13.7	6.8	37.2	43.3
MoH 2003	23.5	4.7	28.2	10.6	5.3	28.8	33.7

*) The indirect method produces estimates of mortality for several reference years, which are then averaged into one estimate. For MICS3 the reference period to which the mortality data refers is 2002/2003.

Comparison of survey data – potential biases

As in the case of the official mortality rates discussed above, survey findings are also subject to potential biases. These are mainly related to:

- sampling errors
- errors in data collection (non-sampling errors)
- model errors related to the choice of life model chosen for indirect estimation
- appropriateness of the assumptions underlying the method used

Information on infant and child mortality can essentially be obtained in two ways, through:

- The **direct method**, which is based on registration of births and deaths, either through vital registration systems seeking to capture this information as it happens (routine data systems discussed above), or retrospectively capturing the information through birth histories (Reproductive Health Surveys);
- The **indirect method**, which is based on information about total number of births of a woman and total number of children who were born alive but later died. As no information is collected regarding dates of birth (except for the first birth) or age at death, mortality rates are estimated indirectly by applying multipliers based on the choice of a life table model (MICS surveys).

Sample errors: While the official data attempts to capture or count 100% of all births and deaths, surveys only include counts among a sample of people randomly selected from the population. The infant mortality rate in a sample survey therefore provides an *estimation* of the value for the whole population. As infant death is typically a “rare” event, any sampling errors can have significant impact on the derived mortality rates. To get around this issue, a 95 percent confidence interval is typically calculated, showing the range of values within which one can be 95% sure the true value of the whole population is to be found (Innocenti Social Monitor, 2003).

Non-sampling errors: The most important non-sampling error is the underreporting caused by memory lapse of events taking place back in time, and sensitivity of discussing child deaths. In the case of RHS surveys collecting full birth histories, the wrong dating of deaths is also a

potential error. Underreporting is more of an issue in surveys using the direct estimation method, as no compensation is made for this underreporting, as is the case with the indirect estimation.

The indirect estimation method has traditionally been popular with demographers as it originated from and is supposed to work well in situations where data is defective (Adetunji). Data collection for the indirect method is simpler thus reducing the risk of non-response and inaccurate response. However, as it is based on an indirect estimation it introduces the risk of error based on the model life table chosen.

Model error: When using the indirect method, the information on the number of children ever born and number of children ever dead is converted into information about the risk of dying before a given age, in this case before the age of 1 and between the age of 1 and 4. The estimation is done by applying a set of multipliers. These multipliers are based on a large number of life table models which have been aggregated into nine groups – four developed by Coale and Demeny – North South, West and East each describing mortality patterns in different regions of Europe and some other countries in 19th and 20th centuries, and five United Nations Models – Latin American, Chilean, South Asian, Far East and General - developed by Palloni-Heligman based on mortality data from developing countries mainly in Latin America and the Far East. Each model reflects a different mortality scenario. Different mortality estimates can therefore be derived from the same data, depending on the life model chosen. As the models differ most markedly in their values at the early ages and in the relationship between infant and child mortality, it is important to choose a life model which most closely resembles the mortality pattern of the country being surveyed.

The MICS3 data for Mongolia was run through all nine models for comparison (see table at the end of the section on mortality). A summary of some of the models have been included in the table below, based on information from women aged 20-30 years old. While the choice of model does make some difference to the level of infant mortality (ranging from 36.5 to 42.5 deaths per 1000 live births) and child mortality (ranging from 7 to 12 deaths per 1000 live births) the differences are somewhat ironed out when comparing the under five mortality (ranges from 49.5 to 52). This is because models with higher infant deaths tend to have lower child death and visa versa. The differences between different model data is far too insignificant explain the difference between official routine data and MICS 2005 data, nor the differences found between MICS 2005 and RHS 2003.

Table 3: Infant, child and under five mortality calculations based on MICS3 data, according to selected life models

Live table model	Infant mortality	Child mortality (Per 1000 live births)	Under-five mortality
Far East	40.5	11.5	52
General	40	11.5	51.5
West	40	12	52
North	36.5	15.5	52
East	42.5	8	50.5
South	42.5	7	49.5

*) Note that the figures are based on an average of the two age groups 20-24 and 25-29. For accurate data the weighting of each of the two groups – depending on the number of births and deaths within each age group - should be taken into consideration. Weighting the data is only likely to change the figures by a few decimal points.

For MICS3 the West model was chosen, as this model has been derived from a larger number of mortality tables than other Coale-Demeny models thus encompassing a wider range of mortality scenarios. This or 'the general model' are the ones normally recommended if lacking clear evidence to suggest any of the other models.

Assumptions: In the Mongolian situation the most significant source of potential error when using the indirect estimation method may well be the underlying assumptions of constant mortality and fertility. The model is not able to reflect sharp fluctuations in mortality within the period analysed as the model assumes a situation of constant or steadily changing mortality. Similarly, if fertility is declining within the period of analysis, the model is not able to capture the shorter exposure to the probability of dying and will lead to overestimated mortality rates (Aleshina & Redmond, 2003).

This is particularly important in transitional countries like Mongolia where fertility rates have declined sharply since the end of communism. In Mongolia the overall fertility rate fell from 4.6 children per woman to 2.1 children per woman in just ten years from 1990 to 2000 (UNDP & Government of Mongolia, 2003). This decline seems to have continued over the past five years. A telling indication is the number of children under five included in the MICS2 and MICS3 surveys. Although the two surveys were based on almost the same number of households, 6000 in 2000 and 6220 in 2005, the number of children under the age of five living within those households was 42% lower in 2005; 3568 children compared with 6199 children five years earlier.

Declining fertility rates play an important role in driving down the infant and child mortality rates, as lower fertility is associated with larger spacing of births (and thus lower incidence of low birth weight, early weaning, malnutrition and disease), and in a lower number of overall children (and thus lower birth order) - all of them factors which reduce the risk among infants and children of dying.

Comparison with RHS

In 2003 the RHS reported an infant mortality rate of 29.5 based on the direct estimation method, and 34 based on the indirect estimation method, in both cases considerably lower than the MICS3 estimation of 40. There are several reasons for this:

1. **Direct estimation:** It is not uncommon to find higher mortality estimates when using the indirect method compared with the direct method. In a study of 13 Demographic Health Surveys in Africa, infant mortality rates were calculated using the direct and the indirect estimation method for each dataset and then compared. The results indicated, that mortality data based on the indirect method was on average 23% higher than estimates based on the direct method (Adetunji). As the method of data collection, the calculations of estimations and the assumptions underlying the direct and indirect method of estimation differ, results are not directly comparable. While direct estimation tends to suffer more from under- and misreporting the indirect method runs the risk of overestimating mortality somewhat by failing to take into account the effect of rapidly declining fertility.
2. **Indirect estimation:** The infant mortality figure quoted in RHS 2003 on the basis of the indirect estimation method was based on the fertility and mortality pattern of only the youngest age group of women – those aged 15-19 – in order to quote the most recent

reference period. This is significant as the mortality estimates increase with the age group of the mother. The indirect method produces estimates of mortality for five year age groups of mothers from 15-19 years, 20-24 years etc up to 45-49 years, with the overall mortality figures based on a combination of these age groups. The middle age groups are normally the ones quoted as they are believed to best reflect the current fertility and mortality pattern, and their experience of births and deaths to be reasonably recent and thus less affected by memory lapse. Data based on the youngest age group of mother 15-19 years old are normally discarded as the number of births and deaths in this age group is generally very small and the mortality levels not representative.

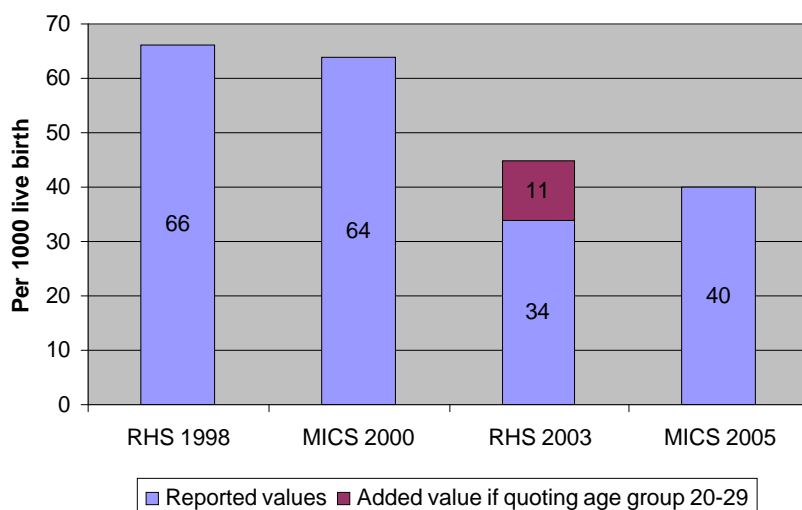
The MICS protocols recommend using the age group 20-35, as done in 2000. However, due to the rapidly declining fertility in Mongolia it has been deemed more appropriate to base the data on the fertility and mortality patterns experienced among women aged 20-29. This difference in the age groups quoted (age 15-19 in RHS 2003 and age 20-29 in MICS 2005) fully explains the difference in the infant mortality levels quoted in the two surveys (see Table 4 and Figure 8).

As is obvious from the discussions above, that infant and child mortality are not easy indicators to measure and there is no one correct method that will guarantee a 'true' result.

Table 4 IMR, indirect estimation method, by age groups, MICS 2005 and RHS 2003, (Highlighted figures are the ones quoted in the two reports)

Age group of women	Infant mortality rate	
	MICS 2005 (West model)	RHS 2003 (Far East model)
15-19 yr	17	34
20-24 yr	35	40
20-29 yr	40	45
25-29 yr	45	50

Figure 8 Infant mortality estimates, based on indirect estimation method, surveys 1998-2005



Survey data and routine data can each have their biases but compliment one another in the role they each have to play. Surveys can provide information on how an indicator like infant mortality is linked to various socio-economic factors. Surveys also tend to provide more reliable results and are thus key instruments in medium- and long term monitoring, analysis and programme development. However, surveys are limited by: a) their sample size (can only provide national and

regional estimates, not estimates at Aimag or soum level); b) the delay in data (mortality data is at best provided a period three or more years back in time); and c) the time interval between data (surveys are typically undertaken every three to five years). Routine data tends to be less reliable as it may suffer from underreporting (in the case of mortality) or over reporting when the indicator is linked to resource allocation. Instead it has the advantage of providing recent data (previous year), at regular time intervals (annually), and better at reflecting local (MoH data available at Aimag level) making it a critical tool in planning and short term monitoring.

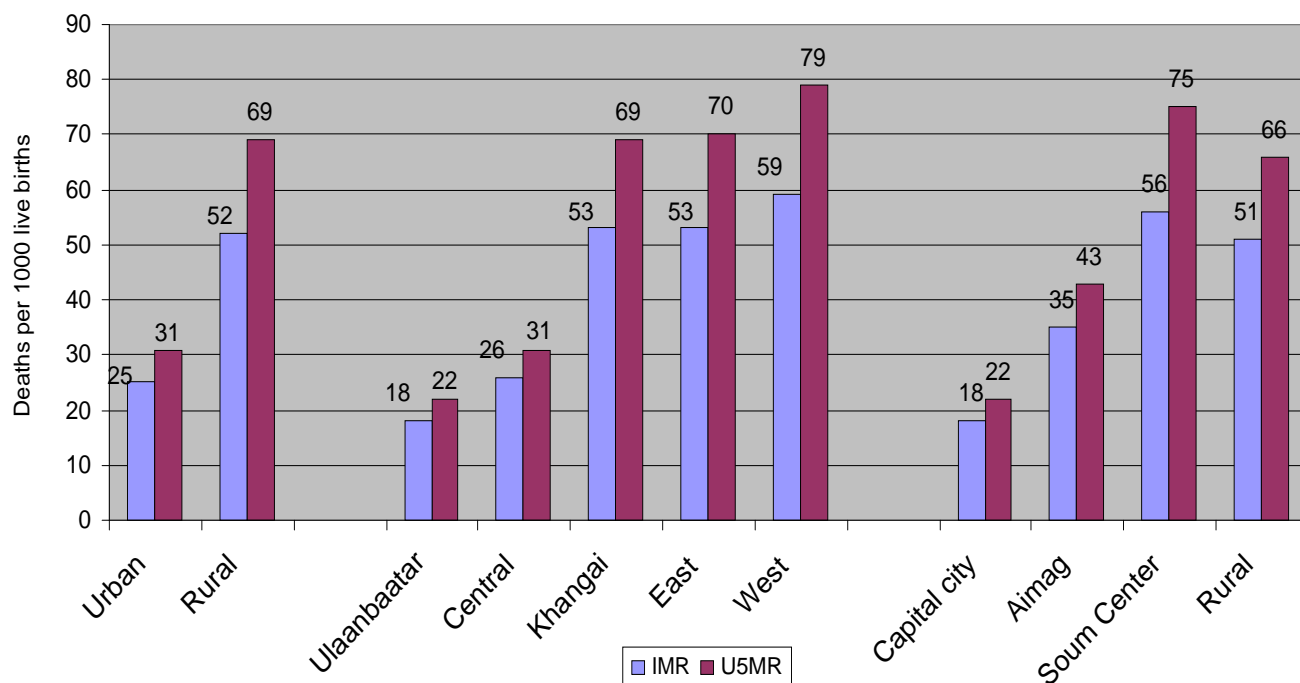
Infant and Under Five Mortality Rates by Geographic Location

There are considerable differences in mortality depending on the background geographical location, socio-economic status and gender of a child (see Table 1: CM.1).

Boys have a higher probability of dying than girls. The infant and under -5 mortality rates among males are estimated at 45 and 55 respectively, about 20-25% higher than those of girls (36 and 46). This is largely due to the biological advantage girls have, where if children of both sexes are subjected to the same standards of nutrition, health measures and care, more girls than boys will survive in every age group.

The risk for an infant or child under the age of five of dying varies tremendously depending on where in Mongolia the child lives. The risk of children is twice as high in rural areas compared with urban areas. The difference is even more pronounced when comparing the five regions. Mongolia seems to be divided into two parts, on one hand the remoter regions of Khangai, East and West region experiencing infant mortality levels (from 53 to 59) which are two to three times higher than those of Central region (26) and Ulaanbaatar (18). In the case of under five mortality, the difference is larger again ranging from an under five mortality rate of 22 in Ulaanbaatar to 79 in West region. - more than three and a half times as high. While the previous RHS have also revealed considerable differences in infant and under five mortality rates between regions, and between rural and urban areas, the differences have not been as large as what is found in MICS 2005. This poses the question of whether the regional divide is widening.

Figure 9 Infant and under five mortality rate by location, Mongolia, 2005

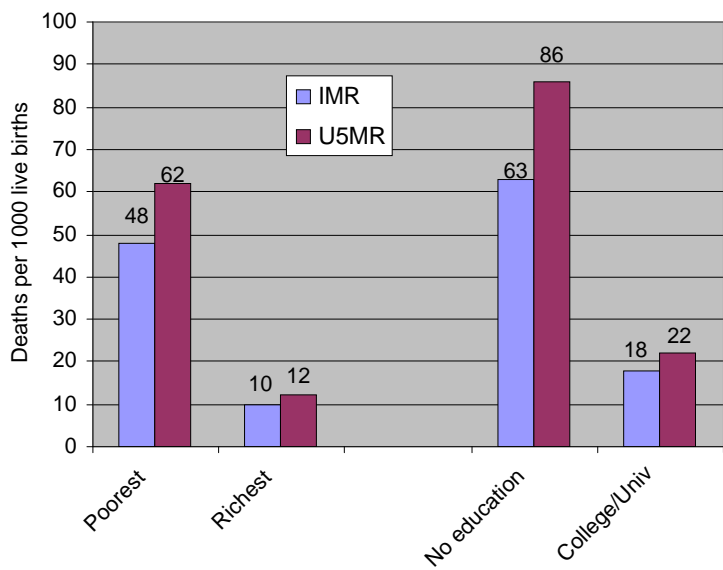


The risk of children dying increases steadily the smaller the type of settlement with an interesting exception. Compared with the capital city Ulaanbaatar, the under five mortality rate is twice as high among children in aimag centres (43), and three and a half times as high in Soum centres (75). Surprisingly, both infant and under five mortality are lower in the countryside (51 and 66)

than in Soum centres (56 and 75), despite having poorer access to health services, safe water and sanitation.

The biggest differences in mortality rates, however, are found in terms of education levels and wealth (see Figure 10). The probability of dying among infants and under-fives living in the richest households is only a quarter of the national average. The most important predictor of child mortality, however, is not the level of wealth nor the location where a child lives, but the education level of the mother. The children most at risk of dying are those with a mother with no or little education – experiencing mortality rates 70% above the national average.

Figure 10: Infant and under five mortality rates, by wealth and education level of mother, Mongolia, 2005



Nutritional Status

Table 5: Malnutrition trends and goals for Mongolia

	Underweight	Stunting	Wasting
2000 (MICS2)	13	25	5.5
2005 (MICS3)	6	21	2.2
2015 (National goal)	0	?	?

Children’s nutritional status is a reflection of their overall health. When children have access to an adequate food supply, are not exposed to repeated illness, and are well cared

for, they reach their growth potential and are considered well nourished. Good nutrition is a prerequisite for healthy growth and development of a human being. For young children the lack of food retards their physical and mental development and threatens their very survival. Malnutrition is caused by protein deficiency as well as micronutrient deficiencies such as iodine, iron and Vitamin D deficiencies. Malnutrition contributes to half of all child deaths, not only due to lack of food, but also due to the debilitating effects of infectious disease and lack of care (*Nutrition Status of Mongolian Children and Women, 3rd Nutrition Survey Report, 2004-2006*).

In a well-nourished population, there is a standard distribution of height and weight for children under age five. Under nourishment in a population can be gauged by comparing children to a reference distribution. The reference population used here is the WHO/CDC/NCHS reference, which is recommended for use by UNICEF and the World Health Organization. Each of the three nutritional status indicators can be expressed in standard deviation units (z-scores) from the median of this reference population.

Malnutrition is measured in three different ways as described below.

Underweight (weight for age) is a measure of both acute and chronic (long term) malnutrition. It is the best way of describing the overall level of malnutrition in a population and the best way of assessing changes over time. Children whose weight for age is more than two standard deviations below the median of the reference population are considered *moderately or severely underweight* while those who’s weight for age is more than three standard deviations below the median are classified as *severely underweight*.

Stunting (height for age) is a measure of linear growth. Children whose height for age is more than two standard deviations below the median of the reference population are considered short for their age and are classified as *moderately or severely stunted*. Those whose height for age is more than three standard deviations below the median are classified as *severely stunted*. Stunting is an indicator of poor growth over time and is usually a reflection of chronic (long term) malnutrition as a result of failure to receive adequate nutrition over a long period and recurrent or chronic illness.

Wasting (weight for height) refers to children whose weight for height is more than two standard deviations below the median of the reference population are classified as *moderately or severely wasted*, while those who fall more than three standard deviations below the median are *severely wasted*. Wasting is usually the result of a recent nutritional deficiency. The indicator may reflect significant seasonal shifts associated with changes in the availability of food, reflect disease prevalence or a natural disaster.

Table 3: NU.1 shows percentages of children classified into each of these categories, based on the anthropometric measurements that were taken during fieldwork. Additionally, the table includes the percentage of children who are overweight, which takes into account those children whose weight for height is above 2 standard deviations from the median of the reference population.

In Table NU.1 and the graphs in this section, children who were not weighed and measured (approximately 5.3 percent of children) and those whose measurements are outside a plausible range are excluded.

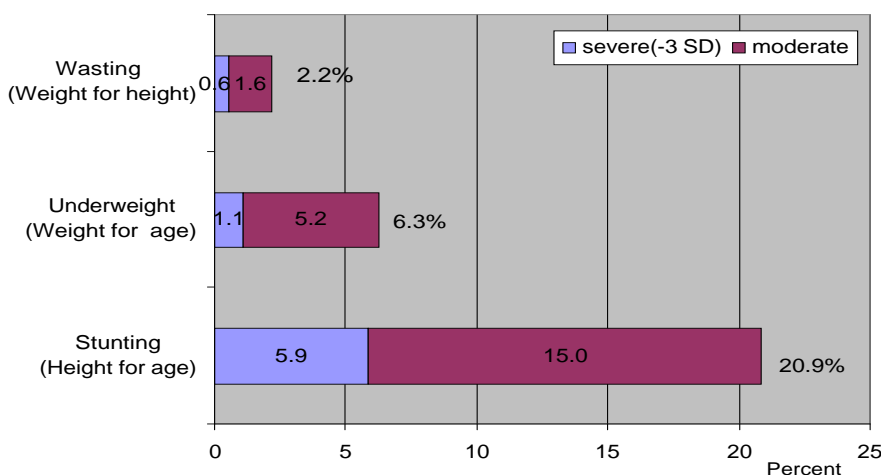
Trends In Malnutrition Over Time

The levels of underweight, stunting and wasting in Mongolia have decreased significantly in the past five years, with the levels of both underweight and wasting falling to half of the level recorded in the previous MICS

survey in 2000, and with stunting decreased by about one fifth. This is consistent with the findings of the 2nd and 3rd National Nutrition Surveys conducted in 1999 and 2004 (see Figure 11).

When comparing the survey results it is worth noting, that the 3rd National Nutrition Survey of 2004 measures malnutrition among children aged 6-59 months, not including children aged 0-5 months as done in the other three surveys. In order to check how this difference in age group might influence the malnutrition results and thus the ability to compare the two surveys, data from the MICS3 survey was computed both for children aged 0-59 months as well as 6-59 months.

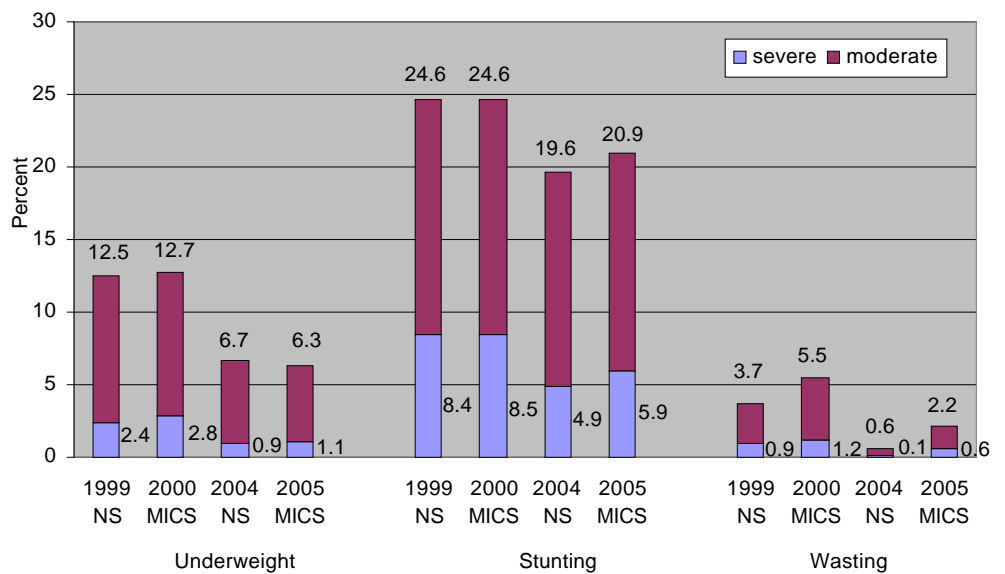
Figure 12: Comparison of underweight, stunting and wasting (severe versus moderate), Mongolia, 2005



Although malnutrition levels are considerably lower among

very young children still being (exclusively) breastfed, the omission of data for the age group 0-5 months, only resulted in a slight increase in the overall malnutrition figures. Children being underweight increased from 6.3% to 6.9% and children

Figure 11: Malnutrition – underweight, stunting and wasting among children under age 5, Mongolia, 1999-2005



being stunted from 20.9% to 22.1%.

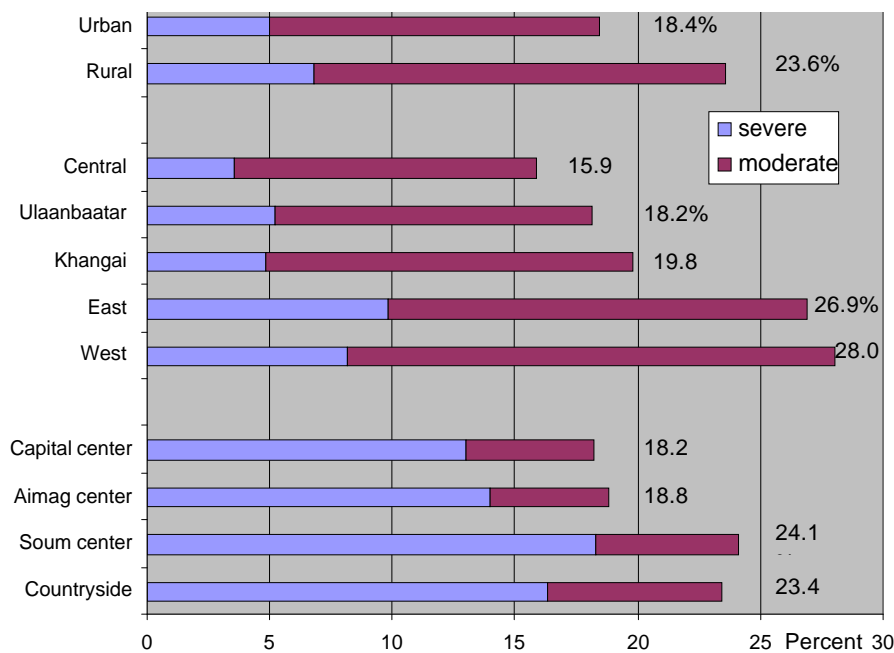
This decline in malnutrition rates is seen as a positive outcome of the various health and nutrition policies, growth monitoring and supplementation programmes in place, coupled with economic growth and improvements in access to clean water and sanitation. It may also be a reflection of the fact, that the country has been going through a stable period unlike when the previous MICS survey was undertaken during the dzud (during the second of three consecutive harsh winters) and when the 1st National Nutrition Survey was undertaken in 1992 during the transition period.

Figure 12 shows the level of the three types of malnutrition in relation to one another.

Stunting

Stunting is the most prevalent form of malnutrition in Mongolia affecting one in five children under the age of five. Severe stunting affects roughly 6 percent. While the incidence of stunting is declining, it is doing so at a much slower pace than the two other types of malnutrition. This is not surprising as stunting reflects chronic malnutrition or repeated disease affecting growth over a long period of time, the effects of which cannot quickly be reversed. As pointed out in the Nutrition Survey 2003, stunting has also been very persistent due to deficiency in vitamins and micronutrients, especially zinc deficiency (*Nutrition Status of Mongolian Children and Women, 3rd Nutrition Survey Report, 2004-2006*).

Figure 13: Stunting (moderate and severe) among children aged 0-59 months, by location, Mongolia, 2005



Children in rural areas are more likely to be stunted (24%) than children in urban areas (18%). However, this rural urban divide is not as pronounced as the difference between regions where children in the West and East region are almost twice as likely to be stunted (28% and 27%) as those living in Central Region (16%). The regional figures are similar to those recorded in the 3rd Nutrition Survey, except for Ulaanbaatar which was found to have a considerably higher level

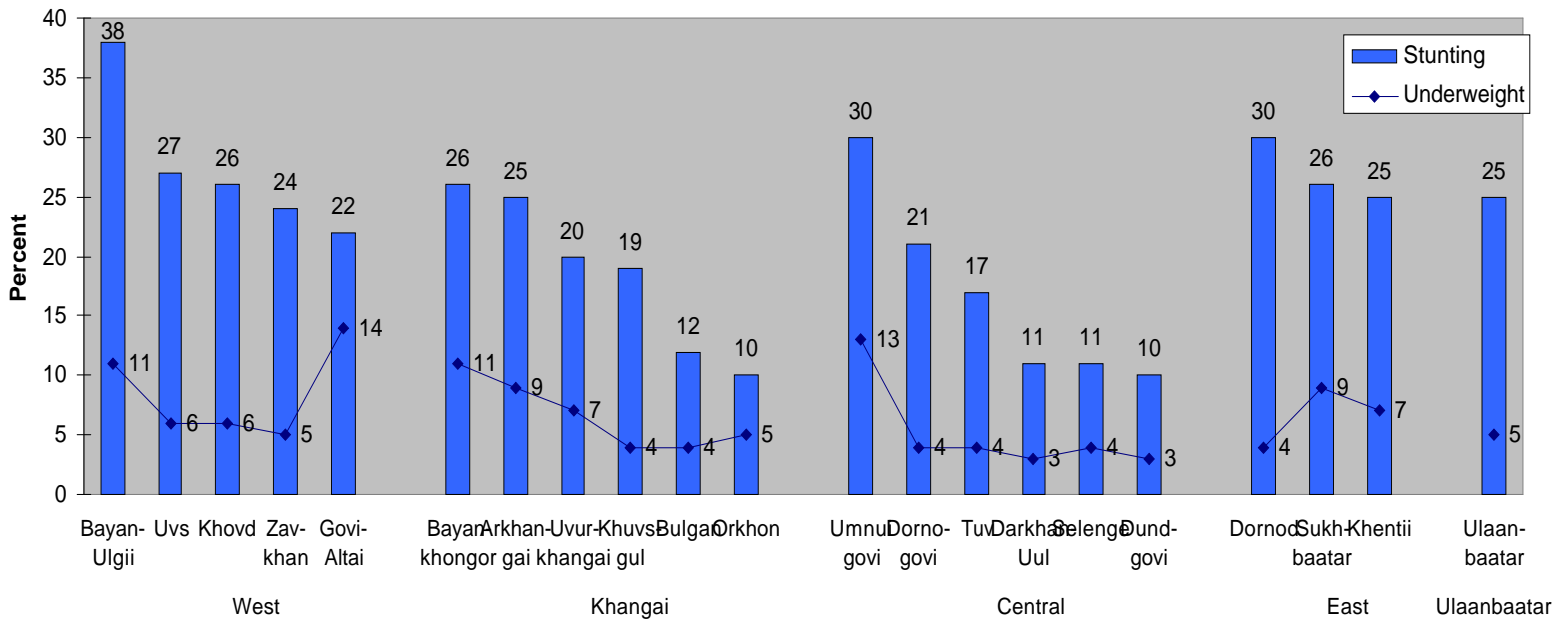
of stunting, 18% according to the MICS results, compared with 10.5% according to the Nutrition Survey. Since a third of the population lives in Ulaanbaatar, the lower level recorded in the 3rd Nutrition Survey also leads to lower urban malnutrition figures and thus a larger rural urban difference than the one found in MICS 2005.

The regional averages cover over big variations between aimags within the same region (see Figure 14 which shows both the level of stunting and underweight at aimag level). While all three aimags in the East region experience consistent high levels of stunting between 25%-30%, it is

noticeable how the level of stunting varies tremendously within the three other regions with aimags like Bayan-Ulgii in West and Umnugovi in Central experience standing out from the rest with stunting levels which are well above those of the neighboring aimags.

As the malnutrition rates at aimag level are based on a relatively small number of children (between 56-147 in all aimags except Govisumber, which has not been included due to the very small sample there) caution should be exercised against drawing conclusions based on subtle differences between Aimags, as these may not be statistically significant.

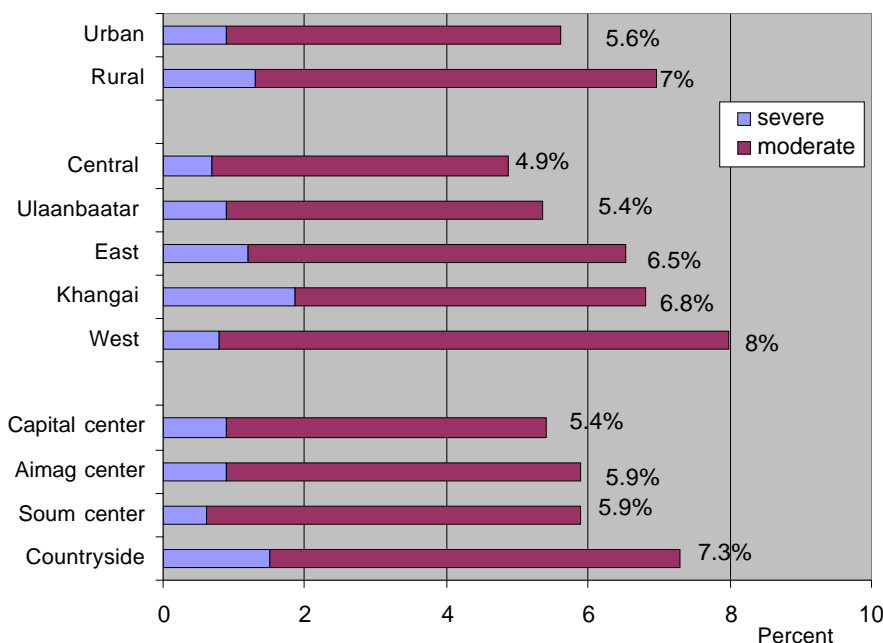
Figure 14: Stunting and underweight (moderate and severe) among children aged 0-59 months, Aimag level, Mongolia, 2005



Underweight

The incidence of underweight has been halved over the past five years. One in sixteen children under the age of five is now underweight (6.3%) compared with one in eight children (12.7%) five years ago. Children living in the West region, children of mother's with no education, and children from the poorest families are the most likely to be affected. Only 1.1 percent is

Figure 15: Underweight among children aged 0-59 months, by location, Mongolia, 2005



classified as severely underweight. If this decline - of halving the incidence of underweight every five years - is sustained it should be possible to reach the goal of having virtually no underweight young children by year 2015. Regional differences vary from 8% of children being underweight in West Region to 4.9% in Central (see Figure 15). Severe underweight is most prevalent in Khangai, where close to

2% of children under the age of five are severely underweight – roughly twice the level of anywhere else.

As in the case of stunting, there are significant differences within regions at the aimag level. While there is mostly a fairly close relationship between areas with high levels of stunting also having high levels of underweight, it is not always the case as seen for Govi-Altai in West region which has the lowest level of stunting but the highest level of underweight within that region.

Wasting

Only 2.2 percent of children under five are **wasted** or too thin for their height. As wasting reflects recent malnutrition typically caused by seasonal differences in the supply of food, disease or emergency situations, the very low incidence indicates that there have been no major natural disasters or socio-economic calamities affecting the country recently. The policy during the dzud of distributing high calorie BP-5 bars and ‘Pally’ cookies to children in areas affected by minor-degree natural disasters has also helped alleviate this problem.

Malnutrition Levels By Socio-Economic Background

Of all the background variables included in table NU.1 the most significant factor determining the risk of malnutrition – whether stunting, wasting or underweight - is the education level of the mother and the level of wealth of the household (see Figure 16). Education was the most important predictor of underweight, whereas wealth is the most important predictor of stunting. Children under five are two and a half times as likely to be stunted if coming from a poor household (27%) compared with children from the wealthiest households (12%). The difference is even more pronounced for children who are underweight. Children of mothers with no education are more than three times as likely to be underweight compared with children born to well educated mothers.

Figure 16: Malnutrition by education level of mother and level of wealth of household, Mongolia, 2005

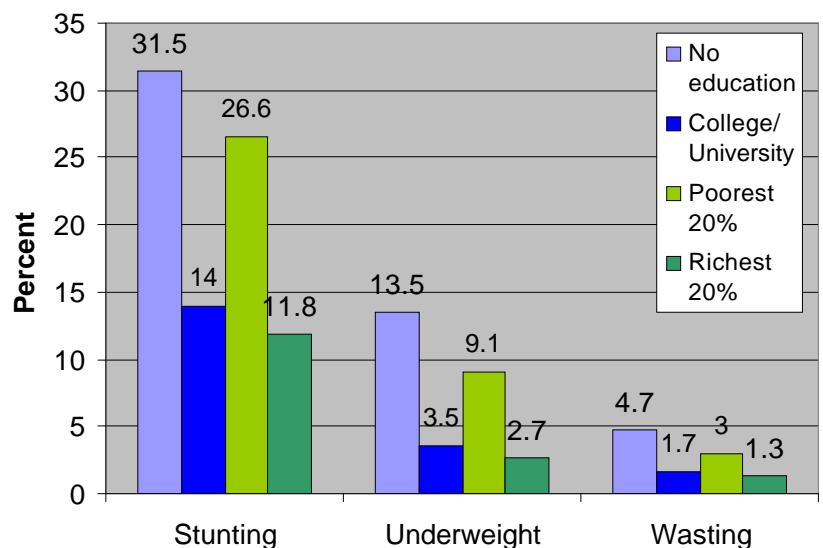
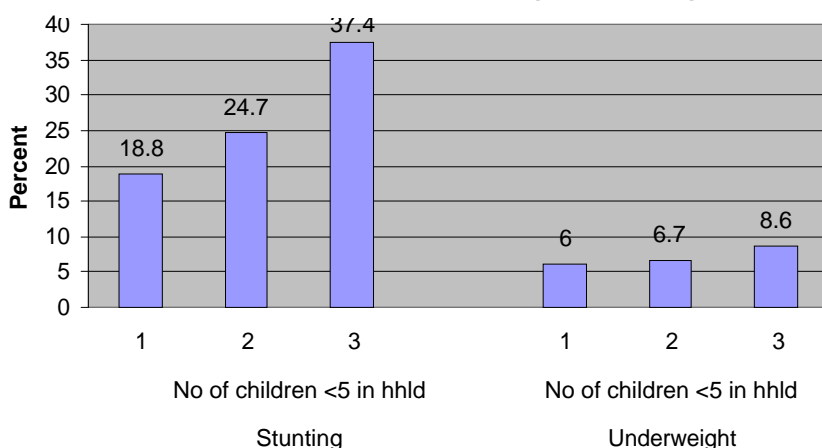


Figure 17: Level of stunting and underweight, by number of children in the household under age five, Mongolia, 2005



Another important determinant of malnutrition is the number of young children in the household. The risk of being underweight is 43% higher for children living in households with three children under the age of five, compared with households with only one child under the age of five. The

risk of stunting is almost 100% higher (see Figure 17).

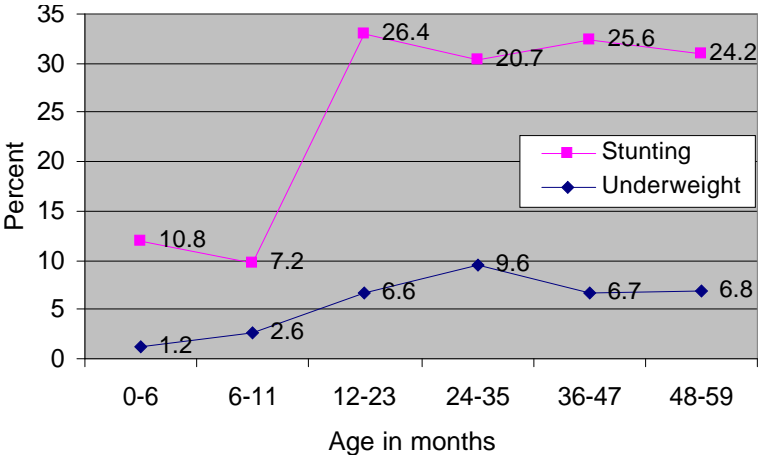
There is very little if any difference in the incidence of malnutrition between boys and girls. While the data show that girls may be slightly more prone to being underweight or wasted, and boys slightly more prone to being stunted, the differences are so small, they are unlikely to be statistically significant.

The problem of malnutrition is relatively low among very young children under the age of 6 months who are still primarily being breastfed. As other foods and drinks are introduced into the diet malnutrition starts to increase, peaking around the age of 24-36 months (see Figure 18).

Overweight

An increasing phenomenon is children who are too heavy for their height. Overall 9.6% of children under five were overweight mainly among children in the richest households (15%), children born to mothers with college or university education (13%), and children living in Ulaanbaatar (15%) or East Region (14%). However, the problem of overweight is particularly pronounced among newborn and very young children under the age of 6 months, where 25%, or one in four children, are too heavy for their height. However, as children begin to get increasingly mobile the problem decreases affecting roughly 5% of children aged 3-5 years.

Figure 18: Underweight and stunting (moderate and severe) by age of children, Mongolia, 2005



Breastfeeding

Goal: International and national

Empowerment of women to exclusively breastfeed their children for 6 months after birth, and continue breastfeeding, with complementary foods, well into the child's second year.

Breastfeeding for the first few years of life protects children from infection, provides an ideal source of nutrients, and is economical and safe. However, many mothers stop breastfeeding too soon and there are often pressures to

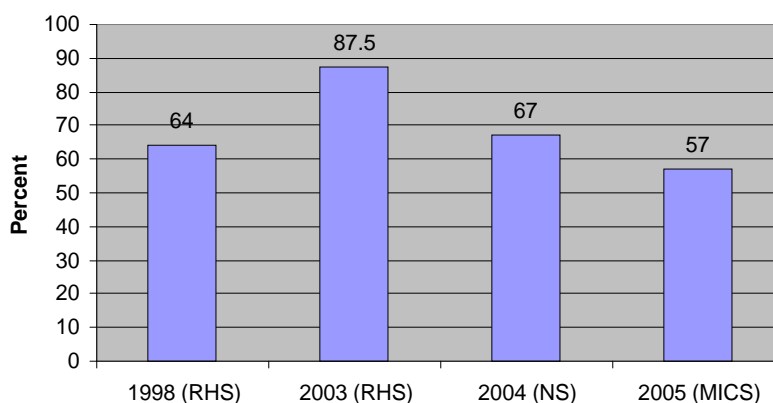
switch to infant formula, which can contribute to growth faltering and micronutrient malnutrition and is unsafe if clean water is not readily available. The World Fit for Children goal states that children should be exclusively breastfed for 6 months and continued breastfeeding with safe, appropriate and adequate complementary feeding up to 2 years of age and beyond.

In Table 4: NU.3, breastfeeding status is based on the reports of mothers/caretakers of children's consumption of food and fluids in the 24 hours prior to the interview. *Exclusively breastfed* refers to infants who received only breast milk and vitamins, mineral supplements, or medicine. The table shows exclusive breastfeeding of infants during the first six months of life (separately for 0-3 months and 0-5 months), as well as complementary feeding of children 6-9 months and continued breastfeeding of children at 12-15 and 20-23 months of age.

Figure 19: Exclusive breastfeeding of children aged <6 months, Mongolia, different survey findings, 1998-2005

Exclusive Breastfeeding

Approximately 57% of children aged less than six months are exclusively breastfed, a level close to the goal of the National Programme on Child Protection and Development of reaching 60%. The national policy regarding breastfeeding was revised in 2000 when the previous recommendations of 4 months exclusive breastfeeding



was changed to 6 months in line with WHO recommendations (*Nutrition Status of Mongolian Children and Women, 3rd Nutrition Survey Report, 2004-2006*).

Figure 19 compares the exclusive breastfeeding rate of children under 6 months of age between different surveys. The reason for the high level recorded in the RHS 2003 may be explained by the different data collection methods used. In the Reproductive Health Survey of 2003 women were asked whether they were breastfeeding, followed by the question, 'Are you still feeding [NAME] only by breastmilk?' If the mother answered 'yes' to both of these questions no further probing was done on any other liquids or foods the child might have been given. This may skewer the result as mothers may not be aware of the precise definition of exclusive breastfeeding, and may still consider themselves to be exclusively breastfeeding when giving the child water or other drinks. This questioning technique differs from the one applied in MICS and in RHS 1998 where all breastfeeding mothers were asked whether the child had been given any - of a list of drink and food items including water - in the previous 24 hours.

Exclusive breastfeeding declines with wealth and with higher education, as parents who can better afford milk substitutes may choose that option for reasons of convenience or because they believe it is better for the child. Those children who are most likely to be exclusively breastfed till six months of age are children living in Ulaanbaatar (60%) and Khangai (59%), children whose mothers have only primary education (73%), and children from the poorest households (71%). Children least likely to be exclusively breastfed till the recommended age are children living in Aimag centres (46.4%).

There is some evidence to suggest that the level of exclusive breastfeeding recorded in the surveys may be too high. According to the 2nd Nutrition Survey in 1999 78.5% of children were given complementary food before they reached the age of six months. Similarly a study on “Feeding patterns of children under two years old” in 2002 found that 70% of children start consuming complementary food before they reach 6 months (*Nutrition Status of Mongolian Children and Women, 3rd Nutrition Survey Report, 2004-2006*). The question is whether these two quoted studies are representative for Mongolia as a whole. It also raises the question of whether large scale surveys might be missing out on incidences of occasional supplementary feeding. Since questions only cover food and drinks given to the child in the preceding 24 hour period, children fed complementary food irregularly (not daily) may not be captured.

Continued Breastfeeding

Children in Mongolia enjoy relatively high levels of continued breastfeeding after the introduction of solid foods. By age 12-15 months, 82 percent of children are still being breastfed, a level that gradually decreases to 65 percent by age 20-23 months. Nine out of ten children in West, Khangai and rural areas continue to be breastfed at the age of 12-15 months, compared with roughly 75% elsewhere in the country. However, the differences by location soon begin to even out. By age 20-23 months there are more children in urban areas who continue to be breastfed, particularly in Ulaanbaatar, than elsewhere. This is possibly linked to the custom in many rural areas of ceasing breastfeeding when falling pregnant again.

Trends Over Time

The prevalence of breastfeeding has increased among all age groups of young children since the last MICS survey (see Figure 20). The increase has particularly taken place in Ulaanbaatar and rural areas / countryside. An opposite trend seems to have taken place at aimag level where the prevalence of breastfeeding has declined except for among children aged 20-23 months (see Figure 21). Soum level data has not been included where sample size was very small.

Figure 20: Prevalence of exclusive and continued breastfeeding. Mongolia, 2000 and 2005

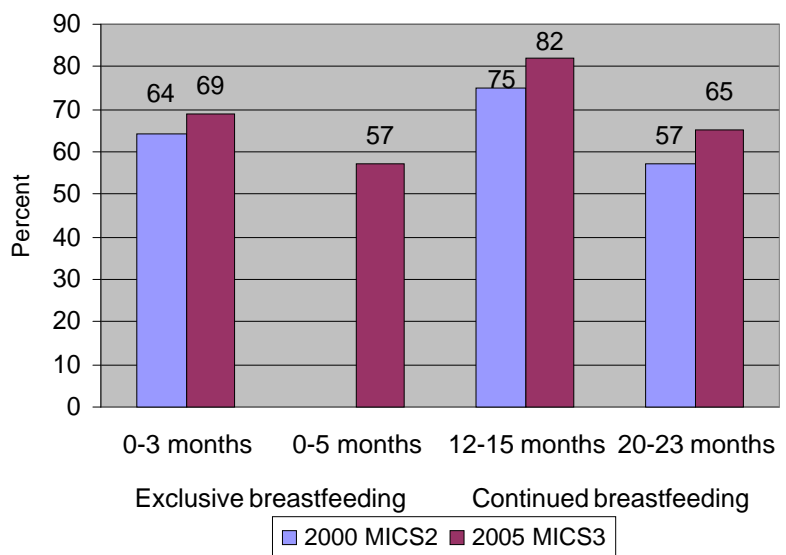
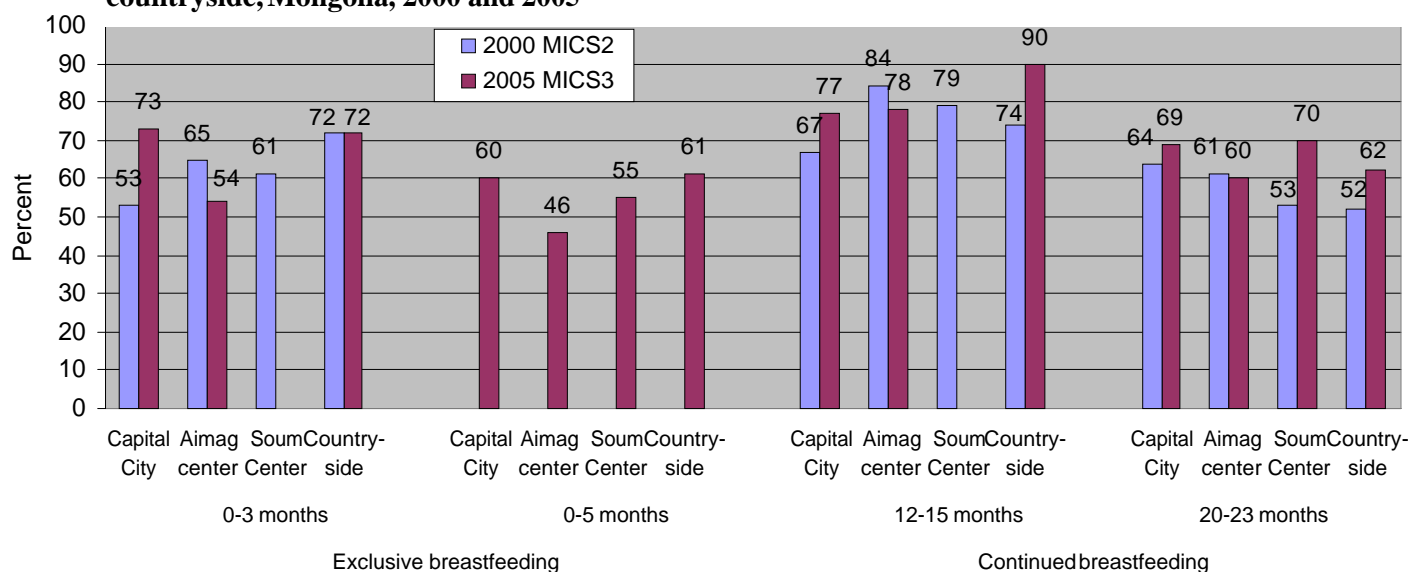


Figure 21: Exclusive and continued breastfeeding, Capital City, Aimag centers, soum centers and countryside, Mongolia, 2000 and 2005



The small increase is a positive result given the intensive marketing and advertising of breast milk substitutes, reflected in an increased import of milk substitutes. Import of baby food was 6.6 times as high in 2001 compared with 1997 (*Nutrition Status of Mongolian Children and Women, 3rd Nutrition Survey Report, 2004-2006*). It is an indication that the government's attempts to counteract the increasing import of milk substitutes and baby food has been somewhat successful. This has been done partly by running awareness campaigns in all mass media to raise the awareness of the benefits of breastfeeding and the potential harmful effects of milk substitutes, and partly by introducing the National Code on Breast Milk Substitutes, which seeks to regulate how the products can be marketed.

Timely Complimentary Feeding

The proportion of children who are receiving timely complementary feeding, i.e. children aged 6-9 months who are given both breast milk and solid/mushy food, has increased slightly since the last MICS survey in 2000 from 54 to 57 percent.

A.

Immunization

According to UNICEF and WHO guidelines, a child should receive a BCG vaccination to protect against tuberculosis, three doses of DPT to protect against diphtheria, pertussis, and tetanus, three doses of polio vaccine, and a measles vaccination by the age of 12 months. Mothers were asked to provide vaccination cards for children under the age of five. Interviewers copied vaccination information from the cards onto the MICS3 questionnaire.

Overall, 80.5 percent of children had health cards. If the child did not have a card, the mother was asked to recall whether or not the child had received each of the vaccinations and how many times. The percentage of children aged 12 to 23 months who received each of the vaccinations is shown in Table 5: CH.1. The denominator for the table is comprised of children aged 12-23 months so that only children who are old enough to be fully vaccinated are counted. In the top panel, the numerator includes all children who were vaccinated at any time before the survey according to the vaccination card or the mother's report. In the bottom panel, only those who were vaccinated before their first birthday are included. For children without vaccination cards, the proportion of vaccinations given before the first birthday is assumed to be the same as for children with vaccination cards.

Box 2: Schedule of when immunizations are due for children under the age of 1 in Mongolia

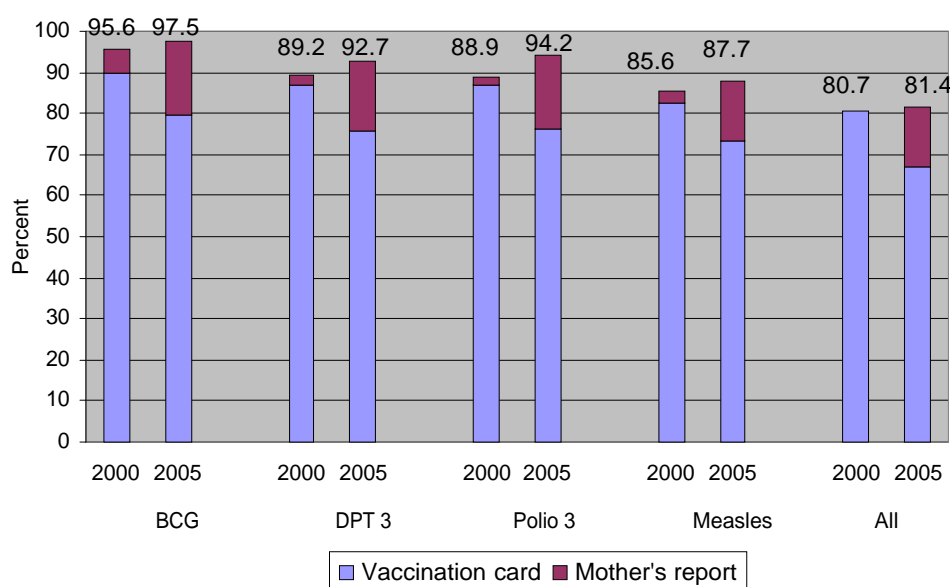
Type of antigen	Time when immunization is due				
	24 hours	2 months	3 months	4 months	8-11 months
Tuberculosis	BCG				
Polio	Polio 0	Polio 1	Polio 2	Polio 3	
DPT		DPT 1	DPT 2	DPT 3	
Measles					Measles
Hepatitis*)	HepB1	HepB2			HepB3

*) Hepatitis immunization coverage will be reported separately in the Full MICS3 report. It is not part of the immunizations included in the indicator on 'Full immunization coverage by one year'.

Trend Over Time

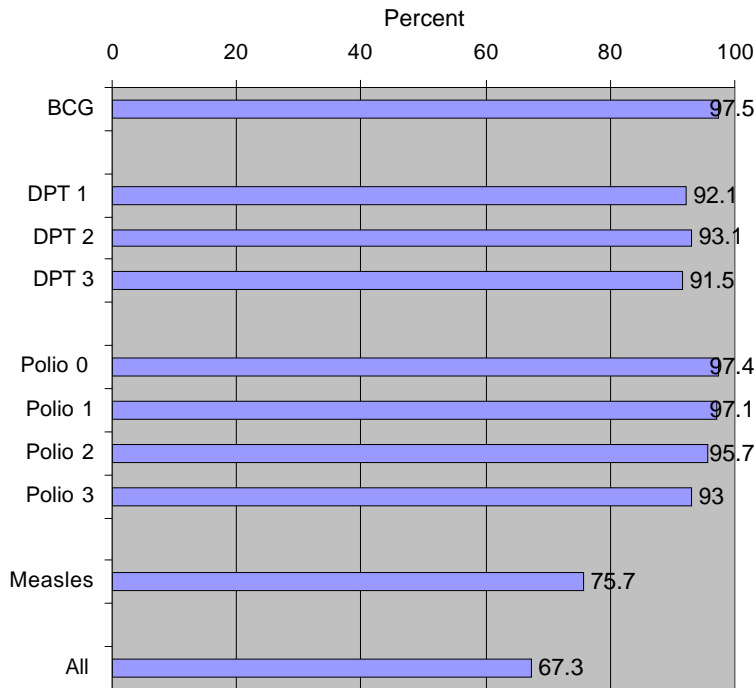
The already very high immunization rates have increased slightly over the past five years for all immunizations due before the age of one. As indicated in Figure 22 the proportion of children with a health / immunization card at the time of interview has decreased with more of the information on immunizations being derived from the mother's or caretaker's verbal report. It is not uncommon for medical centres or

Figure 22: Immunization rates among children aged 12-23 months, immunized any time before the survey, Mongolia, 2000 and 2005



doctors to retain the health card to prevent it from getting lost. Where feasible the field team would contact the local medical facility to locate any missing health cards and crosscheck these with information from the mother. However, in remoter areas with longer distances to health facilities time did not always allow for this.

Figure 23: Children aged 12-23 months who received immunizations by age 12 months. Mongolia, 2005



(BCG, DPT1-3, and Polio1-3) there is very little difference between the proportion of children who received these vaccinations before the age of one and those receiving them any time before the survey. This is not surprising as BCG, DPT1-3 and Polio1-3 are all supposed to be completed by the time the child is 4 months old, and it would be unlikely to have many children delaying these immunizations to later than age one.

The coverage for measles vaccine is lower than for the other vaccines. There is a tendency of delaying the measles immunization, with only 75% of the surveyed children having

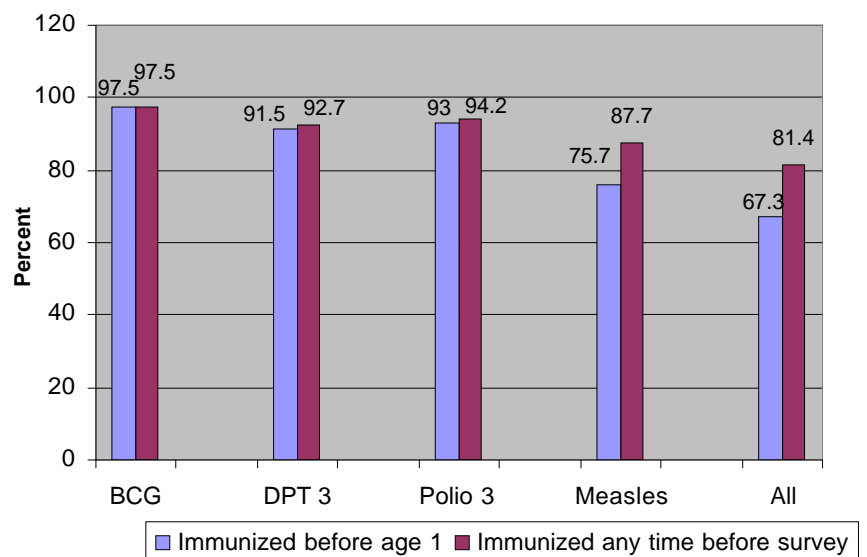
Current Situation

Rates are highest for antigens given at birth (within 24 hours of birth) with 97.5 of all children aged 12-23 months having received a BCG vaccination and 97.4% having received Polio 0 drops. Immunization rates decline slightly for antigens due at later ages (see Figure 23).

The dropout rate between DPT1 and DPT3 vaccinations is low – dropping from 92.1% to 91.5%. A slightly higher dropout rate occurs for Polio1 to Polio3 - dropping from 97.1% to 93%. Although Polio and DPT immunizations are given at the same time (2 months, 3 months, and 4 months of age) Polio immunization remains higher than DPT for all three doses.

For all of the antigens discussed above

Figure 24: Children aged 12-23 months immunized before the age of 12 months and at any age before the survey, Mongolia, 2005



had their measles vaccination before the age of one as recommended, and 13% delaying it till after the age of one. The delay may partly be due to a nationwide stock out period with no measles vaccine available between August to November 2005.

The proportion of children who are fully immunized by the age of one (have received all eight antigens: BCG, DPT1-3, Polio1-3 and measles before their first birthday) is 67% - considerably lower than the goal of 100%.

The tendency to delay measles immunization brings down this figure for full AND timely immunization. If including children who have received all eight antigens, but have completed this immunization schedule after the age of one, the figure rises to 81% of children aged 12-23 months who have been immunized with all eight antigens.

Comparison with Ministry of Health Records

Ministry of Health keeps records on the proportion of one year old children immunized for each of the eight antigens, but do not record the proportion of children who are fully immunized, as this can only be done in surveys tracking the immunization history of an individual child. The immunization rates recorded by MoH are higher than those found in MICS 2005, particularly for measles which stands at 97.5% of one year olds according to MoH compared with 75% of one year olds according to MICS.

There are several reasons for this related to the way rates are calculated and compiled.

MOH records do not reflect whether children immunized received the antigen at the right age or not. If a 13 months old child is vaccinated with measles dose 1 due at the age of 9-11 months, the vaccination will be registered as immunized before the age of one as the dose was due before the age of one. A better comparison of MoH and MICS data would therefore be to compare with the overall measles rate registered in MICS3 (regardless of the child's age) which stands at 87% compared to the MoH data of 97%.

A difference of ten percent between survey data and official records may not be unexpected. An assessment of the EPI system in Mongolia recently revealed that while there is no suggestion of systematic over reporting in Mongolia a random sample did reveal inconsistencies, with the national compilation of data on measles coverage exceeding the Aimag compilations by about 10%.

Effective protection against measles is not only a reflection of immunization coverage but also of the quality of the antigen. Issues with the quality of the cold chain system which is not being systematically maintained in all areas, may result in lower quality/strength vaccines. This could help explain why Mongolia has experienced small outbreaks of measles, despite the high immunization coverage rates.

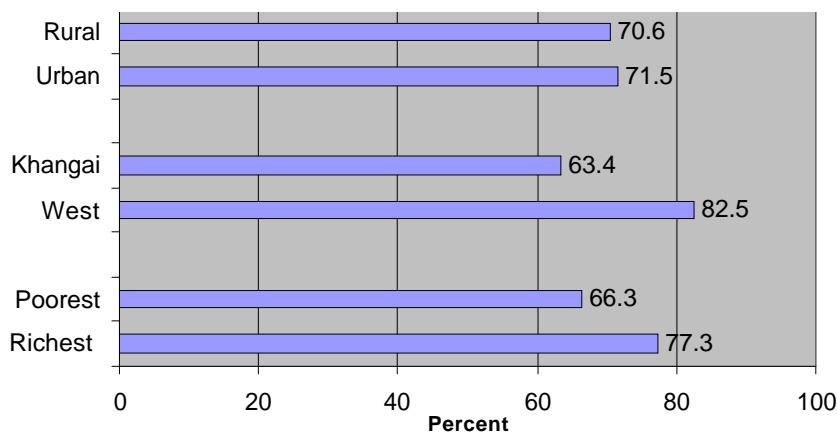
Antibiotic Treatment of Children with Suspected Pneumonia

Pneumonia is the leading cause of death in children and the use of antibiotics in under-5s with suspected pneumonia is a key intervention. Children with suspected pneumonia are those who had an illness with a cough accompanied by rapid or difficult breathing and whose symptoms were due to a problem in the chest and a blocked nose. This question was limited to children who had suspected pneumonia within the previous two weeks and whether or not they had received an antibiotic within the previous two weeks.

Table 6: CH.7 presents the use of antibiotics for the treatment of suspected pneumonia in under-5s by sex, age, region, residence, and socioeconomic factors.

Three hundred and thirteen children or around 9% of the sampled children under the age of five had suspected pneumonia during the two weeks prior to the survey. Seventy two percent of these

Figure 25: Children aged 0-59 months with suspected pneumonia who received antibiotic treatment, selected background characteristics, Mongolia, 2005



children received an antibiotic to treat the suspected pneumonia.

The use of antibiotic treatment is fairly evenly spread throughout Mongolia. The biggest difference was found between regions with four out of five children being treated with antibiotics in the West region compared to three out of five children in Khangai. However, the regional differences should be treated with caution as the number of cases in West, East

and Central are rather small.

While there are regional differences there was no significant difference between children living in rural versus urban areas, nor between the capital city, Aimag centers, Soum centers and the countryside. Antibiotic treatment of suspected pneumonia tends to rise as the living standard increases. The poorer the household the more children go untreated, not only because the likelihood of treatment is lower, but also because the incidence of suspected pneumonia is higher

Solid Fuel Use

Cooking with solid fuels (biomass and coal) leads to high levels of indoor pollution and is a major cause of ill-health in the world, particularly among under-5 children, in the form of acute respiratory illness.

Overall, more than three quarters (76 percent) of all households in Mongolia are using solid fuels for cooking (see Figure 26). Table 7: CH.8 shows the types of fuel used as well as the breakdown by location, wealth and other background indicators.

Figure 26: Types of fuel used for cooking

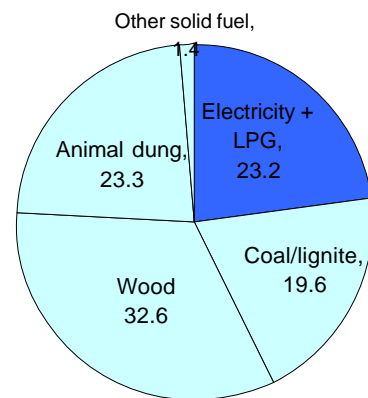
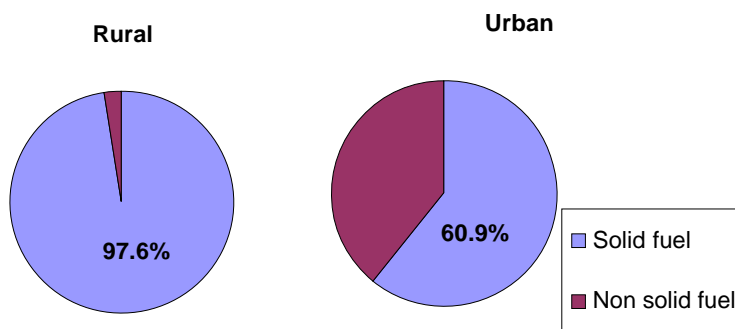


Figure 27: Use of solid fuel for cooking, rural versus urban areas, Mongolia, 2005

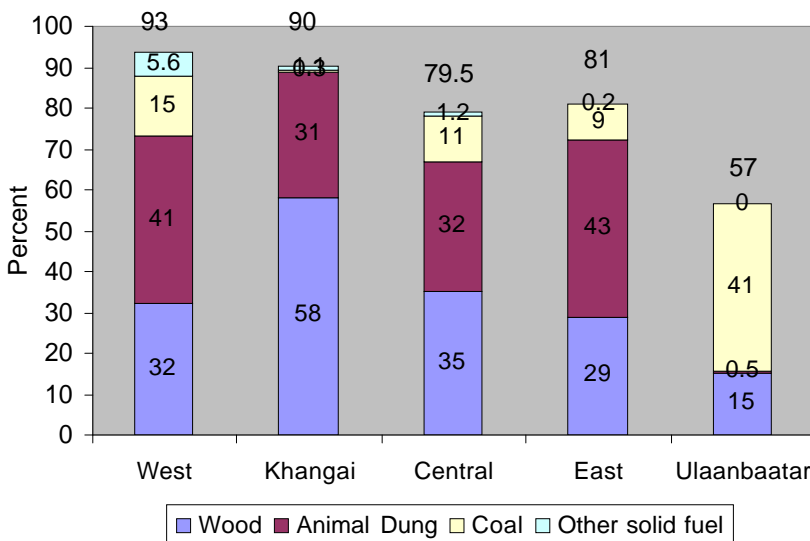


Use of solid fuels is much lower in urban areas (61%), than in rural areas (98), where almost all households are using solid fuels (see Figure 27).

There is a very significant difference between regions.

Highest are the West and the Khangai region where roughly nine out of ten households use solid fuel for cooking. Lowest is Ulaanbaatar with a little over half the households using solid fuel. The types of solid fuel used are mostly wood (32%) - particularly in Khangai (57%), animal dung (23%) - particularly in East (43%) and West (41%), and coal (19%) - particularly in Ulaanbaatar (41%) (see Figure 28). Households who do not use solid fuel for cooking almost all use electricity.

Figure 28: Use of different types of solid fuel for cooking, regional level, Mongolia, 2005



The type of solid fuel used differs between the seasons. In summer when cooking among the ger population takes place outside, the use of animal dung and other cheaper sources of fuel are used, with coal being virtually unavailable to buy in the markets. During winter when cooking is done inside and the stove also serves as the main source of heating, coal is the choice of preference for those who can afford it, as it burns more efficiently and keeps the stove

warmer for longer. Despite ger households using stoves with chimneys leading the smoke out of a small hole in the roof of the ger, this is not tightly sealed making smoke a considerable health hazard during wintertime, when cooking takes place inside.

The use of solid fuel decreases drastically with the education level and the level of wealth. It is not a gradual decrease. Only amongst the highest educated and the wealthiest households do a significant proportion of households use non solid fuel for cooking. For example, while only 18% of the wealthiest households use solid fuel, this figure jumps up to 78% for the households in the second highest wealth category.

Water and Sanitation

Safe drinking water is a basic necessity for good health. Unsafe drinking water can be a significant carrier of diseases such as trachoma, cholera, typhoid, and schistosomiasis. Drinking water can also be tainted with chemical, physical and radiological contaminants with harmful effects on human health. In addition to its association with disease, access to drinking water may be particularly important for women and children, particularly in rural areas, who bear the primary responsibility for carrying

Goals and targets on water and sanitation

MDG: Reduce by half, between 1990 and 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation

WFFC: Reduction in the proportion of households without access to hygienic sanitation facilities and affordable and safe drinking water by at least one-third.

Box 3: Definition of improved water according to the WHO /UNICEF Joint Monitoring Programme of Water Supply and Sanitation

Type of water source	Improved source of water	Unimproved source of water
Piped	Piped water into dwelling, yard or plot	
Public	Public tap / standpipe	Tanker truck
Well	Protected well Pumped well (borehole /tubewell)	Unprotected well
Spring	Protected spring	Unprotected spring
Other	Rainwater	Surface water Other

water, often for long distances.

The distribution of the population by source of drinking water is shown in Table 8: EN.1. The population using *improved drinking water sources* are those who use any of the following types of supply: piped water, public tap, borehole/tubewell

(the term ‘pumped well’ was used in the Mongolian questionnaire), protected well, protected spring or rainwater (see Box 3 for definition of improved versus unimproved source of water).

Overall, clean water reaches 72 percent of the population – nine out of ten in urban areas (91%) but less than half of the population in rural areas (46%).

Figure 29: Population with access to an improved source of water, Mongolia, 2005

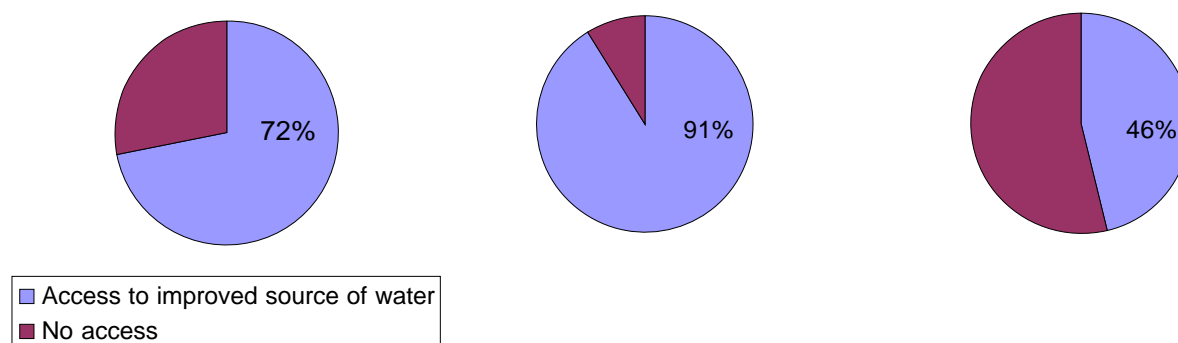
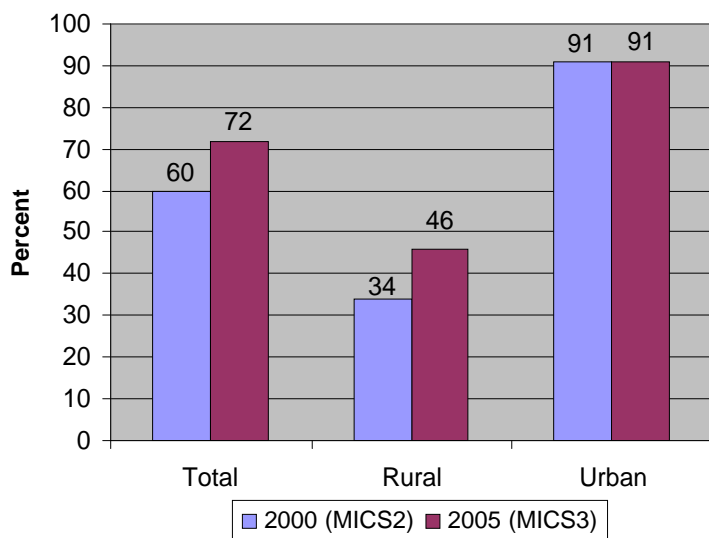


Figure 30: Changes in access to an improved source of drinking water, at rural, urban and national level, Mongolia, 2000 and 2005



when moving closer to the urban centres and being better able to access public taps, protected and unprotected wells.

This difference is reflected in Figure 31 where the use of surface water among the rural population has decreased from 50% to 32% between the two surveys, while the use of water from public taps, protected and unprotected springs and unprotected wells has increased correspondingly.

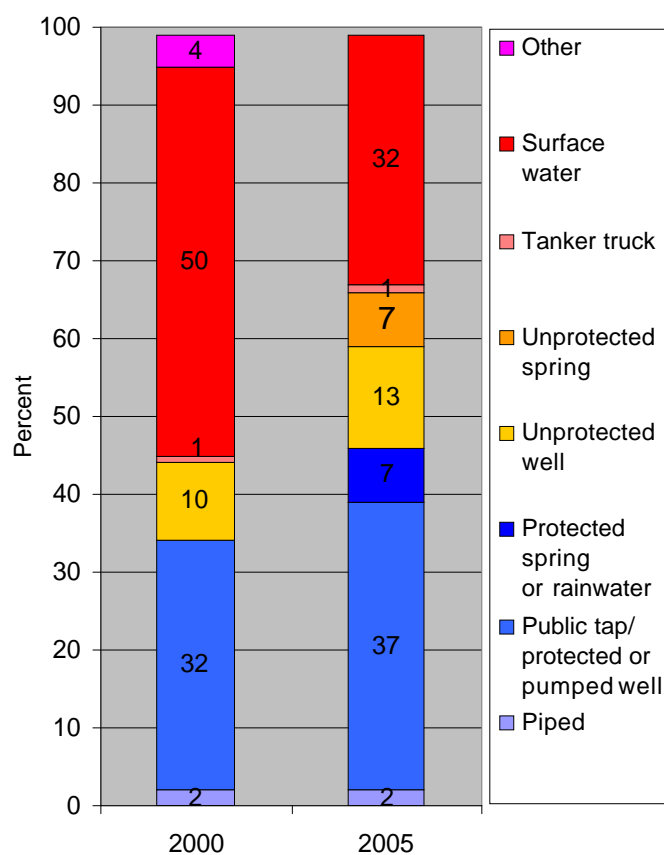
The rural urban difference in access to improved water becomes even more apparent when comparing access between the type of location people live in. The HIES/LSMS revealed that people living in soum centres were more than twice as likely to have access to an improved water source (60%) compared with the population in the countryside (23%) (National Statistical Office of Mongolia, World Bank, & UNDP, 2004).

There are considerable regional differences. The situation in the West and Khangai is considerably worse than in other regions with only little over half the population (52% and 54%) having access to an improved source of water compared with 65% in Central, 78% in East and 95% in Ulaanbaatar.

When comparing the 2000 and 2005 figures there appears to have been a considerable improvement in the coverage with safe water. Overall access to an improved water source has gone up by 12% points, an increase which has entirely taken place in rural areas (see Figure 30).

However, part of this increase may be due to the seasonal differences in the use of water by the ger population. Data collection for MICS2 in 2000 took place during summer (late May to early August) when the ger population move further away from town and are more likely to use surface water for their water supply than during winter (when data collection for MICS3 took place)

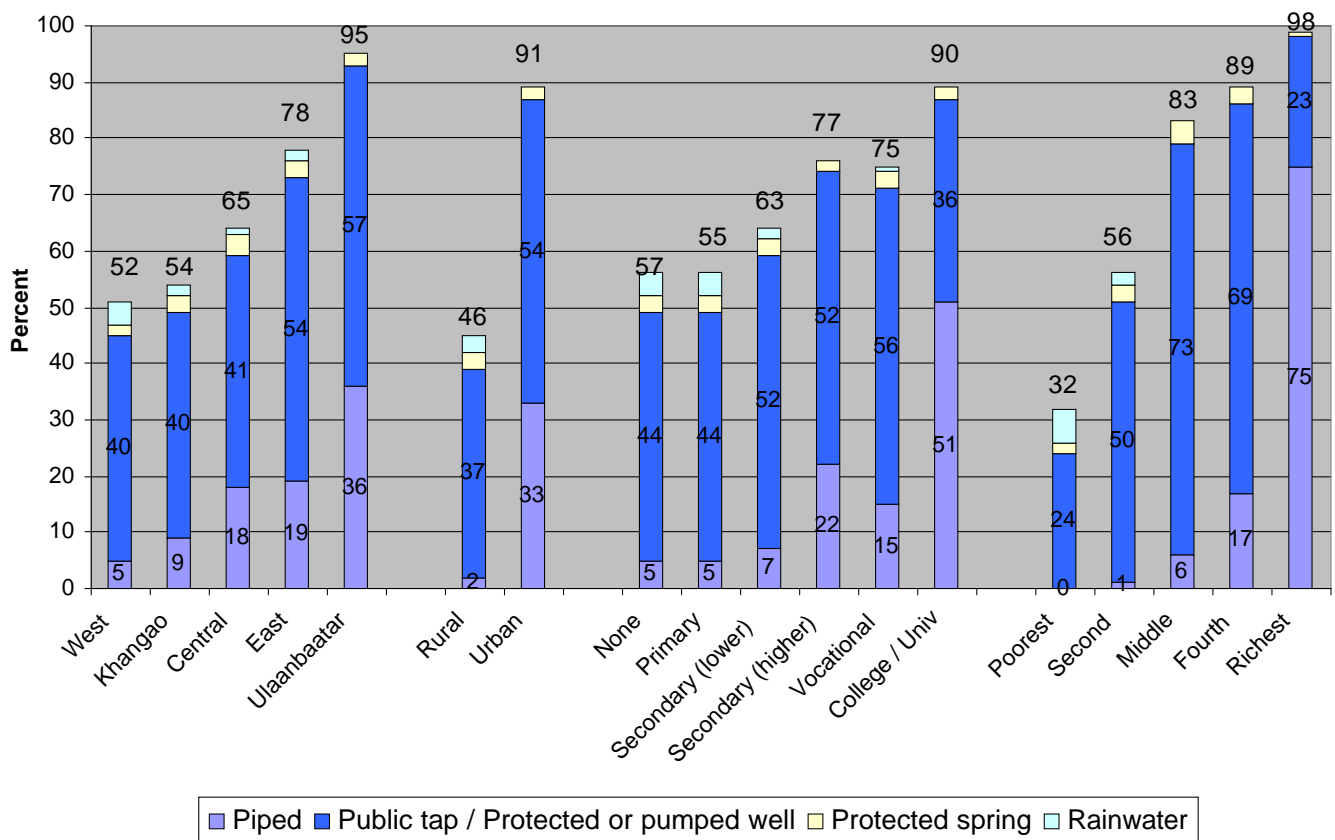
Figure 31: Source of drinking water among RURAL population, Mongolia, 2000 and 2005



When analysing the most common sources of water, the three categories ‘public tap/standpipe’, ‘protected well’ and ‘pumped well’ (borehole) have been lumped together into one category. This has been done as an adequate distinction between a protected well and a public standpipe had not been done during data collection. There is no precedence in surveys collecting information on water supply for having a particular focus on public taps, and indeed the word used in Mongolian does not distinguish between the two. This does not change the overall figures on who has access to an improved water source as both public taps and protected wells are considered safe according to the international definition. However, it affects the ability to distinguish in as much depth between the different sources of improved water.

Overall, the most common sources of improved water are from public taps / protected and pumped wells (47%) and water being piped into the dwelling (20%). Protected springs and rainwater only account for respectively 2.8% and 1.5%. However, the source of drinking water varies strongly by location (see Figure 32). Virtually no one living in a rural area has access to piped water (2%), instead 37% out of the 46% with access to improved water get it from a public tap / protected or pumped well. In urban areas one in three residents use piped water – mainly those living in apartments or expensive houses, whereas the remaining urban population living in gers and traditional housing nearly all get their water from a public tap / protected or pumped

Figure 32: Source of IMPROVED drinking water by background characteristics, Mongolia, 2005



well (55%).

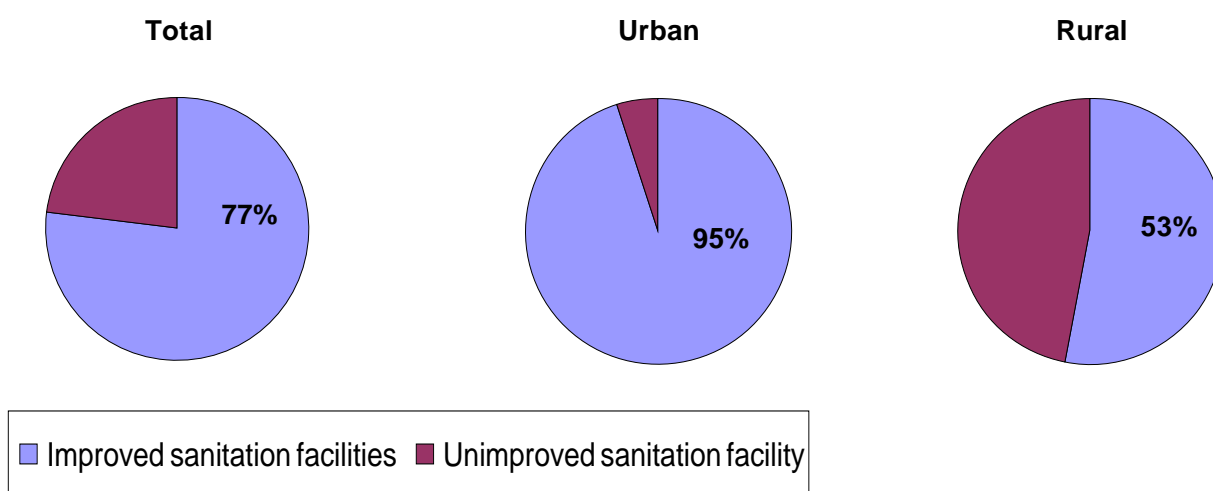
The real dividing line in access to improved water goes between the 60% wealthiest part of the population on one hand, where access varies between 83%-98%, and the 40% poorest part of the population on the other, where access to improved water drops dramatically to between 56% and 32%.

Sanitation

Inadequate disposal of human excreta and personal hygiene is associated with a range of diseases including diarrhoeal diseases and polio. *Improved sanitation facilities* include: flush toilets connected to sewage systems, septic tanks or pit latrines, ventilated improved pit latrines and pit latrines with slabs, and composting toilets.

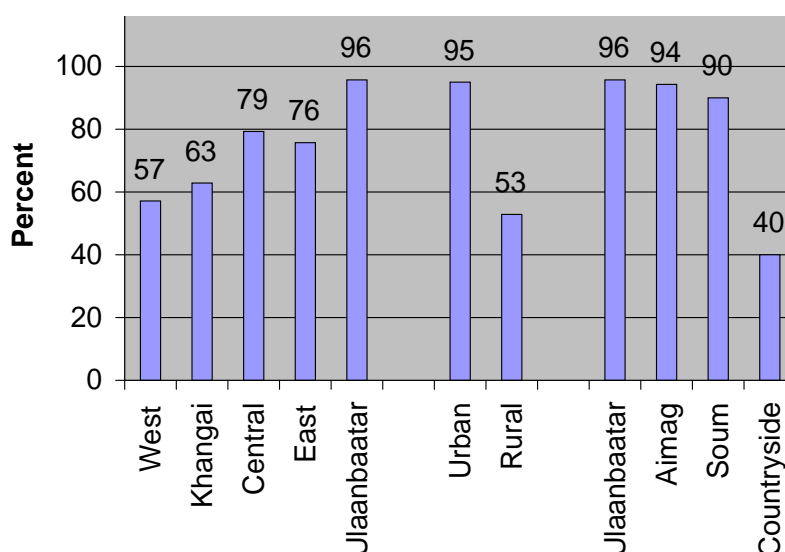
Seventy seven percent of the population of Mongolia is living in households using improved sanitation facilities (Table 9: EN.5). The access to improved sanitary facilities is almost universal in urban areas (95%) compared with rural areas where only little over half the population (53%) have this privilege.

Figure 33: Access to improved sanitation facilities, Mongolia, 2005



People living in West and Khangai are much less likely than others to use improved facilities and people in Ulaanbaatar almost universal. However, by far the most important predictor of access to improved sanitation is the type of location people live in. While 90%-96% of people in the capital city, aimag and soum centers have access to safe sanitation, this only applies for 40% of people living in the countryside (see .Figure 34).

Figure 34: Access to improved sanitation, by location, Mongolia, 2005



Contraception

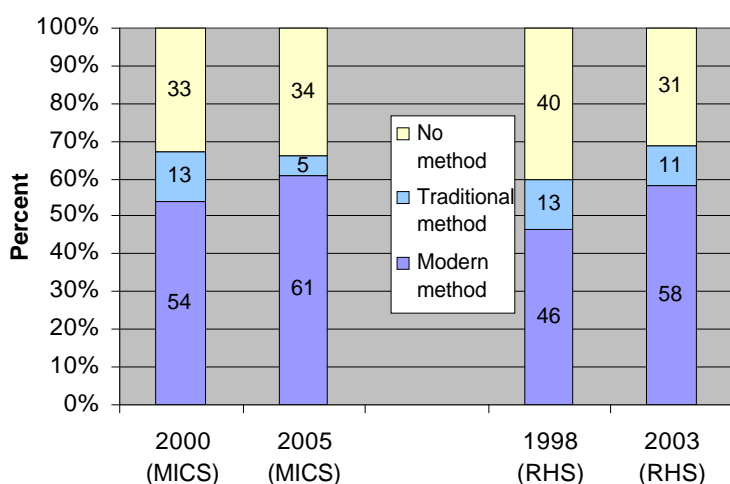
Questions on the current use of contraception and contraceptive methods were asked among the married or in union women aged 15-49 years.

Current use of contraception was reported by two out of three women (66%) currently married or in union. Sixty one percent reported using a modern method (sterilization, pill, IUD, injection, implants, condom or diaphragm) and 5 percent a traditional method (LAM – lactation amenorrhea method, periodic abstinence, withdrawal) of women (Table 10: RH.1).

Trend in use of contraception

There has been virtually no change in the overall use of contraception since the previous MICS was done in 2000. There has, however, been a shift towards the use of modern contraception, which has increased from 54% to 61%, and away from the use of traditional methods, which have declined from 13% to 5% (see Figure 35).

Figure 35: Changes in the use of contraception by women married or in union, by different sources, Mongolia, 1998-2005



When comparing MICS and RHS results, it reveals a pattern of increasing use of contraception up till 2003 and then a slight decrease since then. Despite the small decline in overall use of contraception, the use of modern contraception has been rising throughout the period. Comparisons between the MICS and RHS data should be done with some caution though, as the target group of women covered differs slightly. While MICS findings are based on women who are married or in a union, RHS findings provide data for married women only (as done in Figure 35) or for all women.

Who Is Most Likely To Use Contraception?

Women who are least likely to use contraception are women with no children (20%) and women aged 45-49 years old (38%). Apart from those two groups the use of contraception varies relatively little across background characteristics. While the economic situation of a household influences the type of contraception use by a woman, it has virtually no implications for the overall use of contraception.

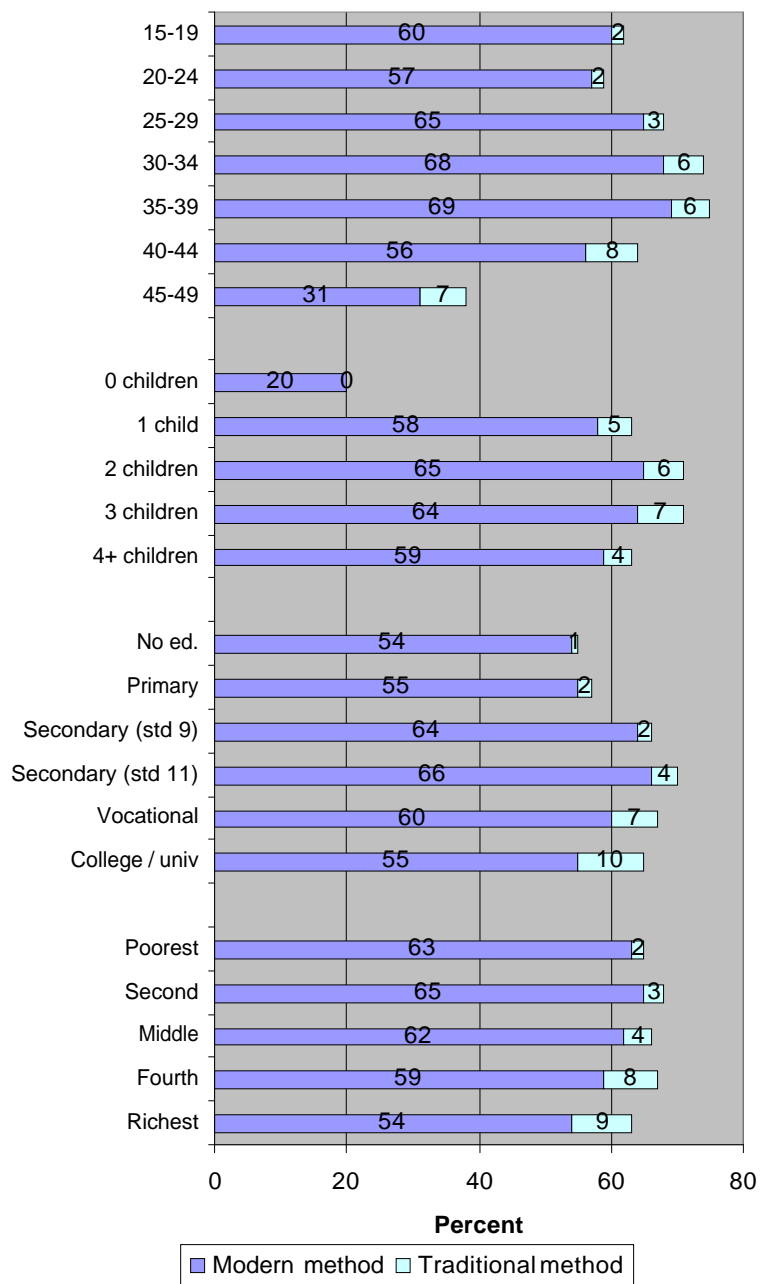
Women most likely to use contraception are women living in Central region or in Soum Centers (both 72%), women aged 30-39 (74-76%) and women who have completed secondary education (70%) (see Figure 36). While it is common to see that the use of contraception increases with higher levels of education (from 54% among women with no education to 70% among women with secondary education), it is surprising that this trend turns around and starts declining for women with more than secondary education.

Another surprising trend contrary to the one found in many other countries is the lower use of contraception in urban areas (64%) compared with rural areas (68%). Women in Ulaanbaatar are less likely to use contraception than women anywhere else in the country (62%). The use of contraception then increases the smaller a settlement a woman lives in to 68% among women in Aimag centers and to 72% among women in Soum centers. It then decreases again among women living in the countryside to 66% (see Figure 38).

Modern Versus Traditional Contraception

The most common traditional method of contraception is periodic abstinence used by 4.7%. In many countries the use of traditional methods decreases among wealthier, better educated and urban women, more likely to be knowledgeable about and to have easy access to modern methods of contraception. However, in Mongolia the pattern is the reverse. Here the use of periodic abstinence increases with the age of women, with the education level and with the level of wealth (see Figure 36). This may be due to better knowledge among well educated women about the reproductive cycle and how to use this knowledge for birth control.

Figure 36: Use of contraception by background characteristics, Mongolia, 2005



The use of traditional methods is twice as high among women in urban areas (7%) compared with women in rural areas (3%). Women in Ulaanbaatar (7%) and Central (10%) region are respectively two and three times as likely to use a traditional method compared with women elsewhere (see Figure 38).

Use of modern contraception by background characteristics

The most popular type of modern contraception is the IUD used by 29% of all women who are married or in a union, followed by the pill and injections (both 11%) (see Figure 37).

There are some interesting regional differences in the types of modern contraception used (see Figure 38). The IUD is most common in Khangai (37%) and least common in Central (21%). The opposite applies to the pill which is used by 17% of women in Central region compared with 10% in Khangai and 9% in West region. Finally injections are most commonly used in East and West (16%) – four times as common as in Ulaanbaatar (4%). The use of a condom (male) is almost twice as high in Ulaanbaatar (8.2%) as anywhere else in the country.

Figure 37: Method of contraception (modern or traditional), overall, Mongolia, 2005

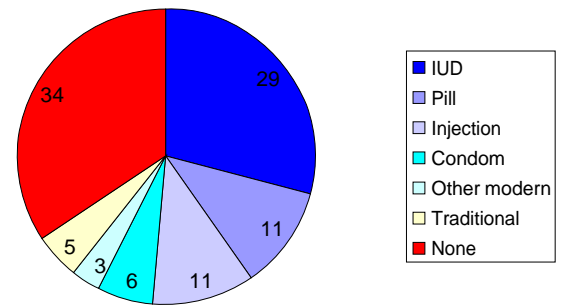
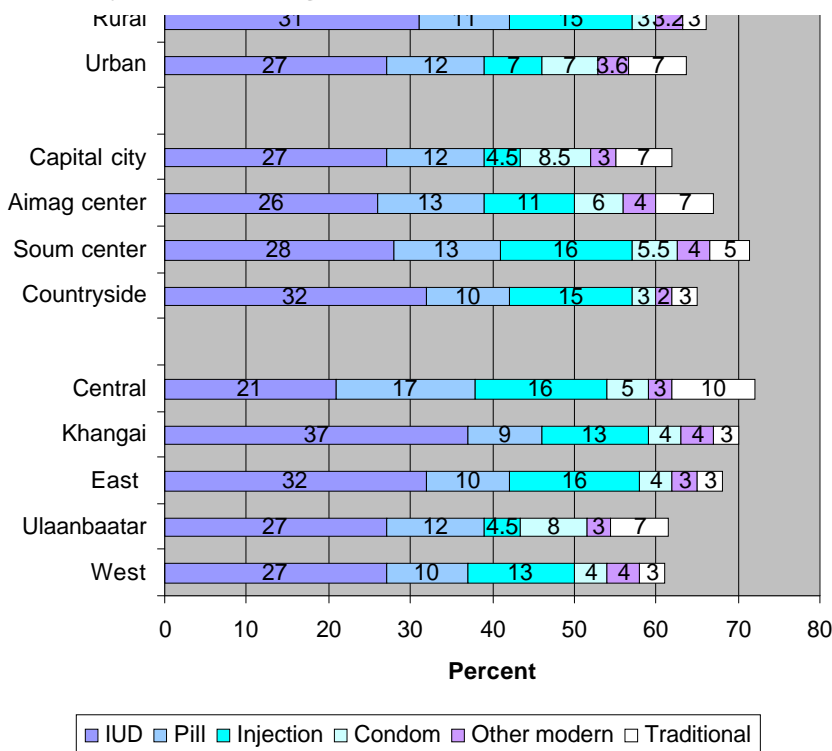


Figure 38: Method of contraception (modern or traditional) by location, Mongolia, 2005



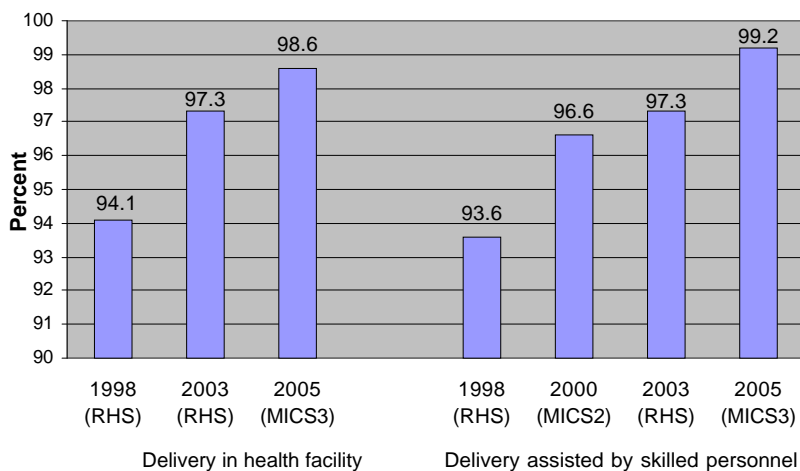
Preferences for different types of modern contraception also vary significantly depending on the education level and level of wealth. Wealthier and better educated women are more likely to use the pill, whereas poorer and less educated are more likely to use injection. IUD remains the most commonly used form of contraception across all groups but more so among the poorest, possibly for cost reasons, as IUDs are distributed free of charge.

Assistance at Delivery

The provision of delivery assistance by skilled attendants can greatly improve outcomes for mothers and infants by the use of technically appropriate procedures, and accurate and speedy diagnosis and treatment of complications. *Skilled assistance at delivery* is defined as assistance provided by a doctor, nurse, midwife or feldsher (auxiliary midwife).

The information on assistance during delivery is based on 1457 births which took place among the women surveyed in the 2 years prior to the MICS survey.

Figure 39: Place and assistance during delivery, Mongolia, 2005



The proportion of births delivered in a health facility and delivered with the assistance of skilled personnel has been increasing steadily from an already very high level over the past seven years (see Figure 39).

Nearly all births in Mongolia take place in a health facility (98.6%) thanks to the common practice of pregnant women, living in remote areas, moving into a maternity house a couple of weeks before birth is due.

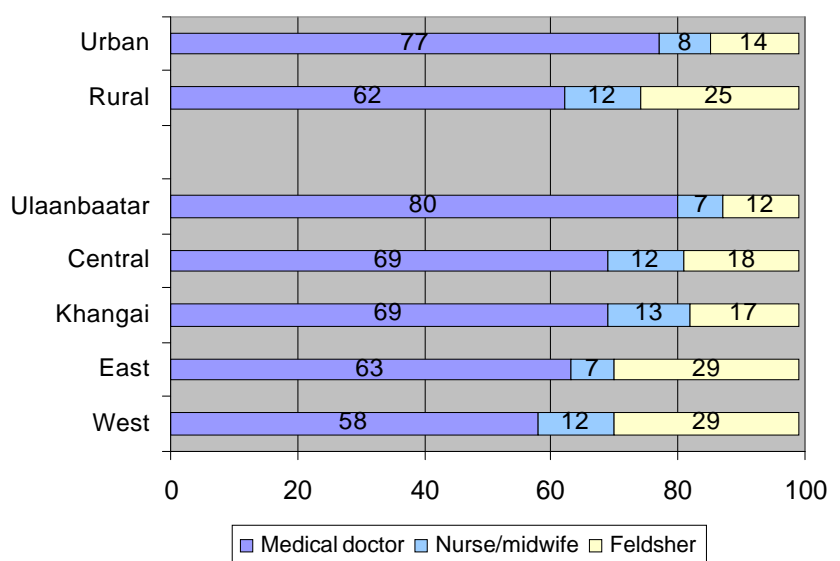
As a result virtually all births (99.2%) take place with the assistance of skilled health personnel. Seventy percent of births are delivered by doctor, 10% by a nurse or midwife, and 19% by a feldsher (auxiliary midwife).

B.

Eighty percent of deliveries in Ulaanbaatar are done with the assistance of a doctor. The further away from the capital, the less frequent the assistance of doctors and the higher the assistance of feldshers (see Figure 40). This is also reflected in the rural urban figures, where 77% of births in urban areas take place with the assistance of a doctor compared to 62% in rural areas.

The better educated the woman is, the higher the chance of having a doctor assist the delivery - 75% for the highest

Figure 40: Type of skilled personnel assisting at delivery, Mongolia, 2005

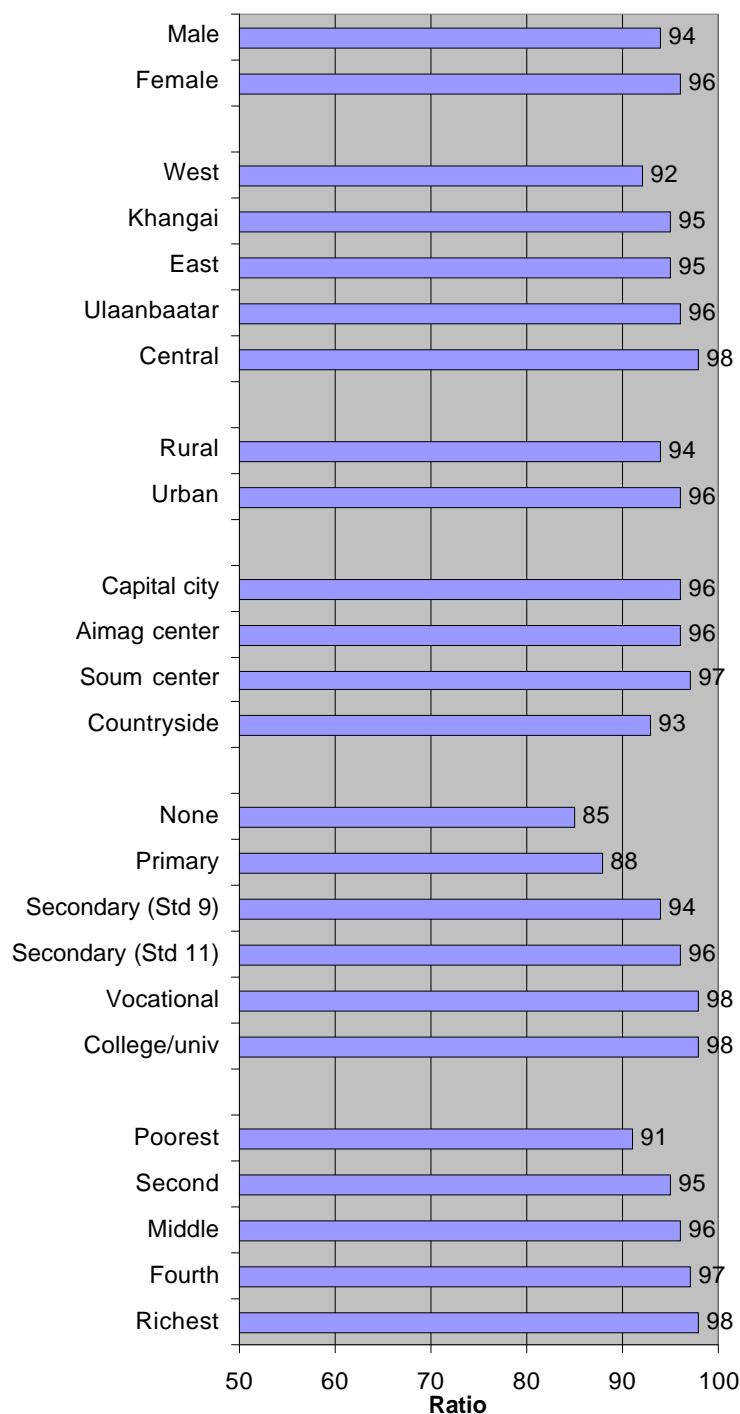


educated mothers compared with 62% for mothers with little or no education. The level of wealth of a household is the most important factor determining how highly trained the person assisting with the delivery is.

Primary School Attendance

Universal access to basic education and the achievement of primary education by the world's children is one of the most important goals of the Millennium Development Goals and A World Fit for Children. Education is a vital prerequisite for combating poverty, empowering women, protecting children from hazardous and exploitative labour and sexual exploitation, promoting human rights and democracy, protecting the environment, and influencing population growth.

Figure 41: Total primary school net attendance ratio, Mongolia, 2005



Mongolia has made significant investments in order to provide all children with education, to limit drop-outs and to create a legal environment in connection with the social and economic development of the country. As a result literacy and educational level came close to the level of developed countries. This is impressive considering the size of Mongolia, the small population density and isolation of some areas.

Overall, 95 percent of children of primary school age in Mongolia are attending school (either primary or secondary) (Table 12: ED.3). The net attendance rate (NAR) is slightly higher for girls (96%) than for boys (94%). Children living in the West region are less likely to attend school (92%) as are children living in the countryside (93%). The most important factor determining whether a child attends school or not, is the education level of the mother (NAR increases from 85 among children of mothers with no education to 98 among mothers with more than secondary education). The level of wealth is also significant, though not as significant as that of education, with attendance rates growing from 90 to 98 with increasing levels of wealth (see Figure 41)

The Education Law of Mongolia was revised in 2005. As a result the starting age for attending primary school was changed from 8 to 7 years starting from the academic year

of 2005-2006. Primary school attendance is highest for children aged 8-10 years and lowest for children aged 7. The lower attendance of 7 year olds (85%) is not surprising given that the law had just been implemented a few months before the survey

There is little difference between boys and girls in the factors determining whether they attend primary school or not. Exceptions are shown in Figure 42. The age of a child, and the level of wealth of a household is a slightly more important factor for boys than for girls in determining whether they go to school. The most significant difference can be found in the net attendance rate between boys who live in Soum centers (98%) and boys living in the countryside (91.5%). While Soum centers are a rare example of a more boys than girls in school, the picture quickly changes when looking at their peers in herding families which make up the majority of the population living in the countryside. According to the Mongolia Human Development Report the most common reasons for withdrawing boys from school are for them to assist with income generating activities in herding families and due to the collapse of vocational training centers (UNDP & Government of Mongolia, 2003).

Figure 42: Primary school net attendance ratio by gender, for selected background indicators, Mongolia, 2005

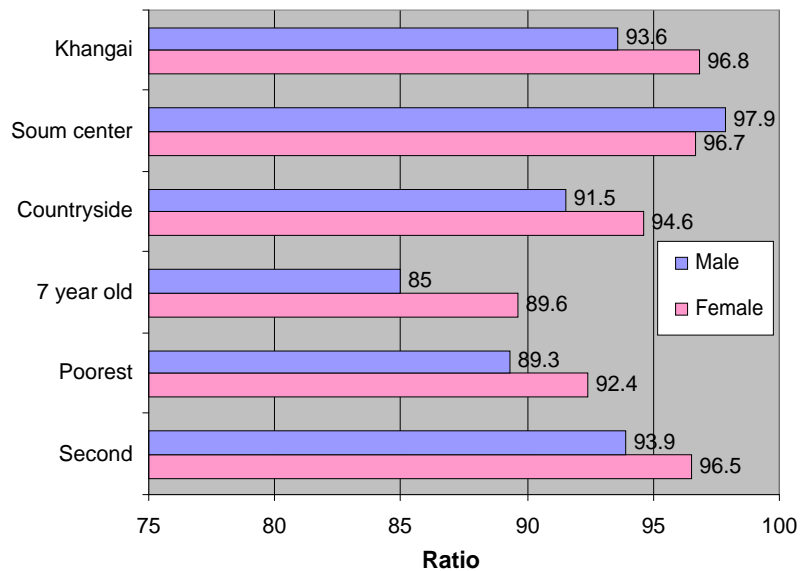


Figure 43: Net attendance rate in primary and secondary schooling, Mongolia, 2005

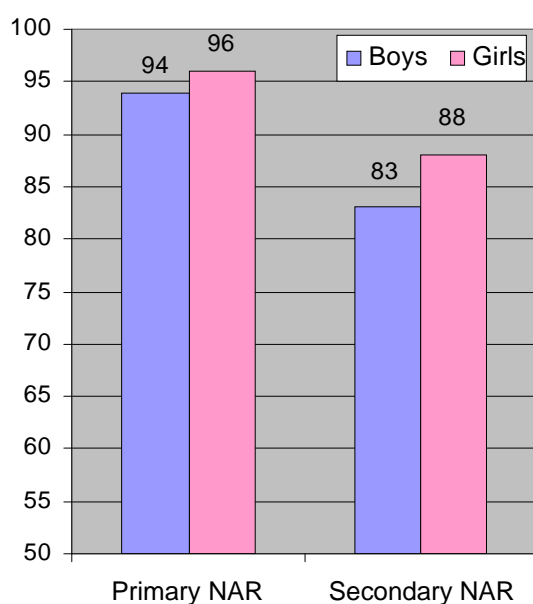
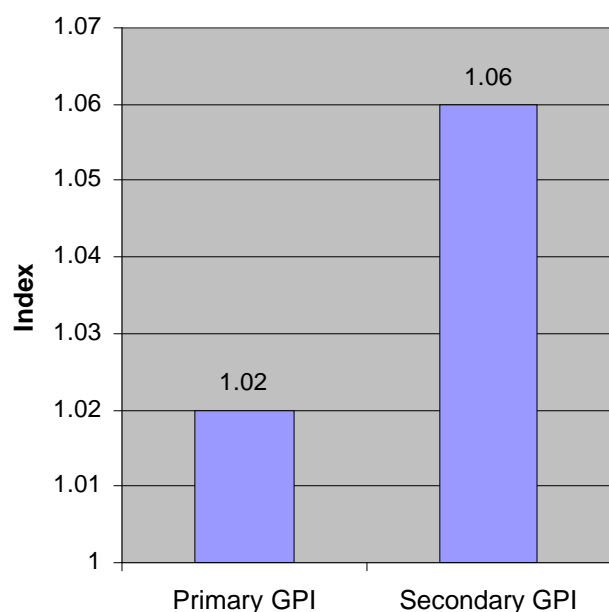


Figure 44: Gender parity index for primary and secondary school, Mongolia, 2005



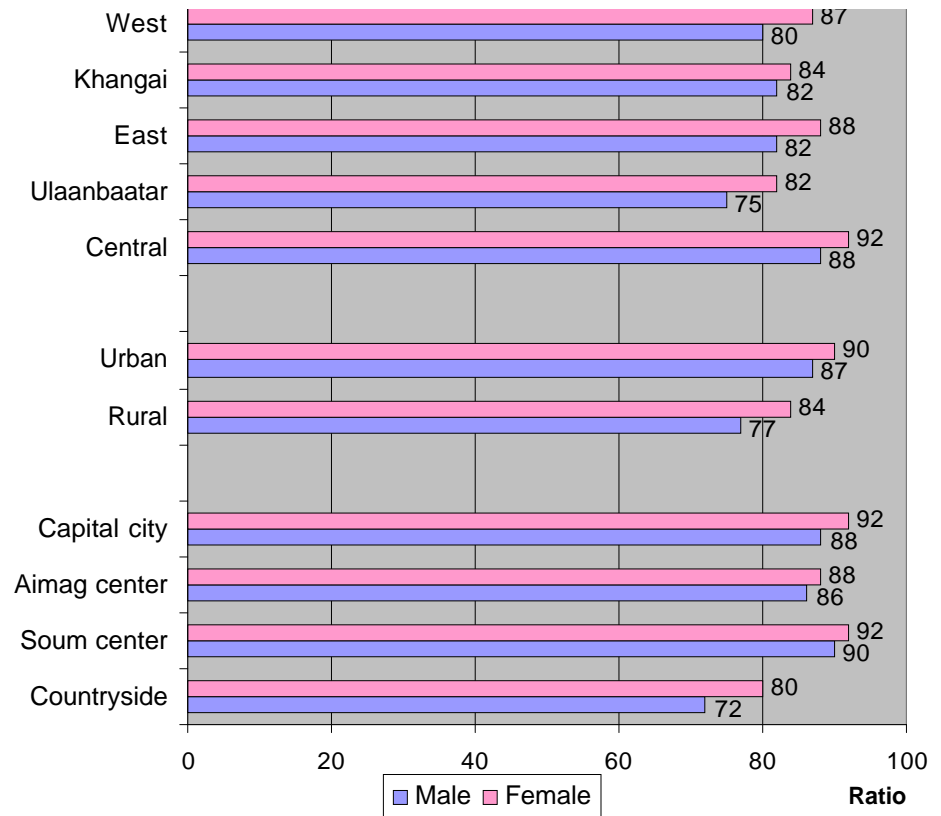
The ratio of girls to boys attending respectively primary education and secondary education is provided in Table 13: ED.7. The reverse gender gap, with more girls than boys in school increases with the level of education. Eighty three percent of boys attend secondary school compared to 88 percent of girls (see Figure 43). The gender parity index is calculated by dividing the net attendance rate (NAR) of girls with that of boys. For every 100 boys attending primary school there are 102 girls (rate 1.02), rising to 106 girls for every 100 boys attending secondary school (rate 1.06) (see Figure 44). This disadvantage of boys at secondary level is most pronounced among boys living in the countryside (1.12), in West and East (1.10), in rural areas (1.09), among the 40% poorest households (1.10) and in particular among boys of mothers with only primary education (1.21). The one exception is children born to mothers with no education, where the attendance rate of girls in secondary school is significantly lower than that of boys (0.83).

The gender differences in attendance, depending on where in Mongolia children live, are shown in Figure 45.

The education level of the mother is the most important factor, followed by the level of wealth, in determining whether a child attends

secondary school or not. Attendance of girls in secondary education increases from 56 to 96 with increasing education levels of the mother. For boys the attendance increases from 67 to 94. Similar differences are found with the level of wealth. Here the attendance rate of boys increases from 67 to 94, and the attendance rate of girls from 74 to 95 with increasing levels of wealth. These factors were also the most significant for primary school attendance, but the difference they make increase with higher levels of education.

Figure 45: SECONDARY school net attendance ratio, by gender and location, Mongolia, 2005

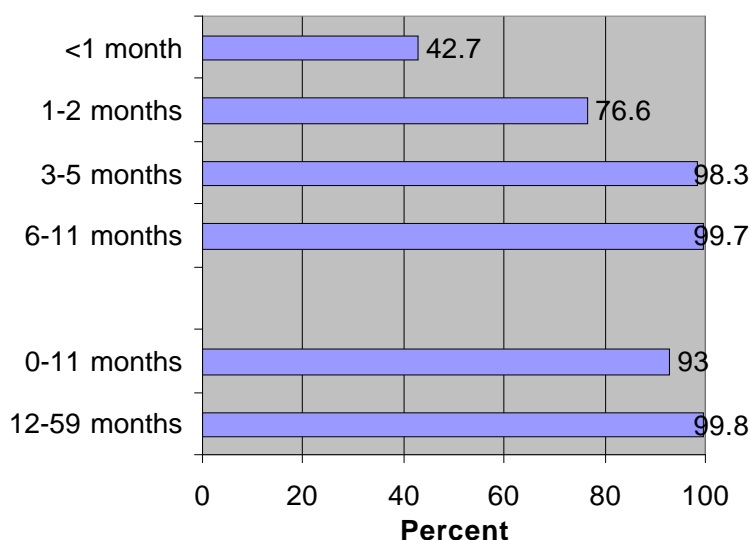


Birth Registration

The International Convention on the Rights of the Child states that every child has the right to a name and a nationality and the right to protection from being deprived of his or her identity. Birth registration is a fundamental means of securing these rights for children.

Table 14: CP.1 shows birth registration of children under five years by sex, age, mother’s educational status, location and reasons of not registration.

Figure 46: Registration of birth, by age of child, Mongolia, 2005



The births of 98.3 percent of children under the age of five in Mongolia have been registered, a slight increase from five years ago (97.6% in 2000). The data was based on the sighting of the birth certificate (85.7% of cases), and where the birth certificate could not be located, on the basis of the mother or caretakers account (12.5% of cases).

Registration is virtually universal for children over the age of 1 year with 99.8 % of births being registered for children aged 12-59 months. Among children aged 0-11 months, birth registration drops to 93% mainly due to the very young children who have not yet been registered and drag down the overall figure for that age group (see

Figure 46).

Reasons For Not Registering

Among those whose births are not registered, cost, travel distance, and lack of knowledge do not appear to be the main reasons. Out of 58 children who were not registered the majority (48 of them) were children under the age of 3 months indicating that the main reason was simply one of time, ie. the parents had not yet got around to it.

According to Mongolian law a birth must be registered within the first month of life. However, as there has not previously been any clear incentive to do the registration on time, children living in remote areas may have delayed this for logistical reasons. However, with the introduction of the ‘Child Money Programme’ in January 2005 initially targeting only poor families, but as of July 2006 providing all (parents of) children under the age of 18 with a monthly allowance from the government, this provides an incentive to register a birth soon after delivery. The abolishment of the registration fee has also removed a possible barrier to registration.

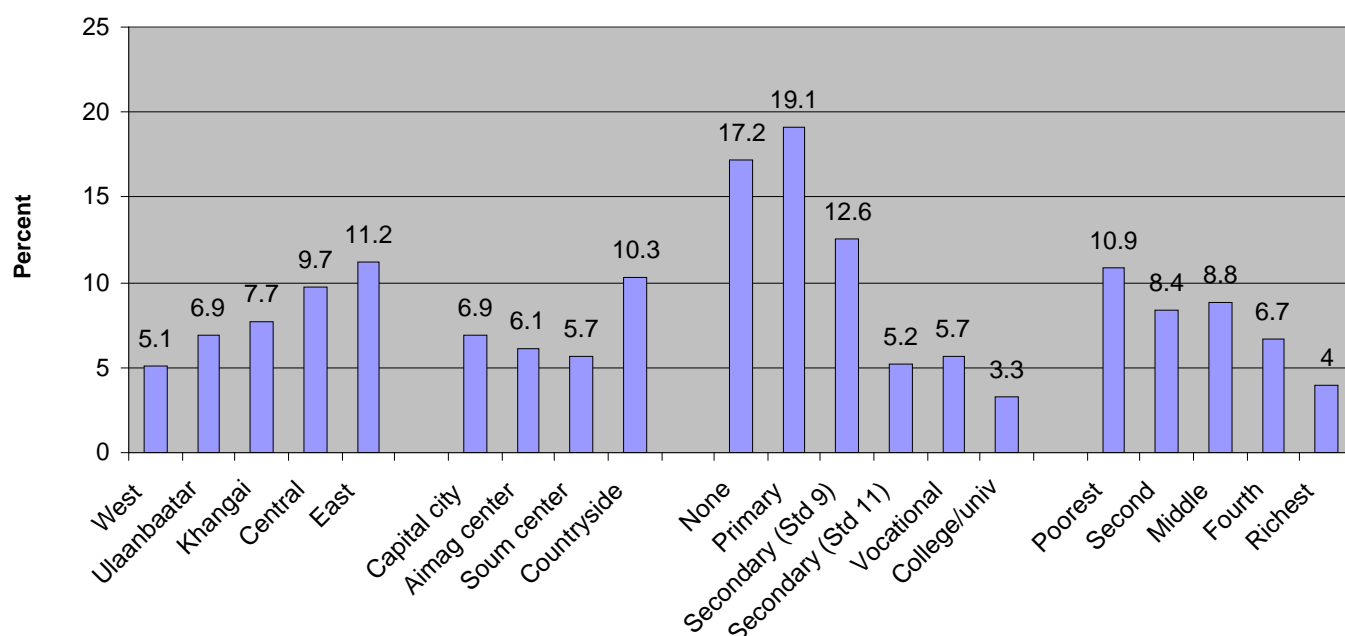
Early Marriage

Child marriage is a violation of human rights, compromising the development of girls and often resulting in early pregnancy and social isolation, with little education and poor vocational training reinforcing the gendered nature of poverty. Women married at younger ages are more likely to dropout of school, experience higher levels of fertility, domestic violence, and maternal mortality.

The percentage of women married before the age of 15 is negligible in Mongolia and was not included in the results. Table 15: CP.5. provides the figures for women married before the age of 18.

7.7 percent of the interviewed women were married before the age of 18. The further eastwards the higher the incidence of early marriage (excluding Ulaanbaatar). Women in the countryside are twice as likely to marry early (10.3%) as women in Soum centers (5.7%). By far the most important factor determining the likelihood of early marriage is the education level of the woman. The proportion of women, who marry before the age of 18, decreases from around 18 percent for those with no or little education to 3.3% for the highest educated (see Figure 47).

Figure 47: Early marriage: Percentage of women aged 20-49 in marriage or union before their 18th birthday, by location, Mongolia, 2005

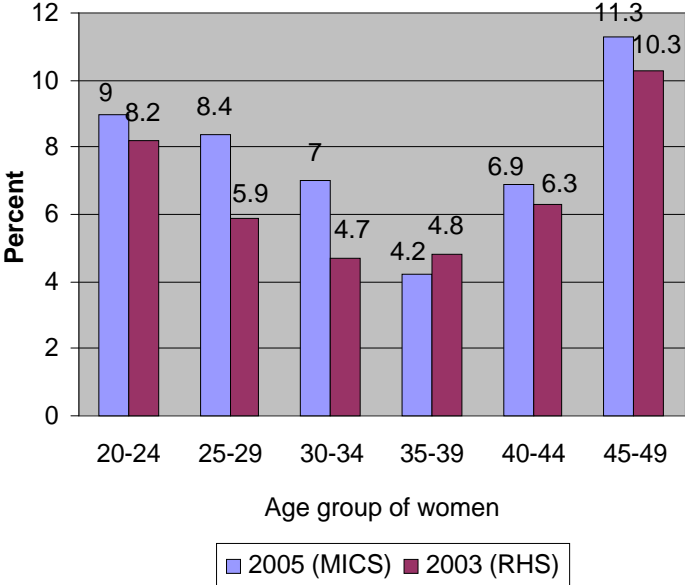


The incidence of early marriage appears to be rising. Early marriage decreases from 11.3% among women aged 45-49 down to 4.2% among the 35-39 year olds, but then steadily increases again until it reaches 9% among women aged 20-24 year olds.

A similar trend is apparent when comparing with RHS data from 2003 (see Figure 48). Although the RHS reports that the median age at marriage is increasing slightly, the proportion of women who marry early is going up at the same time.

MICS and RHS data are not completely comparable as the MICS data include women who were in marriage or union before the age of 18, whereas RHS data 'only' includes women who were actually married by the age of 18.

Figure 48: Early marriage: Women in marriage or union before their 18th birthday, by age group, Mongolia, MICS 2005 and RHS 2003



Knowledge of HIV/AIDS Transmission

One of the most important prerequisites for reducing the rate of HIV infection is accurate knowledge of how HIV is transmitted and strategies for preventing transmission. Correct information is the first step toward raising awareness and giving young people the tools to protect themselves from infection. Misconceptions about HIV are common and can confuse young people and hinder prevention efforts. Different regions are likely to have variations in misconceptions although some appear to be universal (for example that sharing food can transmit HIV or mosquito bites can transmit HIV).

Box 4: Questions used in interview on prevention and misconceptions in relation to HIV/AIDS	
Statements/questions on prevention of HIV/AIDS:	
1.	Can people protect themselves from getting infected with the AIDS virus by having one sex partner who is not infected and also has no other partners?
2.	Can people reduce their chance of getting the AIDS virus by using a condom every time they have sex?
3.	Can people reduce their chance of getting infected with the AIDS virus by not having sex at all?
Statements/questions on misconceptions re HIV/AIDS	
1.	Can people get infected with the AIDS virus because of witchcraft or other supernatural means?
2.	Can people get the AIDS virus from mosquito bites?
3.	Can people get the AIDS virus by sharing food with a person who has AIDS?

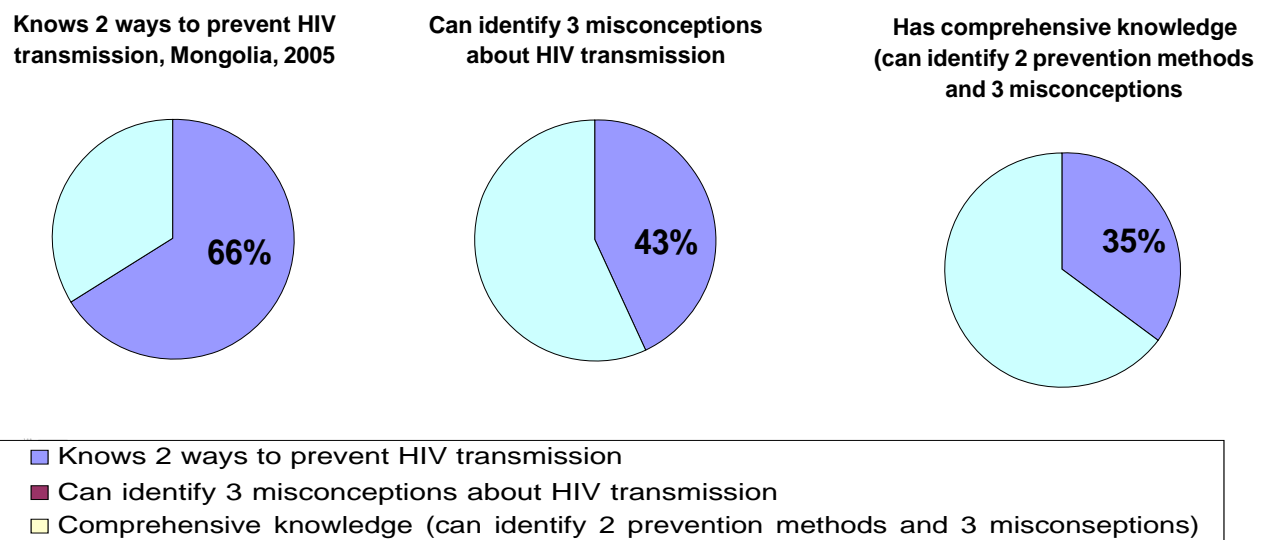
During the interview women aged 15-49 were presented with three statements about ways of preventing HIV/AIDS infection and were asked if they believed them to be true or false.

Sixty six percent of women were able to identify two out of the three prevention methods covered in the interview. The level of knowledge differs by residence. Not surprisingly, urban women are more likely to know two ways of preventing HIV transmission (71%) than rural women (59%), and women living in the capital city of Ulaanbaatar more

knowledgeable (74%) than women living in the countryside (57%). But these locational differences are not as pronounced as the regional differences where the lowest level of knowledge is found in West (51%) and highest level in Ulaanbaatar (74%) (see Table 16: HA.3 and Figure 50).

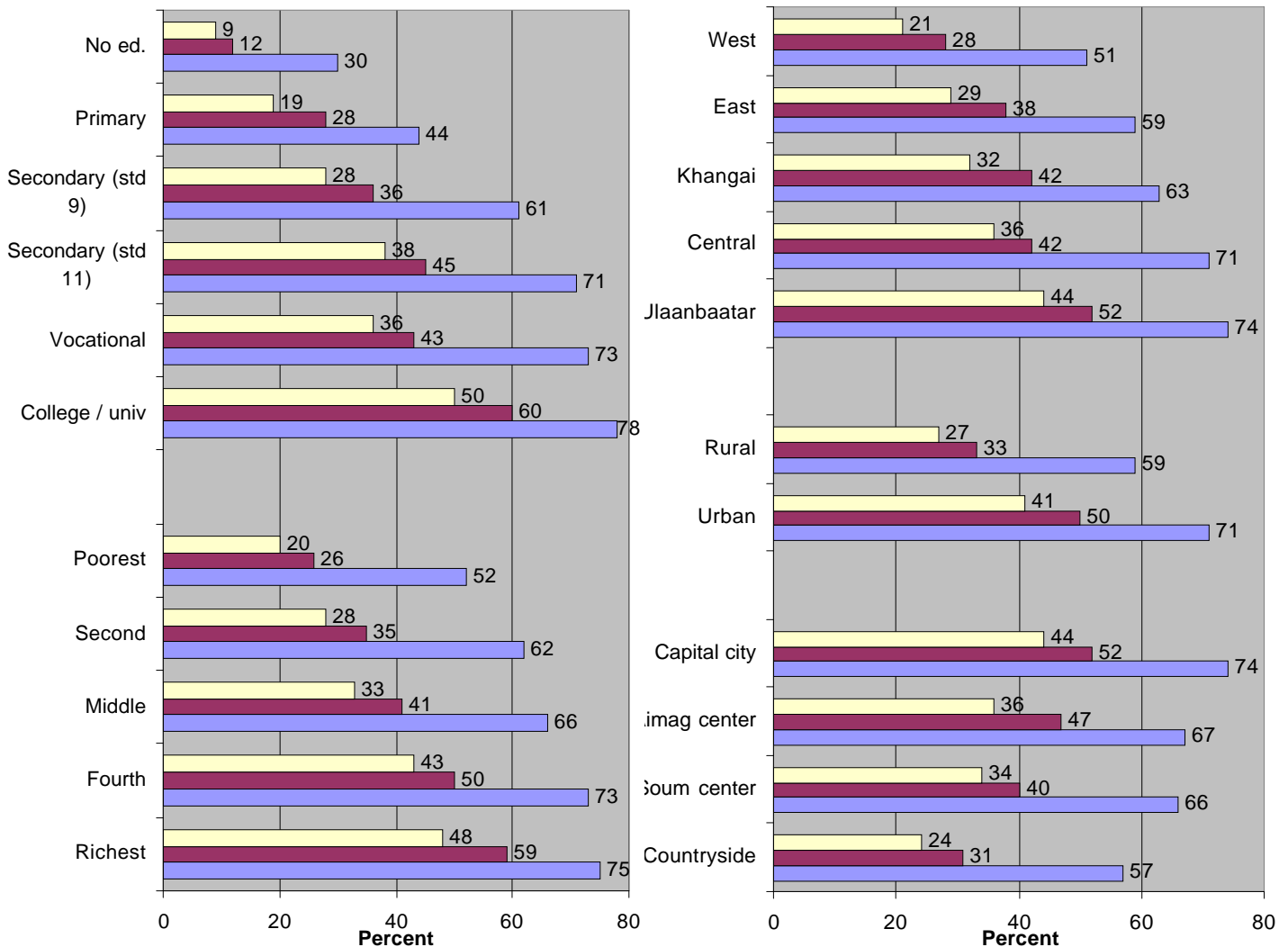
As expected, the percent of women who know two prevention methods increases with the woman's education level. The increase is dramatic. The proportion of women able to identify

Figure 49: Knowledge about HIV transmission among women aged 15-49, Mongolia, 2005



two methods rises from 30% among women with no education to 78% among women with college or university education. The level of wealth plays a role, albeit less significant than that of education. The ability to identify two ways of preventing transmission rises from 52% among the poorest to 75% among the most wealthy. When comparing HIV/AIDS knowledge among different age groups of women the best informed are women aged 25-34. After that knowledge decreases with higher age among the older women and decreases with younger age among the younger women. This could indicate that knowledge increases as women start childbearing and remains highest during the most reproductive years.

Figure 50: Knowledge about HIV/AIDS transmission among women aged 15-49, by location, level of education, and level of wealth, Mongolia, 2005



A key indicator used to measure countries' responses to the HIV epidemic is the proportion of young people 15-24 years who know two methods of preventing HIV, reject two misconceptions and know that a healthy looking person can have HIV.

Less than half of the women were able to correctly identify the common misconceptions about HIV transmission (43%) and only one in three had 'comprehensive correct knowledge of HIV' (35%) - referring to those women who were able to identify two prevention methods as well as three misconceptions.

Knowledge about HIV prevention is strongly related to knowledge about misconceptions and knowledge about both. As in the case of HIV prevention, it is the same background variables which determine knowledge about misconceptions and comprehensive knowledge. In general knowledge among women aged 15-49 about HIV decreases the further the distance to Ulaanbaatar, the more rural the setting, the less educated, and the poorer the women (see Figure 50).

Part IV

Appendices

Bibliography

- Adetunji, J. A. Infant mortality levels in Africa: Does method of estimation matter? Cambridge, USA: Harvard Center for Population and Development Studies.
- Aleshina, N., & Redmond, G. (2003). How high is infant mortality in Central and Eastern Europe and the CIS? *Innocenti Working Papers*, 95, 1-44.
- Innocenti Social Monitor. (2003). *Counting infant mortality and accounting for it*: Innocenti Social Monitor CEE/CIS/Baltic States.
- National Statistical Office of Mongolia, & United Nations Population Fund. (2001). *Mongolia Reproductive Health Survey 1998, Maternal and Child Health and Determinants of Infant and Child Mortality, Research Report No 1*. Ulaanbaatar: National Statistical Office, Ulaanbaatar, Mongolia.
- National Statistical Office of Mongolia, & United Nations Population Fund. (2004). *Mongolia Reproductive Health Survey 2003 National Report. On Reproductive Health Series*. Ulaanbaatar: National Statistics Office, Mongolia.
- National Statistical Office of Mongolia, World Bank, & UNDP. (2004). *Main Report of "Household Income and Expenditure Survey / Living Standards Measurements Survey", 2002-2003*. Ulaanbaatar: National Statistics Office.
- Nutrition Status of Mongolian Children and Women, 3rd Nutrition Survey Report*. (2004-2006). Ulaanbaatar: Unicef.
- Rutstein, S. O., & Johnson, K. (2004). *The DHS Wealth Index. DHS Comparative Reports No. 6*. Calverton, Maryland: ORC Macro.
- UNDP, & Government of Mongolia. (2003). *Human Development Report Mongolia 2003, Urban-Rural Disparities in Mongolia*. Ulaanbaatar: UNDP.