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1.1 Summary of Findings

The 2008 Cambodia Anthropometrics Survey (CAS) is a nationally representative sample of 7,495 households with children 0 to 59 months of age. The survey includes representative samples of nineteen survey domains, or areas, throughout the country. The 2008 CAS includes valid anthropometric measurements of over seven thousand children, making it the largest national sample of child measurements ever collected in the country. The main purpose of the survey is to provide policymakers and planners with updated information on nutrition in light of steep increases in the price of food. In order to provide a comprehensive view on nutrition in the country data on anthropometry, micronutrient deficiency, food consumption, disease, coping strategies, infant/young child feeding, and health services were included in the survey. In addition the national survey, 400 households in the informal settlements of Phnom Penh were sampled using the same methodology and questionnaire.

Child Anthropometry

Child (0 to 59 months) anthropometry indicators included in this survey measure whether or not a child's height, weight and age are appropriate with respect to each other. This is possible because all populations of children have the potential to grow the same in the first five years of life, regardless of their race or nationality. The measurements from this survey are compared to an international population of healthy children compiled by the World Health Organization (WHO) in 2006.

In the first half of the decade large improvements in child nutrition were reported by the Cambodia Demographic and Health Survey (CDHS). In the last three years the nutritional status of children has not improved for all anthropometric indicators. Indicators responsive to short term changes have seen no improvement since 2005, while an indicator that measures long-term change has continued to improve. Estimates of undernourished children provided in this summary include both moderately and severely undernourished children.

The indicator most responsive to short-term change is wasting (weight-for-height), which is essentially a measurement of thinness. From 2000 to 2005 the percentage of thin children in Cambodia decreased by 1.7 percentage points per year, going from 16.8% to 8.4%. CAS 2008 results show that 8.9% of children are thin. This indicates that at the national level improvement in the current nutritional status of children has halted and there is no statistically significant change from 2005. The percentage of thin children in the country is four times higher than the percentage found in a healthy population.

Underweight (weight-for-age) is responsive to both short and long term change. From 2000 to 2005 the percentage of underweight children decreased by 2.1 percentage points per year, going from 38.4% to 28.2%. As with thinness, CAS 2008 reports no significant change since 2005; 28.8% of children are underweight. This is nearly thirteen times higher than the percentage found in a healthy population.

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Stunting (height-for-age) measures if a child is short for their age. It is not responsive to short-term change and is the only indicator that shows continued improvement in the nutritional status of children. From 2000 to 2005 the percentage of short children in Cambodia decreased by 1.3 percentage points per year, going from 49.7% to 43.2%. The CAS 2008 percentage of short children, 39.5%, shows continued improvement, albeit at a slightly slower pace. Although there is continued improvement in stunting, the percentage of stunted children remains very high. 39.5% is over seventeen times higher than the percent expected in a healthy population.

Stagnation in the improvement of wasting and underweight is a cause for concern. Seasonality, surveys being carried out at different times of the year, was considered during analysis and is not thought to have had a meaningful impact on estimates of undernutrition. One component of the International Phase Classification (IPC) criteria for an Acute Food and Livelihood Crisis is a wasting percentage above ten percent that is higher than normal and increasing. At the national level we do not know if the percentage of wasted children is increasing because we can only compare to 2005 levels, but it is a distinct possibility if there was continued improvement up until the point of steep food price increases in 2008. It is also highly likely that specific areas or populations are seeing an increase and there is evidence of this in the data. The percentage of wasting in the group most likely to be affected by increased prices, the urban poor, has risen from 9.6% in 2005 to nearly 16% in 2008.

Although wasting appears to be increasing among the urban poor, there is no significant difference in the percentage of thin children between rural and urban areas as a whole; in both areas around 9% of children are thin. The rates of underweight and short children are about ten percentage points higher in rural areas, but rates in urban areas should also be considered high.

Poverty is an important risk factor in malnutrition and there is variation in the percentage of thin, underweight, and short children by wealth of the household; however, even the richest wealth quintiles see elevated rates of all three indicators of undernutrition. When compared to expected levels in a healthy population, the richest wealth quintile of Cambodia has over twelve times more short children (28.6%), over eight times more underweight children (19.3%), and four times more thin children (8.9%). Children whose parents are professionals are better off nutritionally than the children of agricultural workers and manual laborers. Yet, even in this sector of society the percentage of short children (28.2%), underweight children (19.9%), and thin children (6.2%) is much higher than the percent found in a healthy population.

CAS 2008, like the CDHS 2005, includes nineteen domains, some of which are entire provinces while others are groups of provinces. As expected the nutritional status of children is the best in Phnom Penh, but the percentage of wasted children in the informal settlements of Phnom Penh (8.6%) is a few percentage points higher than the province as a whole and statistically the same as the national average. In all domains of the national survey more than 30% of children are short, and with the exception of Phnom Penh, more than one out of five children are underweight in all domains. Fifteen of the nineteen domains are within three percentage points of 10% wasting. Banteay Mean Chey has the highest percentage of thin children (11.7%), but this is not statistically different from many of the other domains. Kampong Cham has the highest number of undernourished children; CAS 2008 estimates that approximately 18,000 thin children, 54,000 underweight children and

68,000 short children currently reside in the province. Kampong Cham and other domains with notably high numbers of undernourished children, Siem Reap and Kandal, are provinces with high populations.

Comparisons of wealth, background of parents, and where a child lives show that nutrition is a national issue that affects every sector of society. It shows that money, or the ability to buy food, is not the only important factor in nutrition. The way children are fed and cared for appear to be just as important as poverty for malnutrition in the country.

Nutritional Status of Mothers

CAS 2008 includes anthropometric measurements of the biological mothers of all children included in the survey. Analysis of these measurements is different from that of children under-5 because there is genetics-based physical variation in adult populations. For this reason the international cut-offs to define a short or thin woman have been intentionally set very low.

All women whose height is below 145 cm are considered short. CAS 2008 finds that 6.3% of mothers are short. This is about one percentage point less than the percent calculated using data from the CDHS 2005. A one percentage point difference is not statistically significant. Nearly ten percent of mothers aged 15 to 19 years are short. Fortunately, teenage pregnancy does not appear to be common nationally; only 2.4% of the sample is in this age group. Looking at the percentage of short women by province shows that there is not a great deal of variation, except in some of the most remote provinces. The percentage of short mothers in Mondul Kiri and Rattanak Kiri (16.1%) is nearly three times higher than the national average. Preah Vihear and Steung Treng also have an elevated percentage of short mothers (11.4%).

In order to measure if a woman is thin or obese, weight is compared to height and body mass index is calculated. 16.1% of mothers are thin, with 3.7% either moderately or severely thin. The percentage of thin mothers has decreased by three percentage points from 2005. The youngest mothers are more likely to be thin (21.3%) and there are a higher percentage of thin mothers in rural areas (17.1%) when compared to urban areas (11.4%).

Due to time and resource constraints only one indicator of micronutrient deficiency is included in the survey. Mothers were asked about nighttime vision problems, a clinical outcome of severe vitamin A deficiency, during their last pregnancy. 5.1% of mothers have self-reported night blindness, down from 8% in 2005. When adjusted for daytime vision problems the 2008 percentage drops to 1.6%.

When interpreting these trends it is important to consider the factors that influence nutritional status of women. For mothers, nutrition is not affected by the same factors as children. Adult nutrition is not influenced as much by disease because of increased immunity to common infections and fertility preferences can have a large impact on a mother's nutrition.

Although they are not very large changes, trends in stunting and maternal night blindness do suggest a possible improvement in the long-term nutritional status of mothers. Both of these indicators do

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not measure short term change. If real, the main cause for the improvement in stunting is probably decreased stunting during childhood. Vitamin A supplementation and improved fertility practices may have contributed to decreased deficiency.

Body-mass-index is the only indicator of the nutritional status of mothers included in this survey that can be indicative of short term change. The improvement seen from 2005 to 2008 is likely the result of decreased parity, having fewer children. This was not measured by CAS 2008, but the CDHS 2005 did report a downward trend in the number of children per mother.

If the nutritional status of mothers is improving we would expect to see improvements in the nutritional status of the youngest children. This is exactly what CAS 2008 shows. Disaggregating child anthropometry by age reveals that acute nutritional status may not be stagnant for all children. For wasting and underweight the youngest children (<1 year) appear to be improving, while the situation may be worsening among older children (1 to 5 years).

Child Disease

In preparing CDHS 2005 data for comparisons with CAS 2008, two important findings emerged. From 2000 to 2005 there did not appear to be any improvement in the prevalence of diarrhea or fever. After controlling for seasonality both of these indicators appear to have improved over that time period. The second finding deals with the questions used to determine the prevalence of acute respiratory infection (ARI). Much of the supposed improvement from 2000 to 2005 was simply a result of a change in the questionnaire.

CAS 2008, like the CDHS, measures child disease using a period prevalence; children are included as having the disease if they have experienced it within the last two weeks. CAS 2008 prevalence of all three diseases is high. 58.9% of children have fever, 29.7% have diarrhea, and 15.5% have ARI. Rural areas and the lowest wealth quintiles have the highest prevalence of all three diseases. This is likely related to both sanitation and undernutrition, the latter can weaken the immune system and make a child more susceptible to disease.

If the first half of the decade saw improvements in all indicators of child disease, the current situation as reported by CAS 2008 is the opposite. Compared to data from CDHS 2005, fever has increased by 22 percentage points, diarrhea by 8, and ARI by 7. In the case of fever the extent of the increase is surprising, but the data appears to be sound. There was no meaningful effect of seasonality on the estimates and the questions from the two surveys are identical. Findings from household surveys should routinely be corroborated with anecdotal and incidence data. This information is especially needed to verify surprising findings, such as the prevalence of fever.

Child disease is another component of the IPC criteria and in an Acute Food and Livelihood Crisis an epidemic that is increasing is expected. An epidemic, broadly defined, is simply higher than expected levels of a disease. Findings from CAS 2008 are a strong indication that the prevalence of child diseases are higher than normal and the prevalence does appear to be increasing when compared to CDHS 2000 and 2005.

Coping Strategies

In the context of this survey coping strategies are self-reported behaviors households use to minimize the effect of financial difficulties. Each household was asked about coping strategies used in the last month with the same questionnaire used by the Cambodia Development Resource Institute (CDRI) for a survey in May of 2008.

The most common strategies found in CAS 2008 are food-related. Two out of three households in both rural and urban areas report relying on less expensive or less preferred food at least one time in the month prior to the survey. Other common food-related strategies are purchasing food on credit, reducing food eaten in a day, and restricting consumption by adults so that small children can eat. After food-related strategies, the most common strategy used is reducing expenditure on health care, employed by 41.1% of households.

Crisis strategies are coping strategies that affect future livelihood, such as selling land and productive assets. The percentage of households using crisis strategies is low, but they are being used. Four percent of households report selling land and three percent report selling productive assets (farm tools, sewing machine, etc).

When comparing to the CDRI survey of May 2008 the timing of the two surveys should be taken into account. CAS 2008 was carried out during the lean season. Between May and November of 2008 all of the coping strategies measured increased, although some of the increases are statistically insignificant. The largest increases for food-related coping strategies were restricting consumption by adults and increasing exploitation of common property resources (fishing, foraging, etc). The largest increase in strategies not related to food were selling more animals and decreasing expenditure for health care.

Coping strategies are also a component of the IPC criteria. In a crisis situation the use of coping strategies should be higher than normal and increasing. The use of crisis strategies should also be evident. A baseline for a normal level of coping strategies is not available but CDRI did report an increase in the percentage of households facing financial difficulties after the food price increases, making it reasonable to assume that the use of coping strategies is higher than normal. From May to November coping strategies appear to have increased, but this could be affected by the lean season. Crisis strategies are being used, but their use is not widespread.

Food Consumption

There are different ways to measure food consumption, and each and every one has methodological problems. Food consumption is not easy to measure. This is why it is important to be able to compare findings over time. CAS 2008, like the DHS, measures dietary diversity, or what types of food are eaten. The quantity of food eaten is not measured by this survey because it will be measured in the 2009 Cambodia Socio-Economic Survey (CSES).

The core foods in the diet of children are rice and fish. For children, the third most common food being consumed is sweets. In addition to the negative health consequences of high sugar intake, the

position of sweets in the diet is worrying because few children are eating important sources of protein and energy: legumes and nuts (10%), oils and fats (23.1%), milk products (13.9%). Mean food group consumption of children 6 to 35 months of age is 4.7 out of 14 food groups. . This varies by age, with the older children (24 to 35 months) eating an average of 2.6 more food groups than the younger children (6 to 11 months). There is no difference between urban and rural areas in mean food group consumption, but there are differences in food selection. Children in urban areas are more likely to eat meat, while fish is more common in rural diets. Consumption of milk in urban areas (35%) is nearly four times higher than consumption in rural areas.

As with children, rice and fish are the main foods in the diet of mothers. The biggest difference between the diets of children and mothers is that the consumption of sweets is 20 percentage points lower for mothers. Consumption of oils and fats is higher for mothers (32.7%), suggesting these foods are intentionally excluded from the diets of children.

Child food consumption is compared with data from the CDHS 2005. When comparing the two surveys seasonality could have a large impact on estimates, especially on trends in fruits and vegetables. At the national level mean food group consumption in 2008 is the same as 2005, but does appear to have decreased in urban areas, going from 5.4 to 4.8. In urban areas consumption of nearly all food groups (12 of 14) has decreased, while rural areas see a mix of ½ increasing and ½ decreasing. All of the changes are not large enough to be statistically significant, but the largest changes are significant and meaningful. The largest changes are decreases in consumption of expensive food items in urban areas. Fish and meat consumption have both dropped 14 percentage points, while egg and oil/fat consumption has decreased by 8 and 7 percentage points respectively.

Two components of the IPC criteria are related to food consumption. One component is based on calorie consumption, which is not measured by CAS 2008. The other component, dietary diversity, is said to represent crisis levels when there is acute dietary diversity deficit. The IPC is intentionally vague about what constitutes dietary diversity deficit because it is context specific. In Cambodia the high rate of stunting shows that a chronic dietary diversity deficit is likely. In this context any negative change in dietary diversity is a cause for concern. At the national level there does not appear to be widespread acute dietary diversity deficit. In urban areas there does appear to be negative change and because this change is occurring with the most expensive food items that are nutritionally very important, acute dietary diversity deficit is likely to be occurring in these areas.

Infant & Young Child Feeding

For infant and young child feeding (IYCF) one of the most important practices is exclusive breastfeeding. Giving a child only breast milk in the first 6 months of life provides complete nutrition, improves the immune system and lowers the risk of coming into contact with infectious disease. The rate of exclusive breastfeeding among children 0 to 5 months is 65.9%. In rural areas the rate is 70.8%, while in urban areas it is much lower at 40.3%. For the country as a whole CAS 2008 shows that nearly all children (91.5%) are exclusively breastfed in the first month of life. There are two reasons the rate does not remain this high. Many mothers begin giving children water after the first month of life and begin giving children food at four or five months of age.

Since 2000 the rate of exclusive breastfeeding has steadily improved because of government and NGO programs. A change in the CDHS 2005 questionnaire meant that estimates from 2000 had to be recalculated. The rate of exclusive breastfeeding has increased from 47% in 2000, to 60% in 2005, to 66% in 2008. Most of the change is a result of fewer mothers giving their child water. In urban areas the situation appears to be different. From 2005 to 2008 the rate of exclusive breastfeeding in urban areas decreased from 48.5% to 40.3%.

Complementary feeding refers to the foods a child is eating in addition to breast milk. Looking at exclusive breastfeeding shows that children receiving food at too early an age is an issue. By 5 months nearly 1 out of 3 children are consuming food. An equally important issue is that 1 out of 4 children six months old and 15% of children 7 months old are not receiving food. This and the reluctance to give children certain foods are responsible for the lower dietary diversity seen in children 6 to 11 months of age.

Child Health Services

For children curative vitamin A capsules and deworming medication are provided through health centers, hospitals, and routine outreach. The main strategy for delivery of preventive vitamin A supplementation to children 6 to 59 months of age is the special outreach session. Special outreach sessions are biannual (May and November) and they operate through outreach services; deworming medication is also included.

The percentage of children 6 to 59 months of age receiving vitamin A capsules in the last six months is 59.4%. The percentage of "don't know" responses to the question on the timing of vitamin A supplementation is 12.7%, which is much lower than CDHS 2005, but is large enough to affect estimates. Wealthier respondents and those living in urban areas are more likely to respond "don't know." Comparisons by background characteristics are not very meaningful because of these differences and the overall estimate may be lower than the true value.

The indicator for deworming medication includes the same time period as vitamin A supplementation, but respondents are not asked for a specific number of months. There is not a problem with "don't know" responses and deworming cannot be compared directly to vitamin A supplementation. CAS 2008 reports that 39.9% of children 12 to 59 months of age received deworming in the last six months. The percentage is higher in rural areas (42.7%) when compared to urban areas (26.9%).

For both vitamin A supplementation and deworming it is difficult to establish trends. The CDHS 2000 and 2005 questions on vitamin A are different from each other and "don't know" responses vary from 2005 to 2008. Previous research that takes into account "don't know" responses gives an estimate of 50% for 2005. Using this estimate shows that supplementation has increased by about ten percentage points. For deworming the CDHS 2005 reports on children 6 to 59 months of age, but the intervention is only meant for children older than 1 year. Selecting the right age group and only the youngest child provides an estimate comparable to CAS 2008, 29%. There appears to be close to

an eleven percentage point increase in the percentage of children receiving deworming medication in the last six months from 2005 to 2008.

Maternal Health Services

For mothers the health services measured by CAS 2008 (iron folate supplementation and deworming during pregnancy and postpartum vitamin A supplementation) are predominantly provided through antenatal and postnatal care at the health center and through outreach. In 2008 47% of mothers had four or more antenatal care visits during their last pregnancy; this is up from 27% in 2005. In 2008 nearly 9 out of 10 mothers had at least one antenatal care visit, up from about 7 out of 10 in 2005.

CAS 2008 shows 39.5% of women took 90 or more iron folate tablets during their last pregnancy and 31.4% received deworming medication. 43.7% of mothers received vitamin A supplementation within six weeks of giving birth and 33.2% received postpartum iron folate supplementation.

Compared to the CDHS 2005 there is improvement in all maternal health services. Adequate iron folate supplementation (+90) has increased by nearly 22 percentage points, deworming by 21 percentage points, vitamin A supplementation by 16 percentage points, and postpartum iron folate supplementation by 22 percentage points. These impressive improvements in the coverage of maternal health services can be attributed to government and NGO programs to increase antenatal and postnatal care.

1.2 Survey description

Sample design

The sample design of this survey is based on the most appropriate design for the multiple objectives of the survey, which were determined by starting with the intended actions. After the actions were listed a survey matrix (Table 1-1) was completed to decide which questions were needed to guide the actions and what data was needed to answer those questions.

Table 1-1 Survey planning matrix

ACTION	INFORMATION (research questions)	DATA
CORE OBJECTIVES		
Advise on what kind of interventions are required	• **Are increased prices increasing child malnutrition or slowing improvement?**	**Anthropometry of woman and child** **Dietary diversity & food consumption of mother and child** **Coping strategies** **Micronutrient deficiency** **Child infection**
Advise on where to intervene	• Have any provinces seen a large increase in malnutrition? • Which provinces have the highest levels of malnutrition? • Which provinces have the most malnourished? • Is the current situation disproportionately affecting impoverished, urban areas?	(in addition to above) Province & urban/rural strata Over-sampling of impoverished urban areas
Advise on who to target for interventions	• Have socio-economic groups been affected differently by the rise in food prices? • Have farmers and wage earners been affected differently? • Have net rice producers and consumers been affected differently? • Are children of different age groups affected differently?	(in addition to above) SES Profession Rice purchases/debt
Advise on which nutrition interventions need to be scaled up	• Is there sufficient VAS coverage? • Is there sufficient deworming coverage? • Is there sufficient IFA coverage? • Is there sufficient iodized salt coverage?	(in addition to above) Child/maternal micronutrient supplementation HH iodized salt

In order to get estimates on informal urban areas, two separate samples were collected. This was necessary because of different sampling frames. For the purpose of clarity the nationally representative sample is referred to as the "primary sample," while the sample covering informal urban areas is called the "secondary sample" in this section.

The selected design for the primary sample is a cross-sectional cluster survey with explicit stratification by province (domain) and implicit stratification by district and commune. Two of the

core objectives of the survey are to provide estimates of child malnutrition at the provincial level for targeting of interventions and to identify provinces that have seen large changes in child malnutrition from 2005. In order to make disaggregated comparisons with the CDHS 2005 the same domains are used:

- Fourteen individual provinces: Banteay Mean Chey, Kampong Cham, Kampong Chhnang, Kampong Speu, Kampong Thom, Kandal, Kratie, Phnom Penh, Prey Veng, Pursat, Siem Reap, Svay Rieng, Takeo, and Otdar Mean Chey
- Five groups of provinces: Battambang and Krong Pailin, Kampot and Krong Kep, Krong Preah Sihanouk and Kaoh Kong, Preah Vihear and Steung Treng, Mondol Kiri and Rattanak Kiri

Within each of the nineteen domains, households were selected using a two-stage process. At the first stage enumeration areas from the 2008 National Census were selected based on probability proportional to size. At the second stage all households in enumeration areas with less than 200 households were listed. For those areas with more than 200 households segmentation was used and only selected segments were listed. Households with children under-five were included for a random selection of ten survey participant households. In each selected household all children were measured and their mother(s) or caretaker(s) interviewed, using a separate questionnaire for each mother or caretaker. Each participant has a known, non-zero probability of selection.

Sample size was determined using calculations to fulfill the primary objective of the survey, which is to determine if rising food prices have caused a change in the trend of child acute malnutrition from 2000 to the present day at the national level. Intra-class correlation was calculated using data from the CDHS 2005 and a predicted design effect of 1.31 was estimated. The overall sample size needed to show a two percentage point change in wasting from the CDHS 2005 is determined using the following formula for comparing binomial proportions obtained from clustered binary data (Rosner, 2006):

$$ Power = \varphi \left[|\Delta| \Big/ \sqrt{C(p_1 q_1/M_1 + p_2 q_2/M_2)} - z_{1-\alpha} \frac{\sqrt{\bar{p}\bar{q}(1/M_1 + 1/M_2)}}{\sqrt{p_1 q_1/M_1 + p_2 q_2/M_2}} \right] $$

Where:

C=design effect or 1 + (n- 1)ρ, where n=sample size per cluster and ρ=intra-class correlation

M=sample size

p=proportion wasted

Using ten individuals per cluster, a sample size of 7,600 individuals from 40 clusters is needed to achieve a power of .90.

The sample design of the secondary sample of impoverished, urban areas is based on the design for one domain of the primary sample. The entire sample consists of 400 households from 40 clusters. The power to detect differences between the secondary sample and primary sample is based on the same formula from Rosner and the same design effect calculation used in the primary sample design. With a sample of 400 individuals from 40 clusters the power to detect a five percentage point difference in wasting between the primary sample and the secondary sample is .86.

Survey Questionnaire

The questionnaire for this survey is designed to make trend analysis possible. It is largely based on the 2005 CDHS questionnaire. The questions used to calculate indicators shared by CAS 2008 and CDHS 2005 are identical. Indicators of coping strategies are compared to the CDRI 2008 survey and the questions used in CAS 2008 are the same as CDRI 2008.

The layout of the questionnaire is designed to ensure data collection could be carried out in one month. The CAS 2008 questionnaire consists of three sections: household, child, and mother. The household section includes a list of women, their anthropometric measurements and questions on socio-economic characteristics and coping strategies. The child section consists of a child list and anthropometric measurements. A separate child section was given to each mother age 15-49 years in the household. The final section includes background characteristics, disease, health services, and food consumption.

For some indicators CAS 2008 does differ from the CDHS 2005 because the base population of some indicators is different. All comparisons made in this report are of comparable estimates. A detailed account of analysis is provided in the *Analysis Methodology* section.

Training, Fieldwork & Data Processing

A pretest was held from the 27th-29th of October. Most enumerators for this survey had previous experience with the Cambodia Socio-Economic Survey and all attended a three-day training from the 3rd-5th of November, which focused on selecting a sample, familiarizing staff with the questionnaire, and hands-on training in anthropometry. Data collection ran from the 6th of November until the end of the month. An extended rainy season meant that a few villages were not accessible during the month of November. Teams returned to the field from mid-December until the end of December to interview in these villages.

Data entry personnel were familiarized with the survey questionnaire through training before processing began. Data entry architecture was custom built for the survey using SQL and checks were built in to the program to minimize data entry error. Data processing was carried out by 20 staff, began at the beginning of December and was finished by mid-February.

1.3 Conclusions & Recommendations

The purpose of this section is to guide the core actions for which CAS 2008 was designed. These actions include:

- Advise on the appropriate response to increased food prices
- Advise on where and who to target with interventions related to nutrition
- Advise on which nutrition interventions need to be implemented or scaled-up

Conclusions and recommendations are based on evidence from measurements of anthropometry, micronutrient deficiency, food consumption, disease, coping strategies, infant/young child feeding, and health services.

What is the appropriate response to increased food prices?

Due to a variety of factors the price of food increased dramatically in 2008. At that time many people working in international nutrition and development expressed concern that the increased prices could have a devastating impact on the nutritional status of children, especially in areas that have a large percentage of people living at or below the poverty line. In Cambodia immediate steps were taken by the government and development partners to mitigate the impact of high prices. The interventions were developed and implemented using the best available information, but this is the first national survey to quantify the effect of high food prices on the nutritional status of children. Thus, one of the main goals of the survey is to make sure that current and future interventions are appropriate for the situation.

In order to determine what type of response is needed we must first define what the current situation is. In 2007 a pilot of the Integrated Food Security and Humanitarian Phase Classification (IPC) in Cambodia determined that, with the exception of Phnom Penh and Battambang, all provinces of the country are chronically food insecure. This was attributed to limited economic growth in rural areas and repeated drought, which was driving up the cost of food. CAS 2008 does not follow the IPC methodology, but does incorporate some of its key elements, namely four out of the ten outcome indicators and their corresponding cut-offs, and a strong emphasis on trend analysis.

The four indicators shared with IPC that are included in CAS 2008 are acute malnutrition, disease, dietary diversity, and coping strategies. Table 6-1 compares 2008 national level findings with the IPC criteria for three classifications: chronically food insecure, an acute food and livelihood crisis and a humanitarian emergency.

Table 6-1 Integrated Phase Classification criteria and findings from CAS 2008

Outcome Indicator	Chronically Food Insecure	Acute Food & Livelihood Crisis	Humanitarian Emergency	CAS 2008
Acute Malnutrition (wasting)	>3% but <10% Usual range & stable	>10% but <15% > than usual & increasing	>15% > than usual & increasing	8.9% No statistically significant change from CDHS 2005, but higher than predicted levels based on past improvement (6.5%)
Disease	-	Epidemic & increasing	Pandemic	Levels of diarrhea, ARI, and fever are significantly higher than CDHS 2000 and 2005
Dietary Diversity	Chronic dietary diversity deficit	Acute dietary diversity deficit	Regularly 2-3 or fewer main food groups consumed	Stunting 39.5% Decrease in consumption meat and fish Mean food group consumption 4.7 out of 14 food groups
Coping Strategies	Insurance strategies	Coping strategies higher than reference & increasing Crisis strategies	Coping strategies significantly higher than reference & increasing Distress strategies	Increase in the use of coping strategies from May to November of 2008 Crisis strategies used, but not widespread

A closer look at data from CAS 2008 shows that the urban poor may have been more affected by rising food prices than the rest of the country. In urban areas consumption of nearly all food groups (12 of 14) has decreased and mean food group consumption has dropped from 5.4 to 4.8. Consumption of meat and fish has dropped 14 percentage points. Perhaps the most alarming finding is that the percentage of wasting among the urban poor has risen from 9.6% in 2005 to nearly 16% in 2008.

In the context of Cambodia, the big programmatic difference between a situation of chronic food insecurity and an acute food and livelihood crisis is that in the case of the latter there is a need to provide immediate access to food and a heightened need to provide treatment for acute malnutrition. There is currently no functional system for identifying acutely undernourished children. **A simple system using MUAC and existing outreach to screen for wasting should be put in**

place nationwide, starting in poor, urban areas and in the provinces with the most wasted children. **The current hospital-based therapeutic feeding programs should be revamped to help improve referral and reporting and to include community based management and follow-up of acute malnutrition.** Initial efforts by the government and partners targeted food aid to the Tonle Sap region. Government partners are currently looking to intervene in the remote provinces of the northeast; **it should be considered that survey results provide evidence that the most remote provinces of the country may have been shielded from the impact of high food prices**. The provinces of Mondol Kiri, Rattanak Kiri, Steung Treng, and Preah Vihear show improvement in acute malnutrition of children. CAS 2008 shows that 5 of the 7 domains in the Tonle Sap have wasting levels greater than 10%. The interventions in Tonle Sap look to have been well targeted and may have helped to mitigate the impact of high food prices in the region, but it appears that **the group most in need of food aid is the urban poor**; however, **the overall response to the current situation should be nationwide and will have to go beyond the distribution of staple foods (rice) to have a significant impact on nutrition. A comprehensive, intersectoral approach is needed to prevent malnutrition.**

With the price of food still high in comparison to years past it is likely to continue affecting nutrition and this will be exacerbated by international economic problems that are now being felt in Cambodia. Access to food has deteriorated and will likely continue to deteriorate because many families will face the double burden of continuing high food prices and loss of income. **In addition to supporting smallholder agriculture the reduced purchasing power of poor families must be addressed to ensure food security. Social safety nets such as conditional cash transfers and expanding access to health care through fee waivers are needed in the short-term**. Children in the country face the additional burden of high rates of infectious disease. **Providing access to improved water sources and sanitation should be a focus of the response.** Interventions related to micronutrient deficiency can also play a role in disease prevention and these are discussed further under the heading *Which nutrition interventions to scale-up*.

In the current context of continued vulnerability it is imperative that the situation is closely monitored with a national nutrition monitoring system. In addition to the central goal of providing timely warning of negative changes in nutrition, a national system should strive to serve multiple purposes, including identification of districts and communities with poor nutrition, improving existing data sources, improving evidence-based collaboration among partners and to help in monitoring nutrition interventions.

Until now we have focused on monitoring, disease, treatment of acute malnutrition and prevention of poverty-related malnutrition, but it is important to remember that poverty is not the only cause of undernutrition. Even the richest wealth quintiles see elevated rates of all three indicators of undernutrition. Comparisons of the nutritional status of children by wealth, background of parents, and where a child lives show that nutrition is a national issue that affects every sector of society. It shows that money, or the ability to buy food, is not the only important factor in nutrition. The way children are fed and cared for appear to be just as important as poverty for acute and chronic undernutrition in the country. It is also important to remember that chronic undernutrition remains the most widespread nutrition problem for children in Cambodia. There is now a risk that recent improvements in chronic undernutrition will begin to slip away. In order to prevent this and to prevent future acute undernutrition, medium and long term interventions should remain a focus. **Improving childcare behavior through education should be a long term priority.** Health sector nutrition interventions related to childcare behavior are discussed further under the heading *Which Nutrition Interventions to Scale Up.*

Where & who to target with interventions related to nutrition

Health sector interventions related to child nutrition should aim to be scaled up nationwide. For interventions that cannot immediately be implemented nationwide, the greatest impact will be achieved by targeting areas with the most undernourished children. In all domains of the national survey more than 30% of children are short, and with the exception of Phnom Penh, more than one out of five children are underweight in all domains. Fifteen of the nineteen domains are within three percentage points of 10% wasting. Kampong Cham has the highest number of undernourished children; CAS 2008 estimates that approximately 18,000 thin children, 54,000 underweight children and 68,000 short children currently reside in the province. **Kampong Cham and other provinces with notably high numbers of undernourished children, Siem Reap and Kandal, should be targeted.**

In recent years the foci of nutrition programs has shifted to younger children (<2 years) and soon-to-be mothers. This is the best prevention strategy because most undernutrition begins at these early stages of life, but CAS 2008 shows undernutrition in older children must also be a concern. Results show that levels of acute malnutrition among younger children (<1 year) have decreased, while they appear to be increasing among older children. These trends are likely related to improvements in maternal nutrition also found by CAS 2008. **Interventions related to short-term prevention and treatment of acute malnutrition should include all children under 5 in the target group.**

Mothers in rural areas are shorter and thinner than mothers in urban areas. This is likely related to fertility practices. The biggest geographical difference is in the percentage of short mothers in remote provinces. The percentage of short mothers in Mondul Kiri and Rattanak Kiri (16.1%) is nearly three times higher than the national average. Preah Vihear and Steung Treng also have an elevated percentage of short mothers (11.4%). **The elevated percentage of short mothers in remote provinces should be explored further and these areas may need to be targeted for maternal interventions.**

Which health interventions related to nutrition to implement or scale-up

Interventions related to micronutrient deficiency are important for prevention of chronic undernutrition, but can also have an impact on acute nutritional status by decreasing susceptibility to disease. CAS 2008 shows that people are coping with high food prices by taking expensive food items, such as meat, out of the diet. Animal products are an important source of micronutrients and these dietary changes may be increasing micronutrient deficiency. There are numerous micronutrient interventions currently in different stages of implementation that if scaled up, could help to prevent acute and chronic undernutrition.

Current interventions related to micronutrients for children include vitamin A supplementation and deworming. From 2005 to 2008 there does appear to be improvement in the coverage of these interventions, likely a result of increased coordination between the government and its partners. Diarrhea treatment using oral rehydration solution (ORS) with zinc, an intervention not yet implemented because of problems with supply of zinc, could have helped lessen the damage of high food prices by treating and preventing disease. In the current situation zinc is especially important because of the dietary changes previously mentioned. Going forward, **deworming, ORS w/ zinc, and vitamin A should be provided at health centers, during outreach and through community based volunteers to maximize coverage.**

For children, iron supplementation is not recommended because of concerns related to the interaction between high doses of iron and infectious disease. Iron deficiency anemia is known to be a serious public health problem in Cambodia and it needs to be addressed immediately. **In-home fortification using multi-micronutrient powders is currently implemented as operational research in one province. This intervention is proven internationally and should be scaled up immediately.** It is a solution to iron deficiency and a better approach than supplementation with individual micronutrients because a child with one micronutrient deficiency is likely to have multiple deficiencies. For micronutrient supplementation the emphasis should shift to in-home fortification and away from biannual supplementation. If resources for universal coverage are not available, poor urban areas, provinces with high numbers of undernourished, and children with moderate acute malnutrition could be targeted. **Current research is underway in Bangladesh on in-home fortification of pregnant women; this should be followed closely and a rough plan for implementation should be put in place.**

CAS 2008 shows the protective effect of maternal nutritional status on the nutritional status of young children. Maternal micronutrient status is an important component of this protective effect and interventions related to micronutrient deficiency in women could help to prevent acute undernutrition in both children and women. For women, coverage of the current interventions to prevent micronutrient deficiency (prenatal and postnatal iron folate supplementation, deworming medication during pregnancy, postpartum vitamin A supplementation) has improved markedly from 2005 to 2008. The improvements are likely a result of government and partner efforts to increase antenatal and postnatal care visits. **Continued improvement in the quality of prenatal/postnatal care, with an emphasis on making sure supplements and medicine are available, should help to continue improvement in maternal micronutrient supplementation. In addition, prenatal care should include monitoring weight gain during pregnancy and providing information on hygiene and proper child feeding practices.**

Over the last decade there has been long-term improvement in nutrition and this can be built on. Improved fertility practices, increased exclusive breastfeeding, and iodine fortification of salt are all successes. Small improvements to these programs can ensure they reach the entire population and there are other medium/long term interventions to implement that are important for sustainable prevention of undernutrition.

The improvements in fertility practices that affect nutrition are decreased parity and longer birth intervals. Improved fertility practices are largely a result of the population transitioning from farming to wage earning jobs, but family planning services have also contributed to change. **Family planning programs should be a focus for improvement in nutrition, especially in remote provinces with high rates of undernourished mothers. Increasing public awareness of the importance of optimal weight gain through behavior change communication should also be considered.**

Improvements in exclusive breastfeeding are the result of behavior change communication (BCC) that has made people aware that they do not need to give their child water. **Breastfeeding BCC should be continued and refined to address the early introduction of complementary foods. Communication should also be tailored to address the barriers to exclusive breastfeeding in urban areas** because these areas have seen a recent decrease in the rate of exclusive breastfeeding. CAS 2008 shows that many mothers wait too long to give children complementary foods and do not provide a diverse diet to younger children. **Complementary feeding interventions have already been developed in the country, but they need to be rolled out. There is also the need for a BCC campaign that focuses on complementary feeding.**

Iodine fortification of salt has very high coverage, but there are a couple of provinces where this is not the case. Education is the tool most likely to improve coverage in those areas. Iodine fortification of salt is probably coming very close to eradicating iodine deficiency in the country. **Fortification is the long-term solution to micronutrient deficiency. The fortification of staple foods with multiple micronutrients must be a medium/long term priority.**

1.4 Analysis Methodology

Analysis for CAS 2008 was carried out using SPSS Statistics 17 for complex samples. Special effort was made to make trend analysis possible. CAS indicators that are shared with the CDHS were calculated using CDHS analysis methodology. All trend comparisons presented in the report use comparable estimates.

WHO Growth Standards

In line with recommendations from the United Nations Standing Committee on Nutrition, CAS 2008 uses the 2006 WHO Child Growth Standards for all indicators of child anthropometry. These standards replace the NCHS child growth standards, which were based solely on a population of children from the United States of America. The new standards are based on a population of healthy children from around the world whose mothers engage in healthy practices such as breastfeeding and not smoking.

For analysis, CAS 2008 uses growth standard syntax provided by WHO that is written to be in line with DHS analysis methodology. Estimates of child anthropometry indicators from the CDHS 2000 and 2005 presented by CAS 2008 were recalculated using the new growth standards. Comparisons between 2000, 2005 and 2008 are possible because all estimates use the new growth standards. Recalculated estimates from CDHS 2000 and 2005 are included as an annex to the main report.

CDHS Recalculations

Some indicators from the CAS 2008 and the CDHS 2000/2005 have different target populations because of differences in survey design; all comparisons with these indicators presented by CAS 2008 are made possible by recalculating CDHS estimates. The following indicators had to be modified to make the surveys comparable:

- Woman anthropometry
- Child disease
- Child health services

CDHS 2005 estimates of woman anthropometry include all women ages 15 to 49 years. CAS 2008 only includes anthropometric measurements from women with a child 0 to 59 months. In order to compare the two surveys CDHS 2005 estimates were recalculated using only women with a child 0 to 59 months. These estimates are included as an annex to the main report.

In order to complete data collection for CAS 2008 in one month mothers were only asked about their youngest child for questions on child disease and child health services. For comparisons CDHS

estimates were recalculated using only the youngest child. Child disease recalculations from CDHS 2005 are included as an annex to the main report.

In addition to changes dealing with target populations some comparisons with CDHS estimates had to take into account problems with the CDHS indicators. Comparisons of deworming, vitamin A supplementation, and ARI all fall into this category and the necessary changes for comparison are explained in the body of the report.

CDHS 2005 reports chicken and nut consumption as part of two food groups presented for dietary diversity; however, these food items are not included in the calculations. To address this issue and to provide a more disaggregated view of food consumption CAS 2008 uses fourteen food groups that are modeled on FAO recommended food groups for an individual dietary diversity score (IDDS14). CDHS 2005 estimates were also recalculated using this methodology for comparisons.

It should be noted that for postpartum vitamin A supplementation the CAS 2008 question is slightly different from the CDHS 2005 because of a policy change. The recommended timing of supplementation changed from within two months of giving birth to within six weeks of giving birth. This difference is not expected to have had a large impact on the indicator.

1.5   Tables & Figures

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Table 2-1 Weight-for-height children 0-59 months

Percentage of children under five years classified as wasted according to WHO growth standards, CAS 2008			
Background characteristics	Weight- for- Height		
Age in month	< - 3 SD	< - 2 SD	Mean	Number of Children
0 - 5	2.0	9.8	-0.14	618
6 - 11	2.8	11.8	-0.60	824
12 - 23	1.8	9.8	-0.71	1706
24 - 35	2.2	10.1	-0.69	1434
36 - 47	1.5	7.1	-0.68	1343
48 - 59	0.9	5.5	-0.68	1094
Sex				
Male	2.1	9.7	-0.64	3585
Female	1.6	8.0	-0.62	3434
Residence				
Urban	1.6	8.5	-0.44	1217
Rural	1.9	9.0	-0.67	5801
Wealth quintile				
Lowest	1.6	8.6	-0.65	1344
Second	3.2	11.7	-0.71	1261
Middle	1.5	7.7	-0.66	1469
Fourth	1.5	8.0	-0.64	1452
Highest	1.6	8.9	-0.51	1481
Total	1.8	8.9	-0.63	7019

Figure 2-1 Child acute malnutrition trend
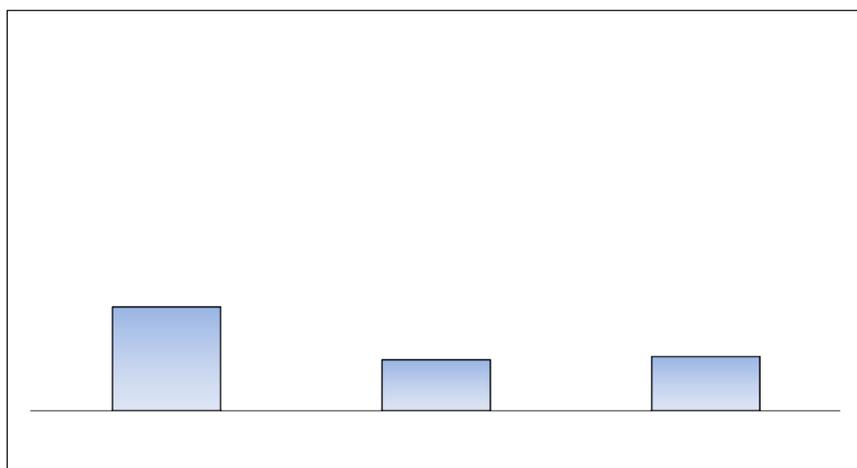
Table 2-2 Height-for-age children 0-59 months

Percentage of children under five years classified as stunted according to WHO growth standards, CAS 2008			
Background characteristics	Height- for- Age		
Age in month	< - 3 SD	< - 2 SD	Mean	Number of Children
0 - 5	5.6	14.5	-0.34	618
6 - 11	4.3	14.5	-0.48	824
12 - 23	13.7	35.2	-1.32	1706
24 - 35	22.1	49.1	-1.49	1434
36 - 47	23.4	50.7	-2.13	1343
48 - 59	25.7	53.1	-2.29	1094
Sex				
Male	18.1	40.9	-1.62	3585
Female	16.5	38.1	-1.52	3434
Residence				
Urban	14.7	31.9	-1.25	1217
Rural	17.9	41.1	-1.64	5801
Wealth quintile				
Lowest	21.5	48.1	-1.9	1344
Second	20.1	42.6	-1.7	1261
Middle	18.4	41.1	-1.6	1469
Fourth	17.0	38.3	-1.5	1452
Highest	10.3	28.6	-1.2	1481
Total	17.3	39.5	-1.6	7019

Figure 2-2 Child chronic malnutrition trends
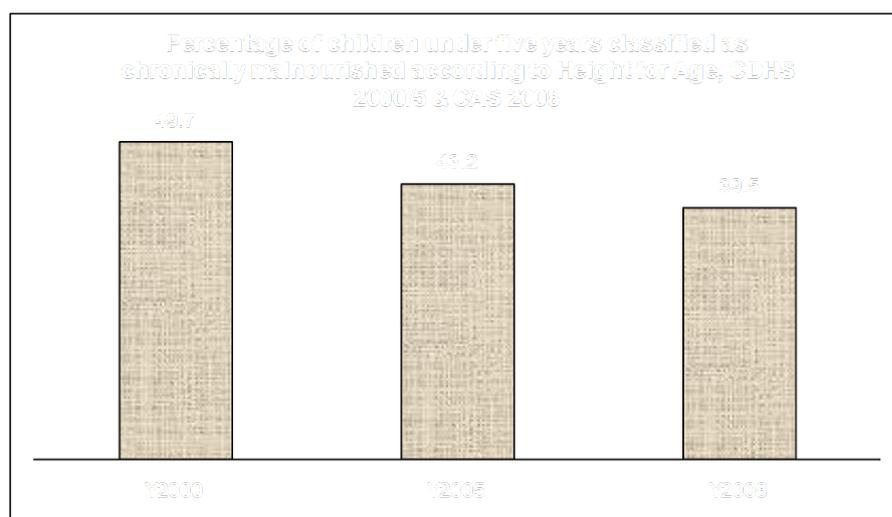
Table 2-3 Weight-for-age children 0-59 months

Percentage of children under five years classified as underweight according to WHO growth standards, CAS 2008			
Background characteristics	Weight- for- Age		
Age in month	< - 3 SD	< - 2 SD	Mean	Number of Children
0 - 5	1.5	7.5	-0.44	618
6 - 11	2.8	15.6	-0.79	824
12 - 23	6.5	25.4	-1.18	1706
24 - 35	11.2	33.5	-1.56	1434
36 - 47	13.1	36.2	-1.72	1343
48 - 59	14.3	40.5	-1.85	1094
Sex				
Male	9.2	28.4	-1.36	3585
Female	9.0	29.2	-1.35	3434
Residence				
Urban	6.9	21.1	-1.02	1217
Rural	9.5	30.4	-1.43	5801
Wealth quintile				
Lowest	12.2	34.5	-1.5	1344
Second	11.4	33.5	-1.5	1261
Middle	9.3	29.9	-1.4	1469
Fourth	8.1	27.8	-1.3	1452
Highest	5.0	19.3	-1.4	1481
Total	9.1	28.8	-1.35	7019

Figure 2-3 Child underweight trends
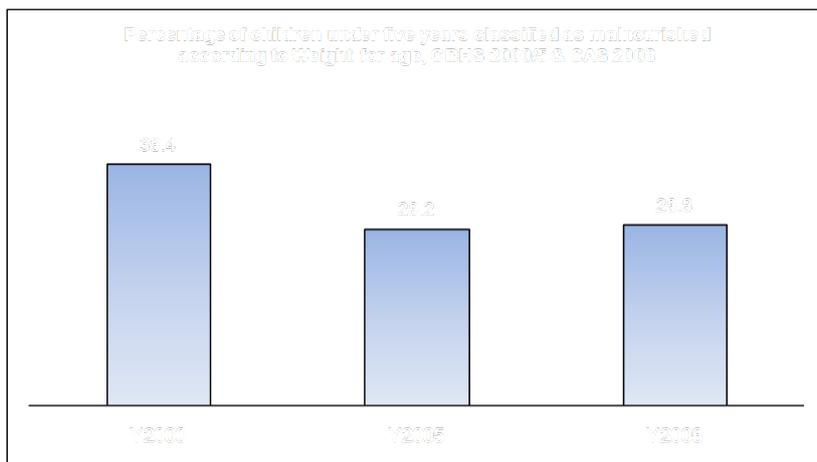
Figure 2-4 Child acute malnutrition trends in similar month
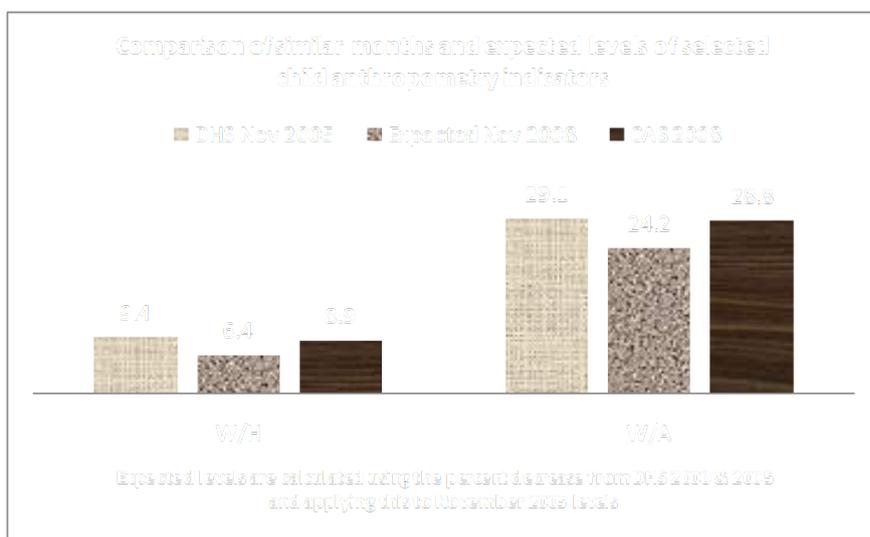
Figure 2-5 Child acute malnutrition trends by residence

Percentage of underweight and wasted children by place of residence, DHS 2000/5 & CAS 2008
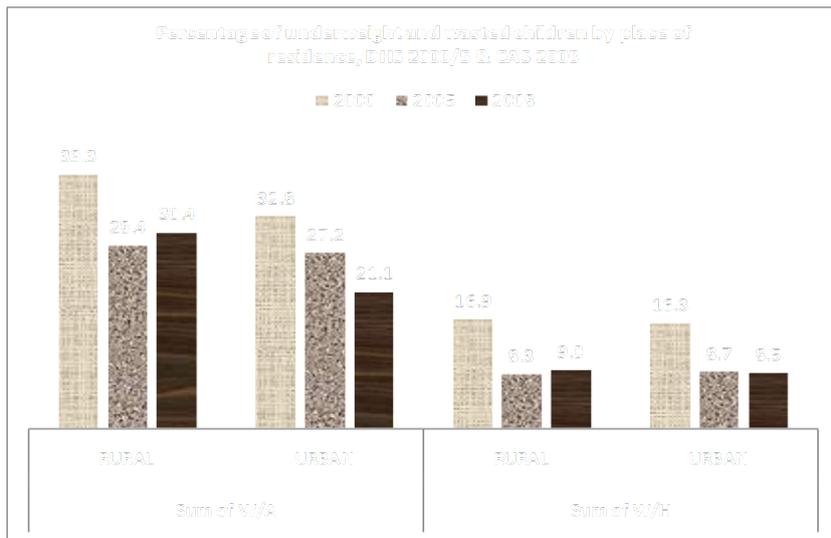
Figure 2-6 Child acute malnutrition trends by residence and wealth

Percentage of wasted children under-5 by place of residence and wealth, DHS 2005 & CAS 2008
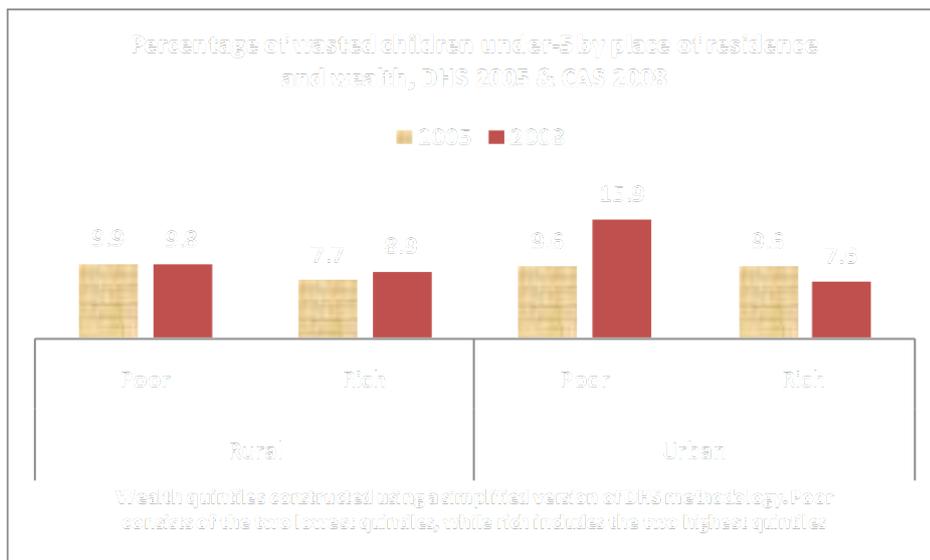
Figure 2-7 Child underweight trends by age
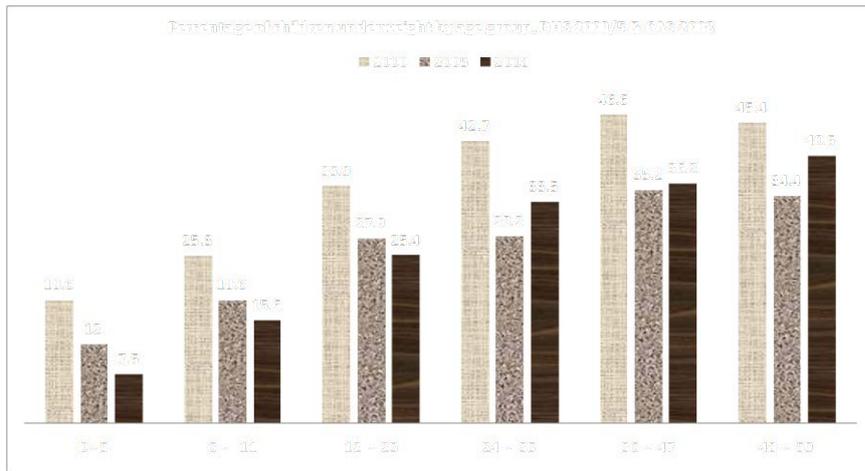
Figure 2-8 Child underweight by age
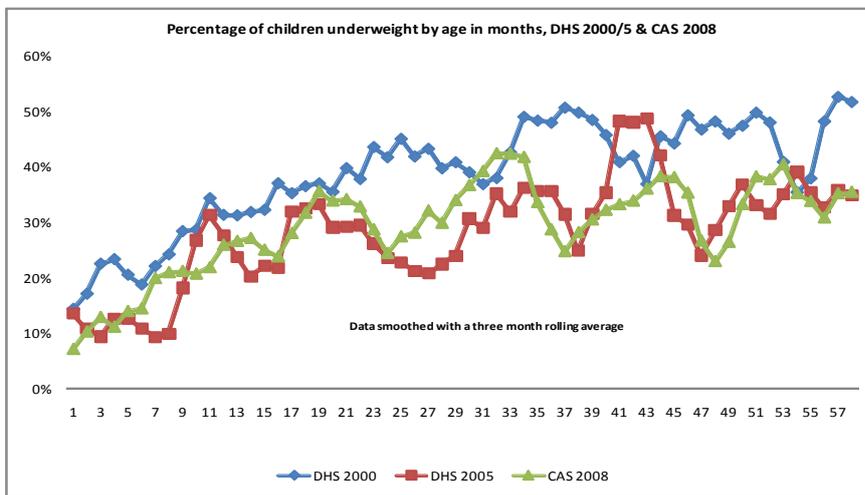
Figure 2-9 Child acute malnutrition trends by age
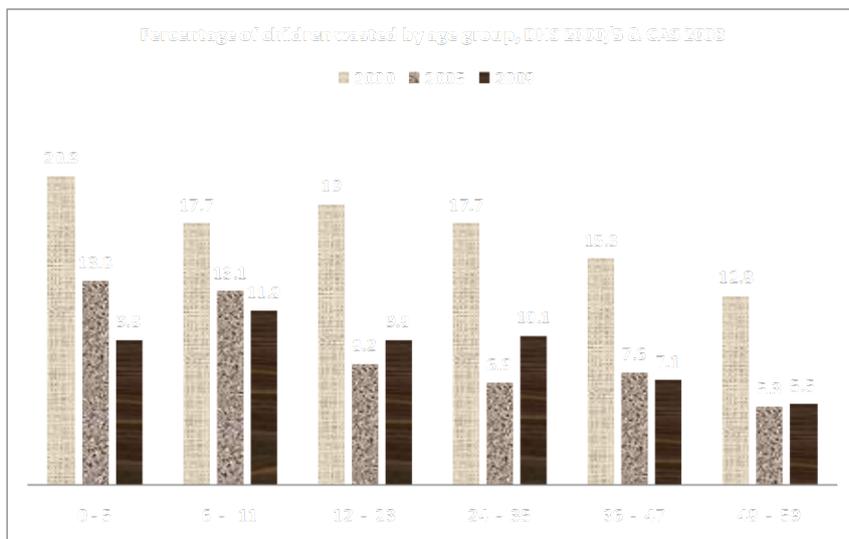
Table 2-4 Anthropometry of mothers

Among women age 15 - 49 that have children under 5 years of age the percentage with height under 145 cm, mean body mass index (BMI), and the percentage with specific BMI levels by background characteristics, CAS 2008

	Height		Mean Body Mass Index (BMI)	Thin		Obese	Number of Women
	Percentage below 145 cm	Number of women		<18.5 (Total thin)	≤17.0 (moderately and severely thin)	≥ 30.0 (Obese)	
Mother's Age							
15-19	9.8	183	20.2	21.3	3.2	0.0	145
20-29	5.9	4015	20.9	16.8	3.9	0.7	3477
30-39	6.6	2045	21.8	14.0	3.2	2.5	1860
40-49	7.1	644	21.8	17.5	4.4	3.0	618
Residence							
Urban	5.3	1144	22.1	11.4	3	2.6	1048
Rural	6.5	5744	21.1	17.1	3.9	1.2	5051
Total	6.3	6888	21.2	16.1	3.7	1.5	6099

Figure 2-10 Trends in anthropometry of mothers

30
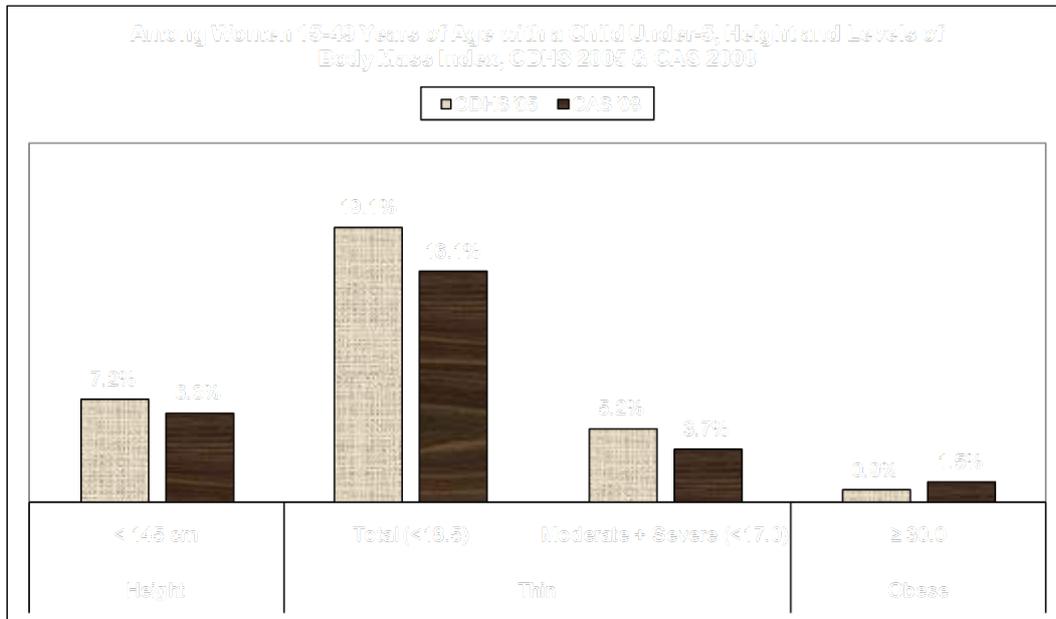
Table 2-5 Maternal night blindness

The percentage of mothers who during the pregnancy of the last child born in the five years prior to the survey suffered from night blindness, CAS 2008			
	Percentage of women who suffered from night blindness		
	Reported	Adjusted	Number of Women
Mother's Age			
15-19	4.5	1.6	179
20-29	4.5	1.5	3984
30-39	5.9	1.7	2034
40-49	7	1.9	639
Residence			
Urban	2.3	0.5	1136
Rural	5.7	1.8	5700
Total	5.1	1.6	6836

Figure 2-11 Trends in maternal night blindness

Percentage of women who suffered night blindness during last pregnancy, DHS 2005 & CAS 2008

■ 2005 ■ 2008

Adjusted levels of night blindness consider women who also have vision problems during the day to not be suffering from night blindness
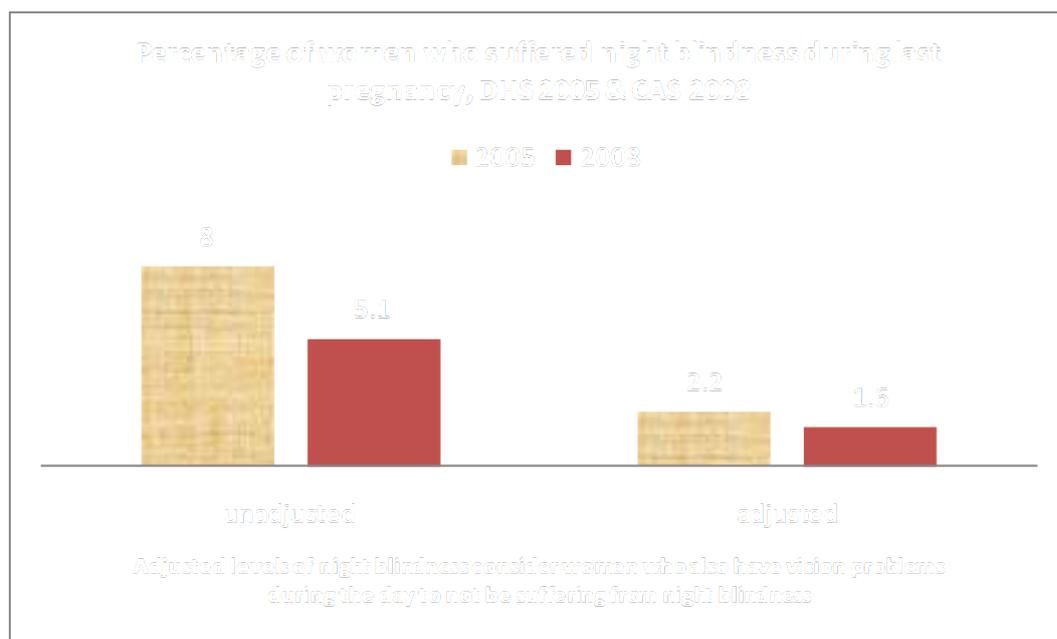
Figure 2-12 CDHS 2005 questionnaire excerpt related to ARI

531	Has (NAME) had an illness with a cough at any time in the last 2 weeks?	YES .... 1 NO .... 2 (SKIP TO 534) ◄─┐ DON'T KNOW 8	YES .... 1 NO .... 2 (SKIP TO 534) ◄─┐ DON'T KNOW 8	YES .... 1 NO .... 2 (SKIP TO 534) ◄─┐ DON'T KNOW 8
532	When (NAME) had an illness with a cough, did he/she breathe faster than usual with short, rapid breaths or have difficulty breathing?	YES .... 1 NO .... 2 (SKIP TO 535) ◄─┐ DON'T KNOW 8	YES .... 1 NO .... 2 (SKIP TO 535) ◄─┐ DON'T KNOW 8	YES .... 1 NO .... 2 (SKIP TO 535) ◄─┐ DON'T KNOW 8
533	When (NAME) had this illness, did he/she have a problem in the chest or a blocked or runny nose?	CHEST ONLY ...... 1 ┐ NOSE ONLY ...... 2 ┤ BOTH .... 3 ┤ OTHER _____ 6 ┤ (SPECIFY) DON'T KNOW ...... 8 ┘ (SKIP TO 535) ◄───	CHEST ONLY ...... 1 ┐ NOSE ONLY ...... 2 ┤ BOTH .... 3 ┤ OTHER _____ 6 ┤ (SPECIFY) DON'T KNOW ...... 8 ┘ (SKIP TO 535) ◄───	CHEST ONLY ...... 1 ┐ NOSE ONLY ...... 2 ┤ BOTH .... 3 ┤ OTHER _____ 6 ┤ (SPECIFY) DON'T KNOW ...... 8 ┘ (SKIP TO 535) ◄───

Table 2-6 Child ARI

Percentage of youngest children under age five who had symptoms of ARI (2005 methodology) in the two weeks preceding the survey by background characteristrics, CAS 2008

Background characteristics	ARI	Number of children
Age in months		
0 - 5	11.5	550
6 - 11	17.1	736
12 - 23	17.0	1520
24 - 35	14.8	1364
36 - 47	16.2	1440
48 - 59	14.3	1200
Sex		
Male	15.6	3481
Female	15.3	3330
Residence		
Urban	9.1	1135
Rural	16.7	5676
Wealth quintile		
Lowest	20.4	1316
Second	17.9	1228
Middle	16.0	1392
Fourth	16.2	1407
Highest	8.0	1473
Total	15.5	6811

Figure 2-13 Child ARI trends (2005 methodology)

Period prevalence of symptoms of acute respiratory infection among the youngest child 0-1 years of age, DHS 2015 & CAS 2018

8.3 — 2015
15.6 — 2018

Prevalence calculated using DHS 2015 methodology. Symptoms include cough, difficulty breathing and that these are chest related
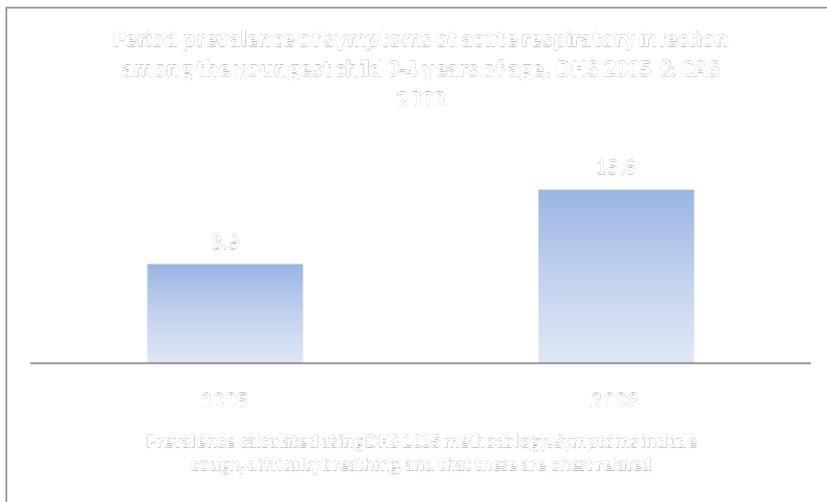
Figure 2-14 Child ARI trends (2000 methodology)

Period prevalence of symptoms of acute respiratory infection among the youngest child 0-4 years of age, DHS 2000/5 & CAS 2018

21.4 — 2000
15.8 — 2005
23.5 — 2018

Prevalence is calculated using methodology from the DHS 2000. Symptoms include cough and difficulty breathing
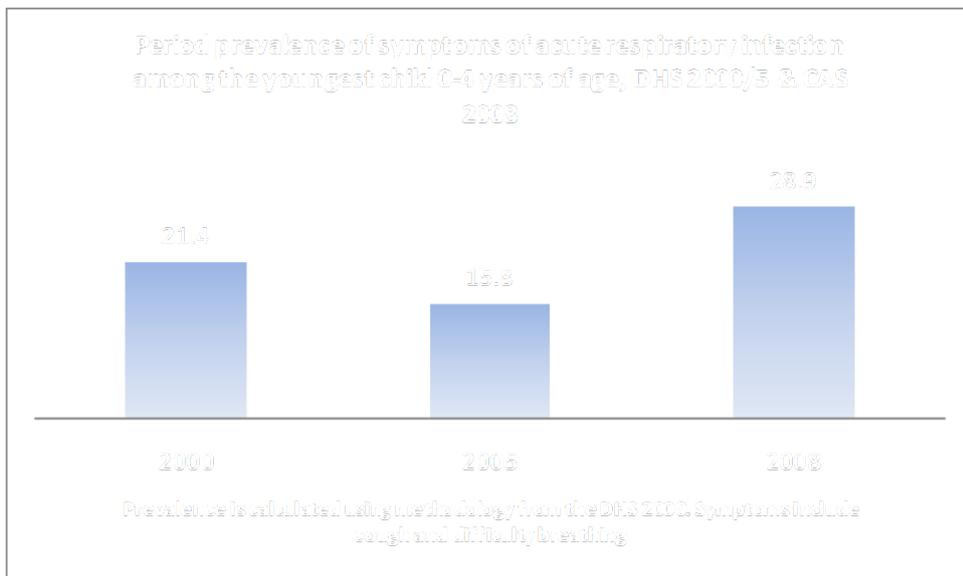
Figure 2-15 Child ARI trends in similar month

Period prevalence of symptoms of acute respiratory infection among youngest child 0-4 years of age, DHS 2005 & CAS 2008

■ 2005 ■ NOV 2005 ■ 2008

The methodology for calculating prevalence differed from 2000 to 2005. 2 symptoms were included in 2000 (cough & difficulty breathing) and a third symptom (chest-related) was added in 2005
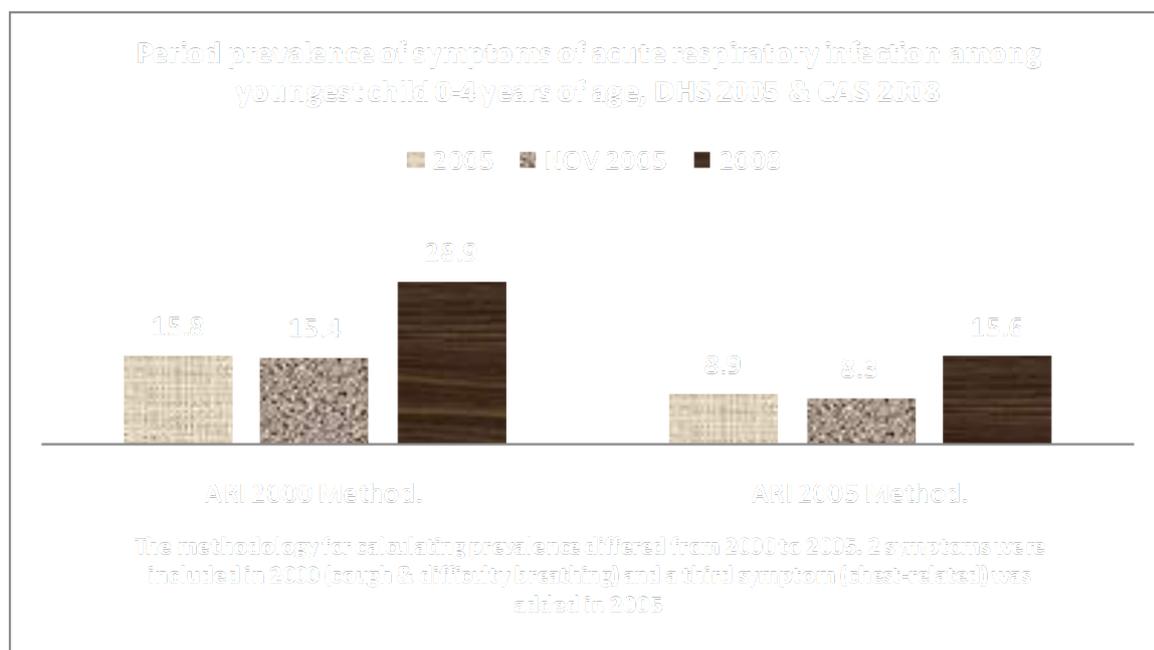
Table 2-7 Child diarrhea

Percentage of youngest children under age five who had diarrhea in the two weeks preceding the survey by background characteristics, CAS 2008			
Background characteristics	All diarrhea	Diarrhea with blood	Number of children
Age in months			
0 - 5	33.4	1.6	919
6 - 11	38.3	4.4	1006
12 - 23	32.9	2.4	1892
24 - 35	28.2	3.6	1287
36 - 47	21.0	2.8	980
48 - 59	19.2	2.5	742
Sex			
Male	31.5	3.1	3525
Female	27.7	2.7	3301
Residence			
Urban	20.1	1.6	1149
Rural	31.6	3.1	5677
Wealth quintile			
Lowest	37.7	4.5	1316
Second	32.2	2.7	1228
Middle	32.2	2.6	1392
Fourth	28.6	3.8	1407
Highest	19.0	0.9	1473
Total	**29.7**	**2.9**	**6826**

Figure 2-16 Child diarrhea trends

Period prevalence of diarrhea among youngest child 0-4 years of age, CDHS 2005 & CAS 2008
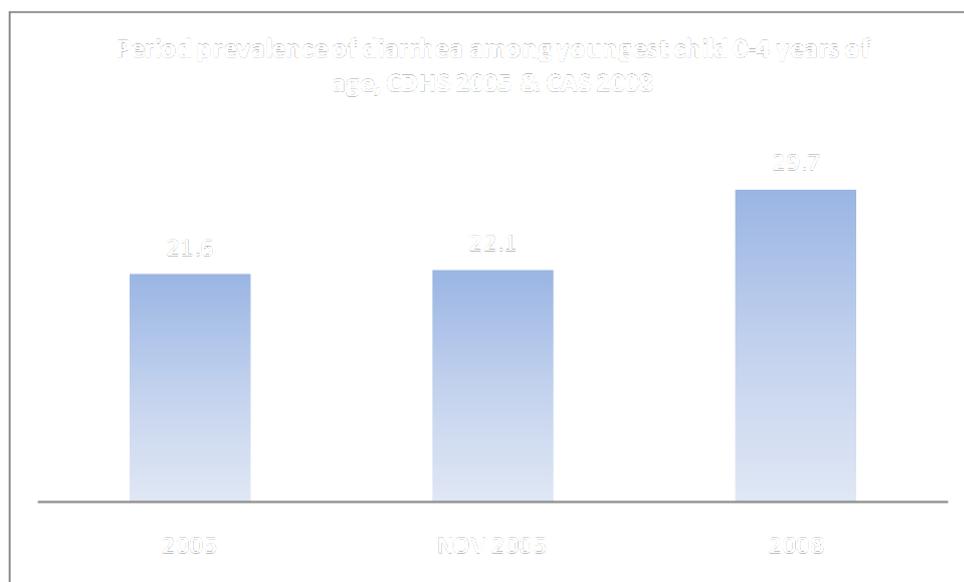
Table 2-8 Child fever

Percentage of youngest children under age five who had fever in the two weeks preceding the survey by background characteristrics, CAS 2008		
Background characteristics	Fever	Number of children
Age in months		
0 - 5	53.5	550
6 - 11	64.5	736
12 - 23	62.6	1520
24 - 35	58.0	1364
36 - 47	48.4	104
48 - 59	53.5	131
Sex		
Male	58.8	3525
Female	58.9	3301
Residence		
Urban	45.6	1138
Rural	61.5	5698
Wealth quintile		
Lowest	66.7	1316
Second	60.3	1228
Middle	60.5	1392
Fourth	59.3	1407
Highest	48.7	1473
Total	**58.9**	**6836**

Figure 2-17 Child fever trends

Period prevalence of fever among youngest child 0-1 years of age, CDHS 2005 & CAS 2008

37.1	39.5	58.9
2005	NOV 2005	2008
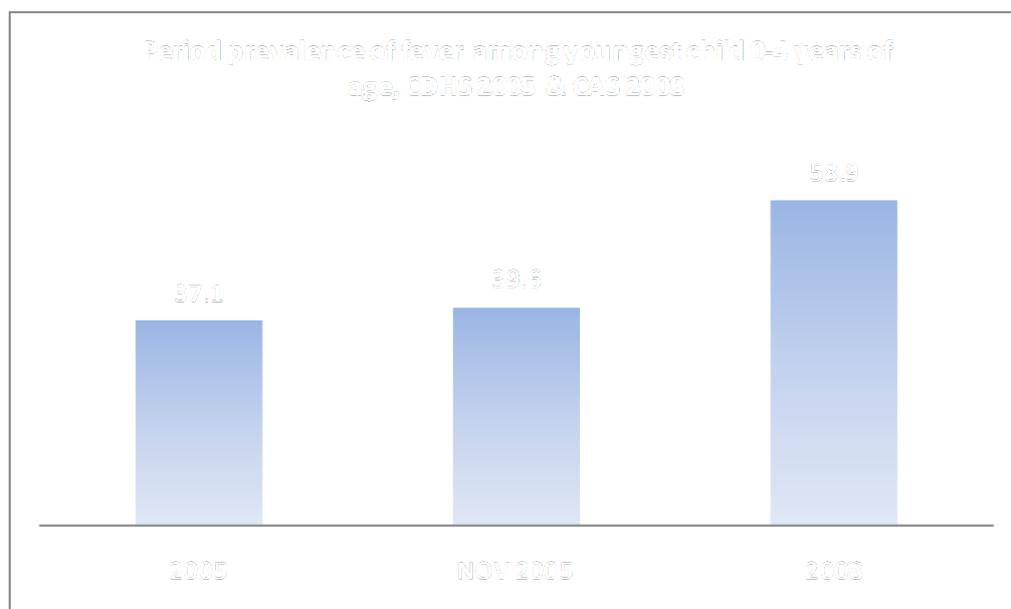
Table 2-9 Coping strategies

Percentage of households using coping strategy in the previous month, CAS 2008					
Coping Strategy	At least one time	At least one time		Every day	n
		Urban	Rural		
Rely on less preferred and less expensive food	71.5	68.7	72.0	6.5	7489
Borrow food or rely on help from friends or relatives	51.8	39.1	54.3	0.2	7489
Purchase food on credit, incur debts	70.3	59.5	72.4	1.4	7489
Reduce food eaten in a day	59.5	63.3	58.8	1.5	7489
Restrict consumption by adults in order for small children to eat	56.3	52.9	99.6	2.6	7489
Mothers and/or elder sisters eat less than other HH members	43.7	33.0	45.8	1.3	7489
Consume seed stocks held for the next season	13.0	2.2	15.1	0.3	7489
Decrease expenditure for fertilizer, pesticide, fodder, animal feed, vet. care	16.0	2.4	18.7	0.0	7489
Sell domestic assets (radio, furniture, carpet)	4.3	2.4	4.6	0.0	7489
Sell productive assets (farm implements, sewing machine, motorbike)	3.4	2.0	3.6	0.1	7489
Sell land	3.5	1.4	4.0	0.1	7489
Sell jewellery	10.3	11.1	10.2	0.4	7489
Sell more animals than usual	17.5	3.5	20.2	0.0	7489
Decrease expenditures for health care	41.1	32.1	42.9	0.1	7489
Take children out of school	9.0	8.9	9.0	1.9	7489
Seek alternative or additional jobs	30.1	42.3	31.2	7.6	7489
Increase the number of members out-migrating for workand/or food	17.0	10.5	18.3	4.1	7489
Increase exploitation of common property resources(fishing, foraging, etc)	33.1	8.2	37.9	9.1	7489
Plant more/new crops to cope with high food prices	25.3	6.6	29.0	3.0	7489

Figure 2-18 Trends in coping strategies related to food

Percentage of households using coping strategy related to food at least one time in the previous month, CAS 2008 & CDRI 2008 Survey

Coping strategy	CAS 2008	CDRI 2008
Increase exploitation of common property resources	33	21
Consume seed stocks	13	7
Borrow food, or rely on help from friends or relatives	52	43
Mothers and elder sisters eat less than others	44	41
Restrict consumption by adults for small children to eat	56	43
Reduce food eaten	60	52
Purchase food on credit, incur debts	70	59
Rely on less preferred and less expensive food	71	71

CAS 2008 field work was carried out primarily in November, while the CDRI survey took place during the month of May

Figure 2-19 Trends in coping strategies not related to food

Percentage of households using coping stategy not related to food at least one time in the previous month, CAS 2008 & CDRI 2008 Survey

Coping strategy	CAS 2008	CDRI 2008
Sell land	4	2
Sell productive assets	3	2
Sell domestic assets	4	3
Take children out of school	9	8
Sell jewellery	10	7
Sell more animals than usual	17	8
Increase migration for work or food	17	10
Decrease expenditures for fertiliser, pesticide, etc	16	15
Decrease expenditures for health care	41	34
Plant more or new crops	25	20
Seek alternative or additional jobs	30	27

CAS 2008 field work was carried out primarily in November, while the CDRI survey took place during the month of May

Table 2-10 Child food consumption

The percentage of children who consumed specific types of foods in the day or night preceding the interview and mean number of food groups consumed, CAS 2008																
	Organ meats	Vitamin A rich fruit	Cereals	Vitamin A rich vegetables	Flesh meats	Fish	Legumes & nuts	Misc.	Milk Products	Tubers	Other vegetables /fruits	Egg	Oils & Fats	Sweets	Mean Food Groups	Number of Children
Age in Month																
6-11	3.6	5.7	88.2	25.4	21.7	38.3	3.6	23.5	12.6	8.6	13.7	14.5	10.9	30.2	3.0	1006
12-23	6.3	11.5	97.6	51.1	40.8	73.2	10.1	40.0	15.4	15.0	31.8	25.7	24.4	60.0	5.0	4892
24-35	6.9	14.7	97.9	62.0	41.8	81.3	14.8	46.7	12.6	19.2	38.3	24.8	30.7	66.7	5.6	1287
Residence																
Urban	7.6	6.6	96.8	54.3	45.4	52.6	9.9	36.8	35.0	9.6	29.7	20.5	16.9	54.4	4.8	679
Rural	5.5	12.0	95.2	47.1	34.8	70.2	10.0	38.4	9.8	15.7	29.4	23.1	24.3	55.0	4.7	3506
Total	5.8	11.1	95.4	48.2	36.5	67.3	10.0	38.1	13.9	14.7	29.5	22.7	23.1	54.9	4.7	4185

Figure 2-20 Trends in food consumption

Percentage point change of children 6-35 months of age eating specific food groups in the day or night preceding the interview, DHS 2005 to CAS 2008
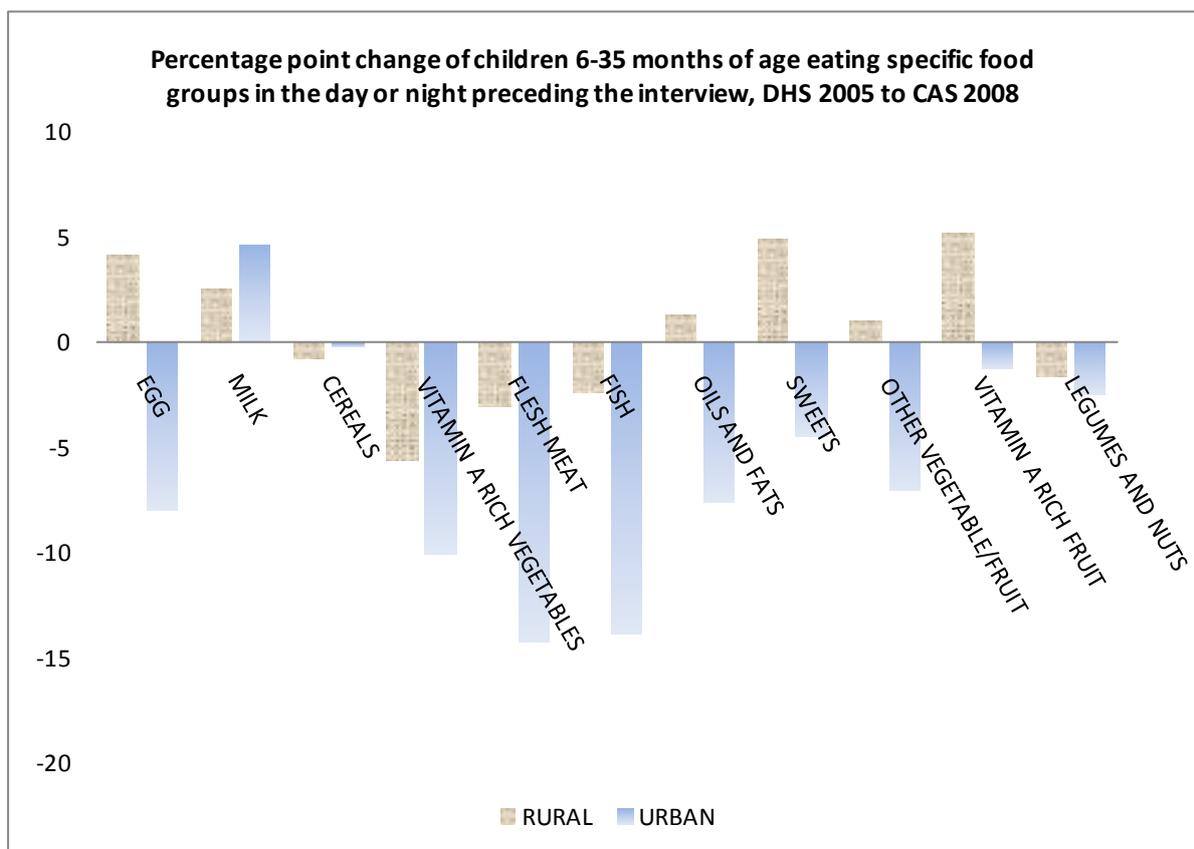
Figure 2-21 Trends in mean food group consumption

Mean number of food groups consumed by children and mothers in the day or night preceding the interview, CAS 2008
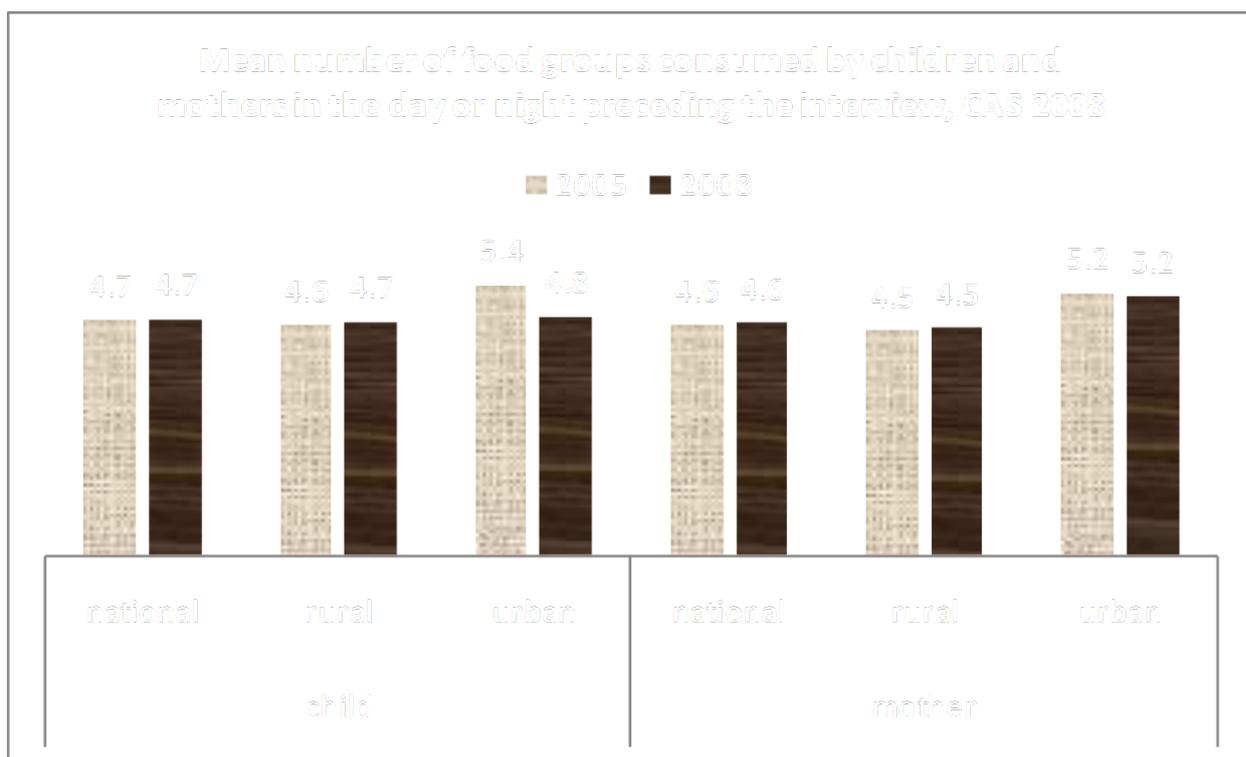
Table 2-11 Food consumption of mothers

The percentage of mothers who consumed specific types of foods in the day or night preceding the interview and mean number of food groups consumed, CAS 2008																
	Milk	Misc.	Cereals	White tubers	Vitamin A rich fruit	Flesh meat	Organ meat	Fish	Legumes & nuts	Tubers	Other vegetables /fruits	Egg	Oils & Fats	Sweets	Mean Food Groups	Number of Women
Mother's Age																
15-19	4.0	6.1	99.9	17.6	10.4	43.5	5.3	86.7	17.0	28.3	29.1	19.2	29.6	30.2	4.3	174
20-29	6.6	6.2	98.2	20.0	13.5	47.5	8.2	83.3	17.9	30.2	47.2	25.1	33.0	32.3	4.7	2602
30-39	7.8	6.5	98.3	22.1	12.4	44.4	6.3	85.9	14.5	29.8	44.5	19.4	32.7	31.3	4.6	1102
40-49	3.7	7.0	98.8	21.9	12.4	41.2	5.0	80.4	15.7	36.2	48.4	20.6	31.4	25.4	4.5	311
Residence																
Urban	9.8	2.9	99.1	20.4	14.2	65.6	9.9	76.7	17.6	42.7	53.0	25.4	37.0	41.1	5.2	665
Rural	6.0	7.0	98.3	20.7	12.8	42.4	6.8	85.3	16.7	28.2	44.5	22.6	31.9	29.6	4.5	3525
Total	6.6	6.3	98.4	20.6	13.0	46.1	7.3	83.9	16.8	30.5	45.8	23.0	32.7	31.4	4.6	4190

Table 3-1 Child anthropometry by domain

Percentage of children uder five years classified as malnourished according to three anthropometric indices of nutritional status: height-for-age; weight-for height, and weight-for-age by domain, CAS 2008							
Province	Height-for-Age		Weight-for-Height		Weight-for-Age		Number of Children
	< -2 SD	< -3 SD	< -2 SD	< -3 SD	< -2 SD	< -3 SD	
Banteay Mean Chey	38.4	18.0	11.7	2.8	29.7	10.4	317
Kampong Cham	38	15.5	10	2.9	30.1	9.6	888
Kampong Chhnang	45.4	19.6	11.1	3.3	37.4	12.1	306
Kampong Speu	37.6	15.1	10.9	1.3	27.8	5.9	471
Kampong Thom	47.1	23.0	9.6	2.1	33.5	12.8	187
Kandal	35.8	15.8	10.8	1.9	29.6	9.9	627
Kratie	46.3	22.6	9.1	2.4	29.3	9.8	164
Phnom Penh	33.6	16.7	5.6	1.4	18.7	6.8	658
Prey Veng	42.2	16.1	5.5	0.8	29.7	8.3	528
Pursat	36.4	16.1	11.2	2.2	33.3	9.1	187
Siemreap	46	23.1	8.6	1.8	34.7	11.9	628
Svay Rieng	36	13.6	11	1.1	30.9	9.2	272
Takeo	43.4	16.7	7.1	1.9	28.9	7.9	479
Oddar Mean Chey	41	16.7	10.1	3.8	26.6	7.6	78
Battambang/Krong Pailin	37.3	15.3	9.3	1.3	25	8.3	557
Kampot/Krong Kep	34.5	13.8	8.1	1.1	27.2	7.7	261
Sihanouk Ville/Koh Kong	40.1	19.9	7.1	0.5	26.4	10.5	182
Preah Vihear/Stung Treng	46.6	23.3	6.7	1.5	24.1	6.0	133
Mondul Kiri/Rattanak Kiri	41.7	22.9	6.3	2.1	27.1	9.4	96
Total	39.5	17.3	8.9	1.8	28.8	9.1	7019

Figure 3-1 Number of wasted children

Estimated number of wasted children by province, CAS 2008

Estimates made by applying CAS 2008 prevalence to population figures from NIS 2008 census
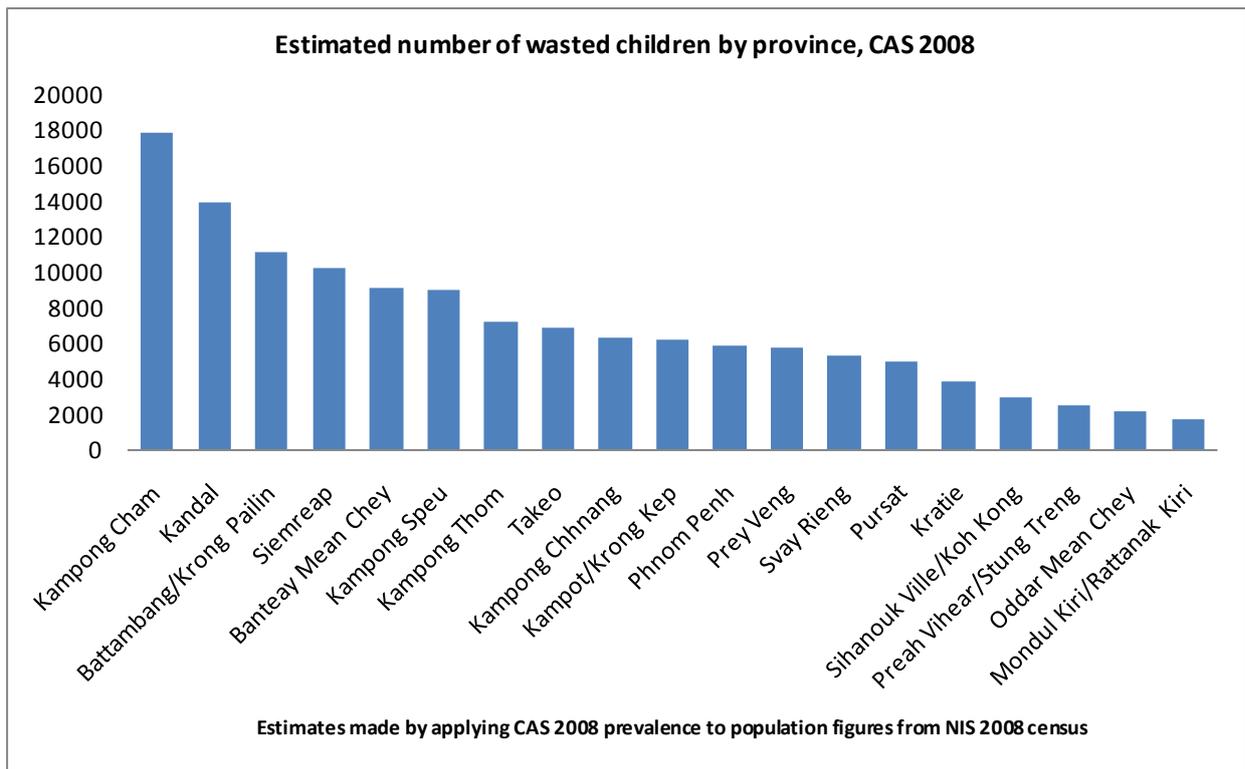
Figure 3-2 Number of underweight children

Estimated number of underweight children by province, CAS 2008

Estimates made by applying CAS 2008 prevalence with population figures from the NIS 2008 Census
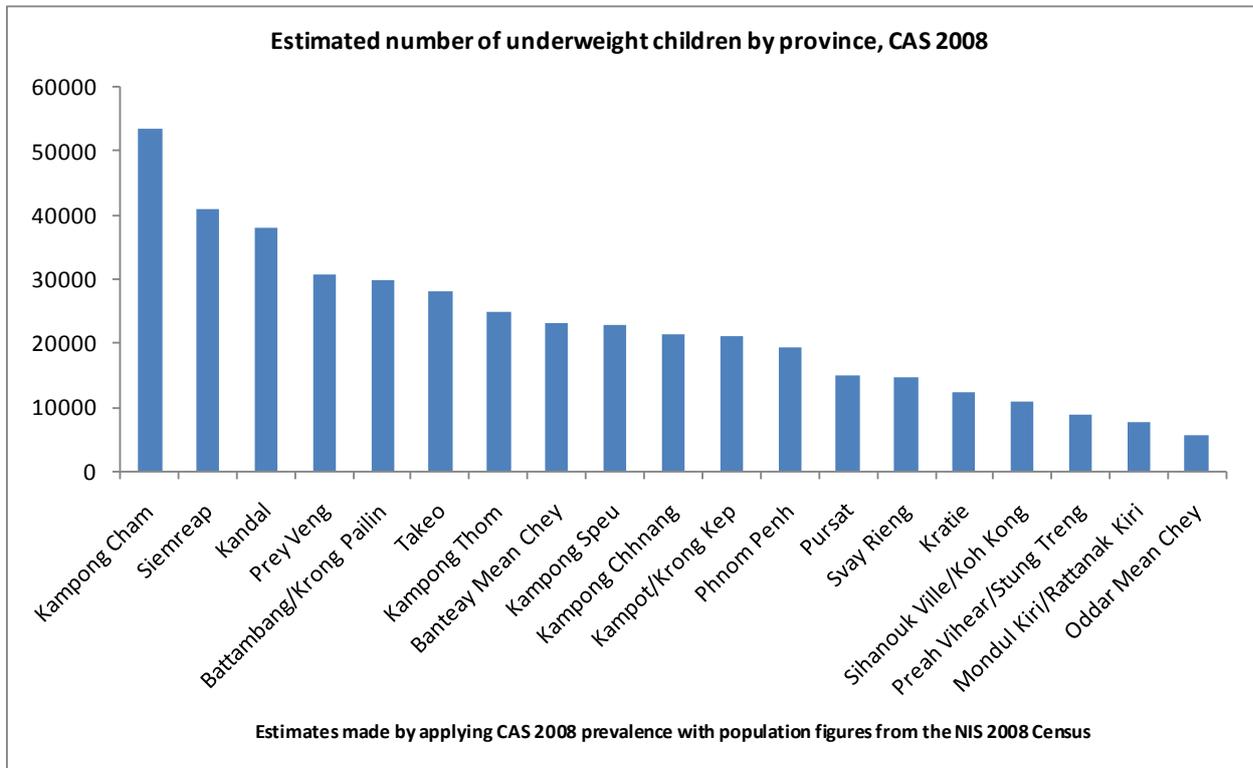
Figure 3-3 Number of stunted children

Estimated number of stunted children by province, CAS 2008

Estimates made by applying CAS 2008 prevalence to population figures from the NIS 2008 census
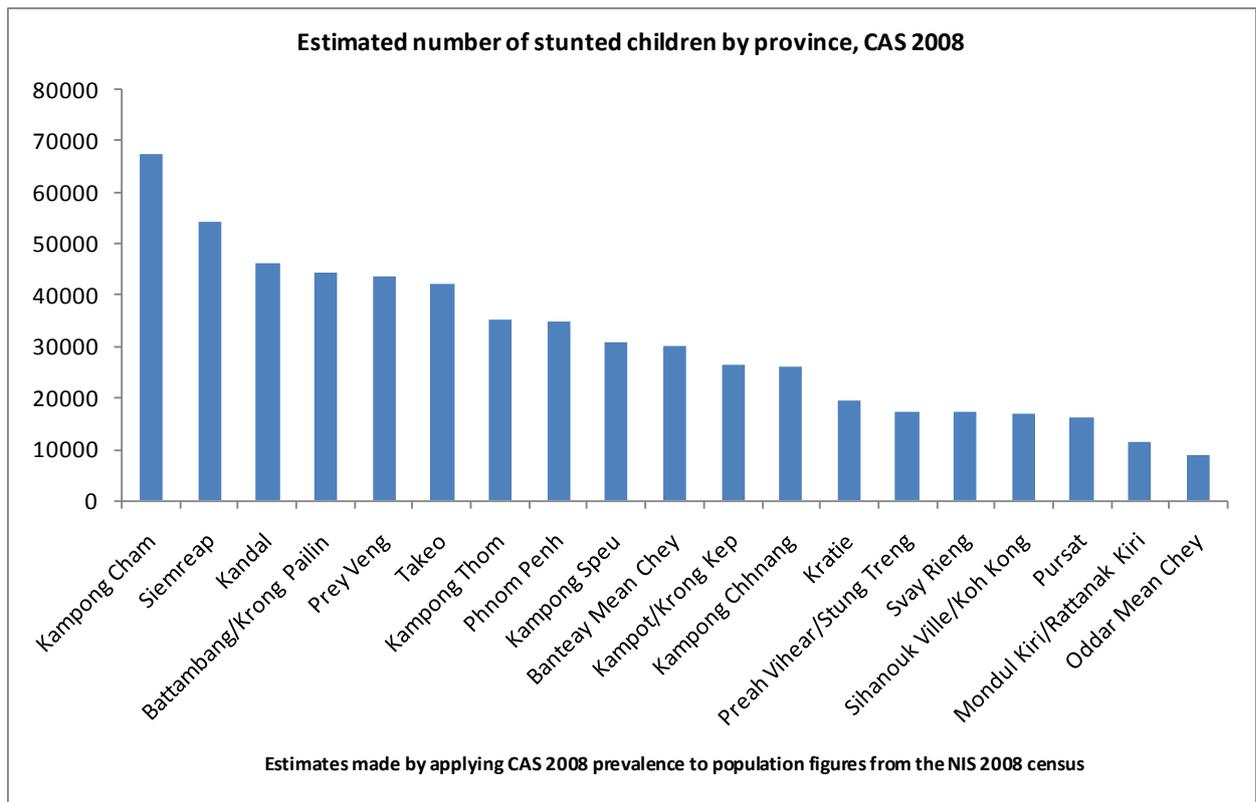
Figure 3-4 Trends in child anthropometry by domain (Coastal and Tonle Sap Regions)

Percentage of children wasted by province and region, DHS 2000/5 & CAS 2008
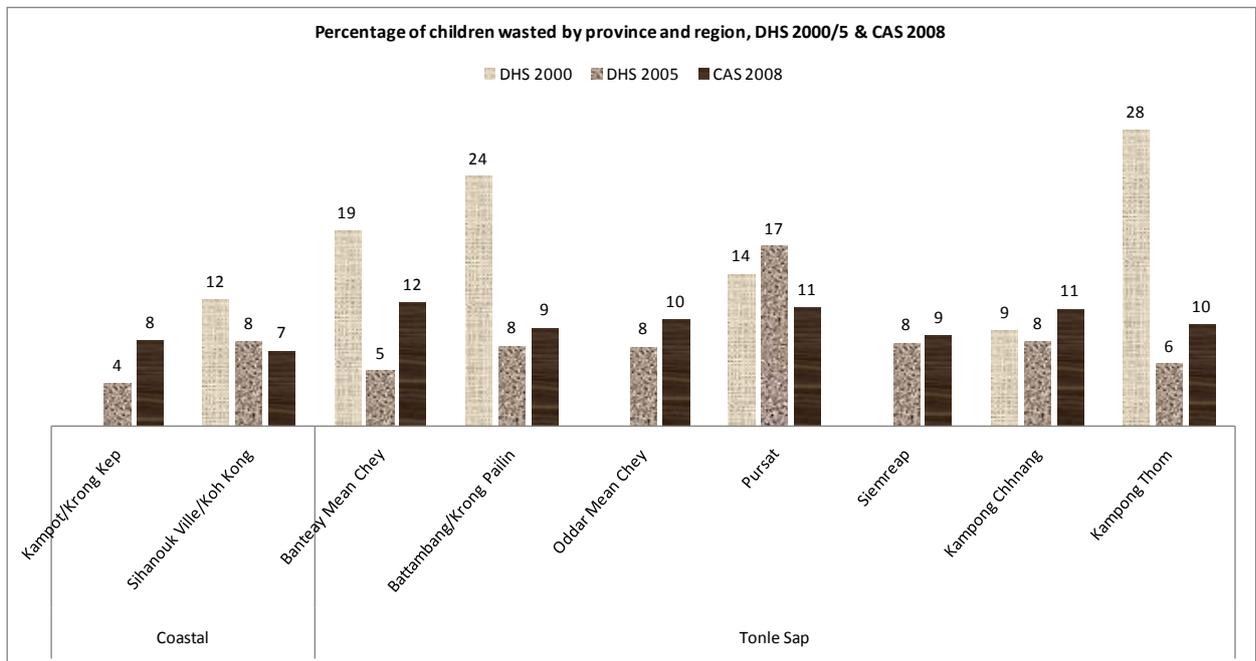
Figure 3-5 Trends in child anthropometry by domain (Plains and Plateau/Mountain Regions)

Percentage of children wasted by province and region, DHS 2000/5 & CAS 2008

DHS 2000 · DHS 2005 · CAS 2008
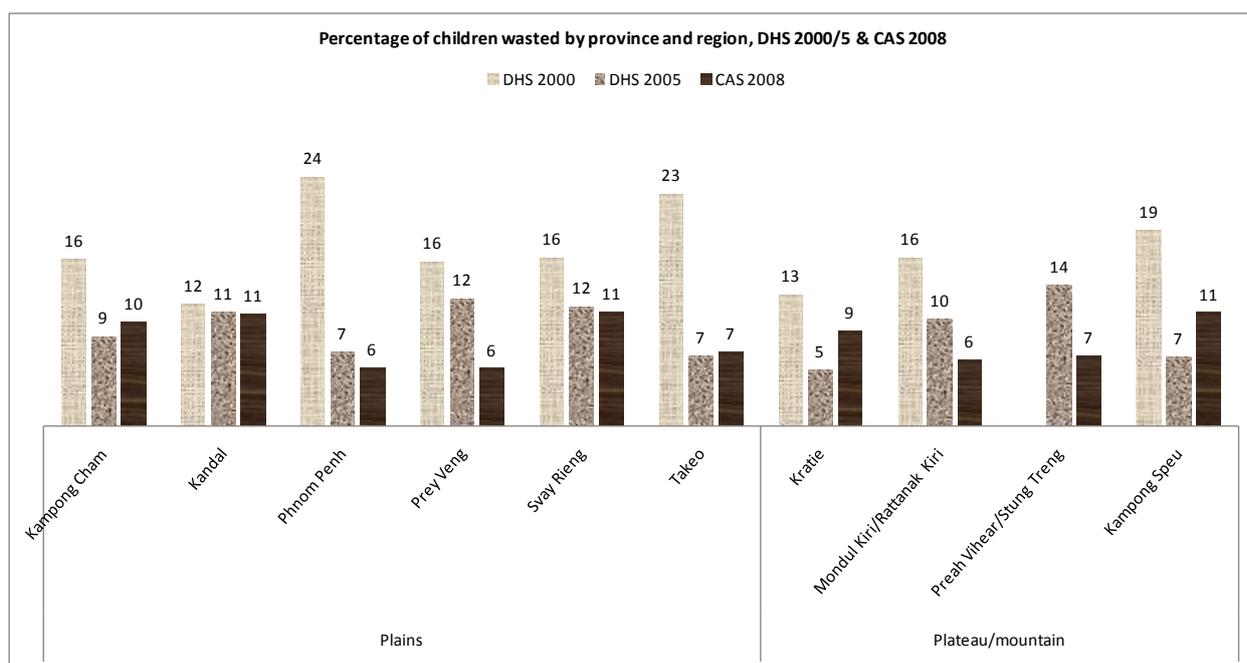
Table 3-2 Child anthropometry by occupation of father

Percentage of children under five years classified as malnourished according to three anthropometric indices of nutritional status by occupation of father, CAS 2008				
Occupation of Father	**<-2 standard deviations**			**Number of Children**
	Height for Age	Weight-for-Age	Weight-for-Height	
Armed Forces	31.5	28.3	6.6	92
Professional	28.2	19.9	6.2	337
Clerical	13.4	10.3	7.1	126
Sales	27.4	16.1	8.4	273
Self employed agricultural	41.6	30.9	9.2	3672
Employee agricultural	53.5	39.1	9.8	256
Skilled manual labor	36.9	25.8	9.8	1267
Unskilled manual labor	38.9	30.3	10.4	442
Total	39.0	28.6	9.1	6465

Table 3-3 Child anthropometry by occupation of mother

Occupation of Mother	<-2 standard deviations			Number of Children
	Height for Age	Weight-for-Age	Weight-for-Height	
Professional	32.1	16.7	7.5	54
Sales	34.5	27.4	9.1	591
Self employed agricultural	42.2	31.7	9.3	1490
Employee agricultural	55	41.6	7.9	190
Skilled manual labor	43.2	30.7	10.6	407
Unskilled manual labor	38.9	35.7	12	283
Total	41.2	31.4	9.6	3015

Percentage of children under five years classified as malnourished according to three anthropometric indices of nutritional status by current occupation of mother, CAS 2008

Table 3-4 Child anthropometry by type of land farmed

Type of Land	<-2 standard deviations			Number of Children
	Height for Age	Weight-for-Age	Weight-for-Height	
Own land	41.8	31.2	9.0	3498
Family land	39.2	27.3	12.6	199
Rented land	41.0	30.5	7.6	105
Someone else's land	44.2	36.0	9.7	267
Total	41.8	31.3	9.2	4068

Among farming families percentage of children under five years classified as malnourished according to three anthropometriic indices of nutritional status by ownership of land farmed, CAS 2008

Table 3-5 Child anthropometry by rice production

Type of Land	<-2 standard deviations			Number of Children
	Height for Age	Weight-for-Age	Weight-for-Height	
Net Rice Producer	39.2	27.2	7.5	1512
Net Rice Consumer	41.9	31.5	9.5	4289

Among rural households percentage of children under five years classified as malnourished according to three anthropometric indices of nutritional status by rice production, CAS 2008

Table 3-6 Child anthropometry by reported financial difficulties

Percentage of children under five years classified as malnourished according to three anthropometriic indices of nutritional status by reported financial difficulties, CAS 2008

Residence & Finances	<-2 standard deviations			Number of Children
	Height for age	Weight-for-Age	Weight-for-Height	
Urban, yes financial difficulties	38.2	27.4	10.8	628
Rural, yes financial difficulties	42.1	32.0	9.3	4603
Total Yes	41.6	31.5	9.5	5231
Urban, no financial difficulties	25.1	14.4	6.1	589
Rural, no financial difficulties	37.6	24.2	7.8	1198
Total No	33.4	21	7.2	1787

Table 3-7 Anthropometry of mothers by domain

Among women age 15 - 49 that have children under 5 years of age the percentage with height under 145 cm, mean body mass index (BMI), and the percentage with specific BMI levels by background characteristics, CAS 2008

| Province | Height | | Mean Body Mass Index (BMI) | Thin | | Obese | Number of Women |
	Percentage below 145 cm	Number of women		<18.5 (Total thin)	≤17.0 (moderately and severely thin)	≥ 30.0 (Obese)	
Banteay Mean Chey	5.0	318	22.1	10.7	1.1	2.8	292
Kampong Cham	5.2	918	21.3	16.1	4.4	1.6	810
Kampong Chhnang	6.3	278	20.9	18.8	4.0	0.3	239
Kampong Speu	6.3	439	20.8	18.4	3.0	0.6	383
Kampong Thom	7.5	194	21.1	16.1	3.4	0.8	171
Kandal	6.8	562	21.0	18.0	5.7	1.3	492
Kratie	5.6	164	21.1	17.4	2.4	1.3	144
Phnom Penh	4.5	655	21.8	11.9	2.4	1.3	602
Prey Veng	4.5	528	20.8	20.4	4.2	0.4	482
Pursat	7.4	186	21.1	13.1	3.9	0.5	167
Siemreap	6.9	572	21.4	15.7	3.1	1.5	465
Svay Rieng	8.2	258	20.3	22.5	5.1	0.8	238
Takeo	7.6	488	20.7	20.6	6.9	2.6	439
Oddar Mean Chey	6.0	85	21.1	12.3	2.4	0.7	75
Battambang/Krong Pailin	5.8	574	21.9	11.3	2.4	3.4	516
Kampot/Krong Kep	6.9	251	21.2	17.6	2.8	2.1	220
Sihanouk Ville/Koh Kong	6.4	173	21.6	14.8	3.4	1.7	151
Preah Vihear/Stung Treng	11.4	143	21.0	11.8	3.3	0.2	126
Mondul Kiri/Rattanak Kiri	16.1	100	20.9	14.7	3.2	0.3	85

Table 3-8 Child ARI by domain

Percentage of youngest children under age five with symptoms of ARI in the two weeks preceding the survey by background characteristics, CAS 2008		
	ARI in the two weeks preceding the survey	
Background characteristics	ARI	Number of Children
Province		
Banteay Mean Chey	22.9	318
Kampong Cham	20.7	897
Kampong Chhnang	14.3	276
Kampong Speu	16.7	437
Kampong Thom	20.5	194
Kandal	17.2	561
Kratie	14.9	162
Phnom Penh	3.0	665
Prey Veng	13.8	520
Pursat	12.5	185
Siemreap	22.4	563
Svay Rieng	14.6	256
Takeo	22.2	480
Oddar Mean Chey	18.2	84
Battambang/Krong Pailin	6.3	566
Kampot/Krong Kep	8.5	250
Sihanouk Ville/Koh Kong	23.3	172
Preah Vihear/Stung Treng	11.3	142
Mondul Kiri/Rattanak Kiri	17.1	98
Total	15.6	6826

Table 3-9 Child diarrhea by domain

Percentage of youngest children under age five who had diarrhea in the two weeks preceding the survey by background characteristics, CAS 2008			
	Diarrhea in the two weeks preceding the survey		
Background characteristics	All Diarrhea	Diarrhea with blood	Number of Children
Province			
Banteay Mean Chey	33.9	1.6	318
Kampong Cham	33.7	2.8	897
Kampong Chhnang	37.5	5.3	276
Kampong Speu	26.8	1.7	437
Kampong Thom	31.0	3.5	194
Kandal	28.8	2.6	561
Kratie	38.1	6.6	162
Phnom Penh	13.4	0.8	665
Prey Veng	33.9	4.3	520
Pursat	32.3	2.6	185
Siemreap	36.8	2.0	563
Svay Rieng	36.3	4.9	256
Takeo	29.4	2.7	480
Oddar Mean Chey	40.9	3.0	84
Battambang/Krong Pailin	20.8	3.0	566
Kampot/Krong Kep	21.5	2.9	250
Sihanouk Ville/Koh Kong	31.6	3.8	172
Preah Vihear/Stung Treng	30.5	2.0	142
Mondul Kiri/Rattanak Kiri	41.1	6.5	98
Total	30.0	2.9	6826

Table 3-10 Child fever by domain

Percentage of youngest children under age five who had fever in the two weeks preceding the survey by background characteristics, CAS 2008		
	Fever in the two weeks preceding the survey	
Background characteristics	Fever	Number of Children
Province		
Banteay Mean Chey	51.9	318
Kampong Cham	57.4	897
Kampong Chhnang	68.4	276
Kampong Speu	66.7	437
Kampong Thom	65.9	194
Kandal	61.7	561
Kratie	51.3	162
Phnom Penh	39.9	665
Prey Veng	68.6	520
Pursat	64.4	185
Siemreap	62.1	563
Svay Rieng	68.8	256
Takeo	72.2	480
Oddar Mean Chey	62.6	84
Battambang/Krong Pailin	48.0	566
Kampot/Krong Kep	52.5	250
Sihanouk Ville/Koh Kong	57.6	172
Preah Vihear/Stung Treng	49.8	142
Mondul Kiri/Rattanak Kiri	66.7	98
Total	58.9	6826

Table 3-11 Anthropometry of children in informal settlements of Phnom Penh

Percentage of malnourished children under five years residing in informal settlements of Phnom Penh according to WHO growth standards, CDHS 2008				
	< - 3 SD	< - 2 SD	Mean	n	SD
Weight-for-Age	6.3	22.1	-0.9	364	1.4
Weight-for-Height	2.5	8.6	-0.3	364	1.3
Height-for-Age	14.8	29.2	-1.2	364	1.8

Note: Caculations made using WHO syntax from www.who.int/childgrowth/software/en/index.html

Table 3-12 Anthropometry of mothers in informal settlements of Phnom Penh

Among women age 15 - 49 that have children under 5 years of age the percentage with height under 145 cm, mean body mass index (BMI), and the percentage with specific BMI levels in informal Settlements of Phnom Penh, CAS 2008

Height		Mean	Thin		Obese	Number
Percentage below 145 cm	Number of women	Body Mass Index (BMI)	<18.5 (Total thin)	≤17.0 (moderately and severely thin)	≥ 30.0 (Obese)	of Women
5.0	326	21.9	14.1	5.3	2.9	289

Table 3-13 Child disease in informal settlements of Phnom Penh

Percentage of youngest children under age five who had disease in the two weeks preceding the survey in informal settlements of Phnom Penh, CAS 2008

Type of Disease	%	n
ARI (2005 methodology)	10.3	335
ARI (2000 methodology)	15.5	335
Diarrhea	32.9	335
Diarrhea w/ Blood	4.2	335
Fever	33.4	335

Table 3-14 Child food consumption in informal settlements of Phnom Penh

The percentage of children 6-35 months living in informal settlements of Phnom Penh who consumed specific types of foods in the day or night preceding the interview and mean number of food groups consumed, CAS 2008

Organ meats	Vitamin A rich fruit	Cereals	Vitamin A rich vegetables	Flesh meats	Fish	Legumes & nuts	Misc.	Milk Products	Tubers	Other vegetables /fruits	Egg	Oils & Fats	Sweets	Mean Food Groups	Number of Children
5.3	8.5	84	42.2	49.5	49.1	8.3	17.7	33.4	9.5	46.5	26.1	9.5	36.7	4.26	335

Table 3-15 Low birth weight

Percentage of youngest children with reported low birth weight (<2.5kg) by background characteristics		
	Low Birth Weight	Population Size
National	8.9%	4227
Residence		
Urban	6.0%	1070
Rural	9.9%	3168
DOMAIN		
Banteay Mean Chey	10.0%	208
Kampong Cham	9.6%	585
Kampong Chhnang	7.4%	166
Kampong Speu	11.9%	213
Kapong Thom	9.8%	100
Kandal	7.9%	398
Kratie	13.3%	115
Phnom Penh	4.7%	648
Prey Veng	11.3%	294
Pursat	8.3%	116
Siemreap	10.3%	334
Svay Rieng	6.6%	113
Takeo	7.9%	276
Oddar Mean Chey	12.6%	43
Battambang/Krong Pailin	9.9%	278
Kampot/Krong Kep	6.9%	105
Sihanouk Ville/Koh Kong	8.7%	123
Preah Vihear/Stung Treng	13.2%	78
Mondul Kiri/Rattanak Kiri	15.5%	45
Wealth Index		
poorest	11.9%	553
2	12.3%	612
3	8.9%	810
4	8.3%	929
wealthiest	6.3%	1324

Table 4-1 Breastfeeding status

	Percent distrbution of youngest children living with their mother by breastfeeding status and the percentage currently breastfeeding according to age in months, CAS 2008								
			Breastfeeding and consuming:						
Age in months	Not breast-feeding	Exclusively breastfed	Plain water	Juice	Milk	Comple-mentary foods	Total	Currently breast feeding	Number of youngest children
0 - 3	5.4	74.3	11.3	0.3	4.0	4.9	100.0	94.6	616
0 - 5	5.8	65.9	12.1	0.7	3.3	12.2	100.0	94.3	929
6 - 9	10.7	3.5	8.7	1.2	0.2	75.7	100.0	89.3	673
12 - 15	19.0	0.3	1.0	0.0	0.0	79.6	100.0	81.0	783
12 - 23	35.5	0.2	0.9	0.0	0.1	63.3	100.0	64.5	2058
20 - 23	53.0	0.0	0.9	0.0	0.2	45.9	100.0	47.0	590

Figure 4-1 Breastfeeding status by age

Breastfeeding status of youngest children currently breastfeeding by age in months, CAS 2008
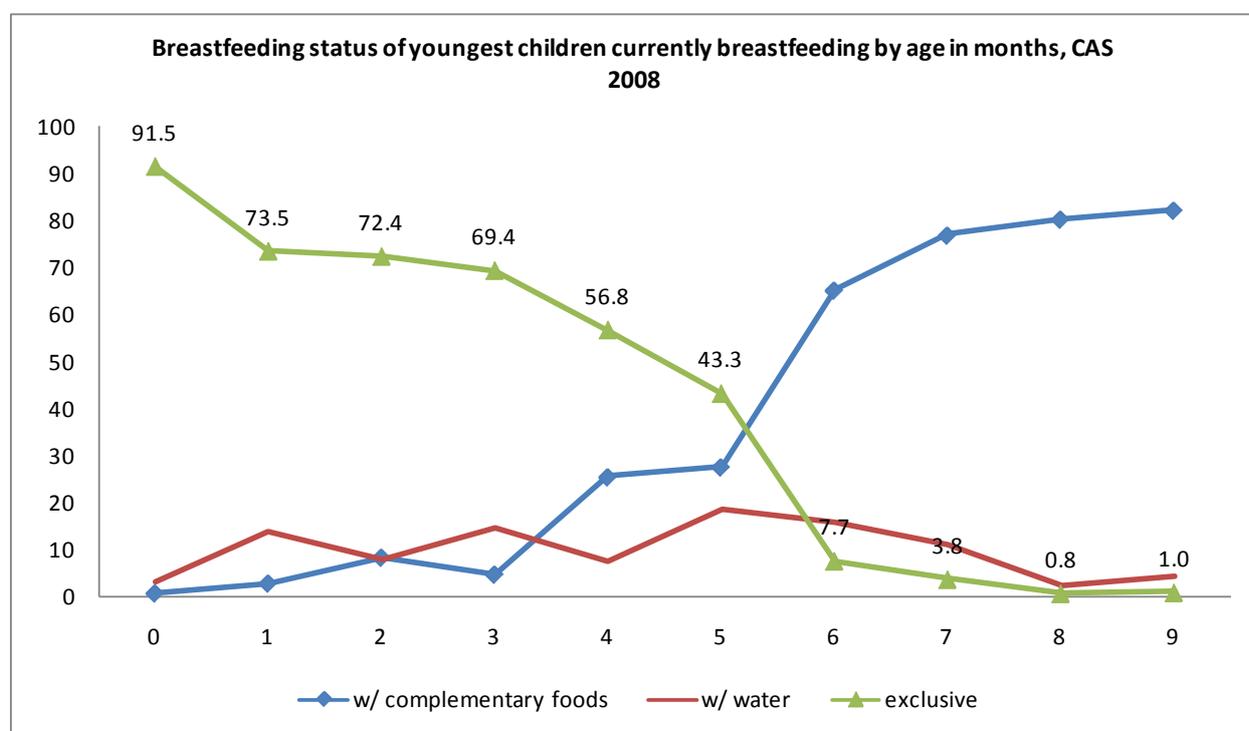
Table 4-2 Breastfeeding status by residence

	Percent distrbution of youngest children 0-5 months living with their mother by breastfeeding status and the percentage currently breastfeeding according to residence, CAS 2008								
			Breastfeeding and consuming:						
Residence	Not breast-feeding	Exclusively breastfed	Plain water	Juice	Milk	Comple-mentary foods	Total	Currently breast feeding	Number of youngest children
Urban	18.2	40.3	17.3	0.4	5.3	18.6	100.0	81.8	149
Rural	3.3	70.8	11.2	0.8	3.9	10.9	100.0	96.7	780
Total	5.8	65.9	12.1	0.7	3.3	12.2	100.0	94.3	929

Table 4-3 Breastfeeding status in informal settlements of Phnom Penh

Age in months	Percent distrbution of youngest children living with their mother in informal settlements of Phnom Penh by breastfeeding status and the percentage currently breastfeeding according to age in months, CAS 2008								
			Breastfeeding and consuming:						
	Not breast-feeding	Exclusively breastfed	Plain water	Juice	Milk	Comple-mentary foods	Total	Currently breast-feeding	Number of youngest children
0 - 5	18.7	37.6	19.2	0.0	7.9	16.7	100.0	81.3	42
12 - 23	53.1	2.5	0.0	0.0	0.0	44.4	100.0	46.9	93

Figure 4-2 Child mean food group consumption by age in months

Mean food group consumption of youngest child by age in months, CAS 2008
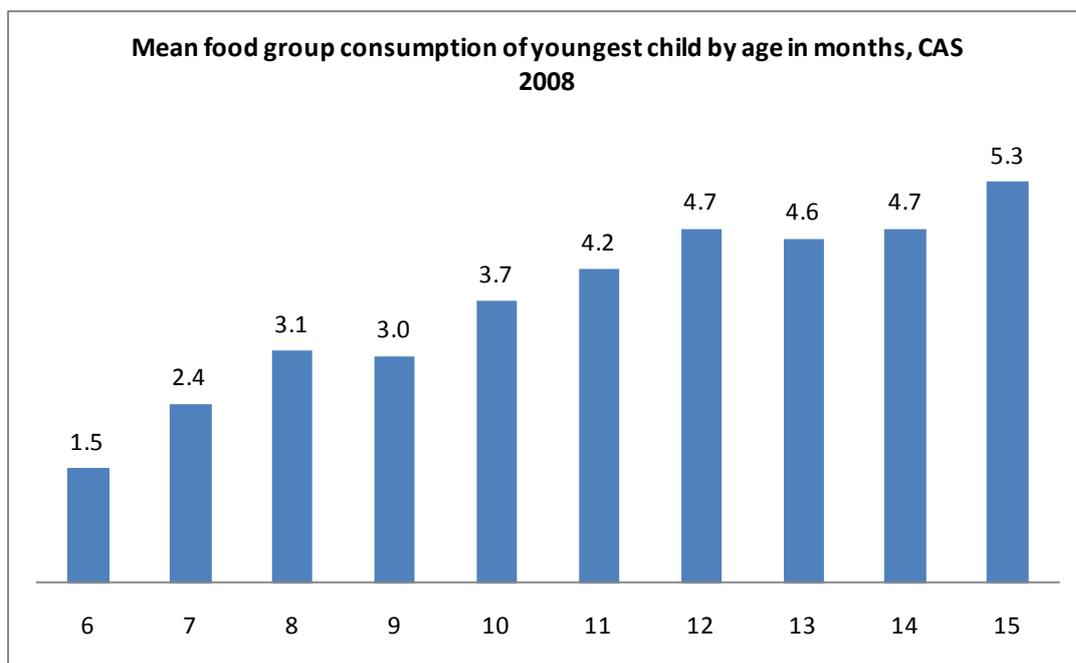
Table 5-1 Child health services

Percentage of youngest children age 6-59 months living with their mother, who received vitamin A supplements and who received deworming medication in the six months preceding to the survey by background characteristics, CAS 2008

Background characteristics	Vitamin A			Deworming		
	Percentage who received Vitamin A	Percentage of Don't Know	Number of Children	Percentage who received Deworming	Percentage of Don't Know	Number of Children
Age in months						
6 - 11	59.3	7.2	1006	n/a	n/a	n/a
12 - 23	65.4	10.5	1891	32.9	0.4	1891
24 - 35	59.2	15.5	1286	41.7	1.3	1286
36 - 47	54.0	16.4	980	47.3	0.5	980
48 - 59	51.6	16.3	741	44.8	2.4	741
Residence						
Urban	43.4	36.5	1000	26.9	0.4	849
Rural	62.6	7.9	4906	42.7	1.1	4051
Province						
Banteay Mean Chey	81.8	4.0	271	38.2	0.0	218
Kampong Cham	70.7	0.8	781	32.4	0.0	633
Kampong Chhang	73.6	0.9	234	27.9	0.6	188
Kampong Spue	72.7	1.1	370	42.1	6.0	310
Kapong Thom	60.9	13.3	171	54.2	0.0	135
Kandal	67.3	4.2	487	42.1	0.4	418
Kratie	49.4	6.0	133	28.1	1.5	110
Phnom Penh	22.2	68.9	575	14.7	0.9	499
Prey Veng	74.3	0.6	451	63.8	0.5	375
Pursat	57.6	17.6	158	50.3	0.0	127
Siemreap	41	26	474	33.6	1.2	402
Svay Rieng	67.6	1.9	223	58.2	0.0	170
Takeo	62.1	12	441	41.4	1.1	385
Oddar Mean Chey	50.4	5.7	66	33.2	0.1	52
Battambang/Krong Pailin	49.7	1.6	498	54.5	1.3	403
Kampot/Krong Kep	64.1	13.5	219	37.9	0.9	176
Sihanouk Ville/Koh Kong	71.7	2.0	142	47.8	0.2	116
Preah Vihear/Stung Treng	51.8	19.5	124	55.9	1.7	110
Mondul Kiri/Rattanak Kiri	36.2	0.4	80	17.1	0.0	65
Wealth quintile						
Lowest	58.9	6.6	1100	38.7	0.3	893
Second	63.6	7.2	1061	42.1	0.3	872
Middle	62.7	7.3	1216	40.6	1.2	1011
Fourth	61.3	10.2	1220	42.4	1.9	1022
Highest	51.4	29.9	1301	36.2	1.1	1094
Total	**59.4**	**12.7**	**5907**	**39.9**	**1.0**	**4900**

Table 5-2 Maternal health services

Percentage of women age 15-49 with a child born in the past five years, who received vitamin A dose in the first six weeks after the birth of the last child, the percentage of women who received deworming medication and the percentage who took iron tablets or syrup, by background characteristics, CAS 2008

Background characteristics	Percen-tage who received Vitamin A	Deworming		Percen-tage who received postpartum iron	Number of women	Number of days women took Iron tablets or syrup during pregnancy					Number of women
		Percen-tage who received Deworming	Percen-tage of Don't Know			None	<60	60-89	>90	Don't Know	
Mother's age											
15 - 19	36.8	31.7	0.0	27.9	179	17.9	25.9	19.0	37.1	0.0	179
20 - 29	45.3	33.7	1.0	35.6	3970	11.7	24.0	20.4	42.7	1.3	3970
30 - 39	42.3	29.0	1.4	29.7	2023	17.6	27.6	18.6	35.0	1.3	2023
40 - 49	40.7	25.0	1.3	30.6	636	23.6	22.3	18.0	34.8	1.3	636
Residence											
Urban	60.0	20.8	1.1	39.1	1141	8.7	25.1	34.2	31.5	0.5	4148
Rural	40.4	33.6	1.1	32.0	5667	16.0	24.9	16.6	41.1	1.4	5677
Province											
Banteay Mean Chey	44.2	51.7	0.9	44.4	317	7.0	9.6	7.4	76.0	0.0	318
Kampong Cham	42.0	17.4	0.2	31.1	897	17.9	41.7	11.6	28.8	0.0	897
Kampong Chhang	34.1	36.9	1.6	21.8	275	12.1	36.7	19.4	29.5	2.4	276
Kampong Spue	28.5	38.0	5.1	22.5	434	11.0	18.9	21.8	48.3	0.0	437
Kapong Thom	25.3	37.6	0.0	22.9	193	24.1	16.0	14.7	44.1	1.1	194
Kandal	30.6	17.4	1.3	27.6	560	15.4	30.4	21.3	29.7	3.2	561
Kratie	50.6	33.5	0.4	47.4	161	23.8	29.1	15.0	31.7	0.5	162
Phnom Penh	85.9	8.3	1.7	41.5	660	4.9	26.0	52.8	15.9	0.3	665
Prey Veng	56.5	56.2	0.0	40.7	518	8.8	13.5	14.6	63.0	0.0	520
Pursat	47.1	65.1	1.5	44.4	184	7.9	10.7	15.3	65.6	0.6	185
Siemreap	30.5	21.5	0.2	38.6	562	27.5	19.7	15.3	34.0	3.5	563
Svay Rieng	38.5	36.0	0.7	37.2	255	5.8	17.2	24.9	50.9	1.1	256
Takeo	44.8	28.9	2.0	30.6	479	5.5	29.8	18.2	45.4	1.1	480
Oddar Mean Chey	38.8	41.4	0.8	27.1	84	25.4	18.0	13.5	42.9	0.3	84
Battambang/Krong Pailin	44.3	41.8	0.5	25.8	564	17.2	24.8	14.8	41.9	1.3	566
Kampot/Krong Kep	32.0	35.2	1.5	29.3	246	18.7	20.8	11.6	42.0	7.0	250
Sihanouk Ville/Koh Kong	30.0	30.2	0.9	29.1	171	26.8	20.8	12.9	38.9	0.6	172
Preah Vihear/Stung Treng	55.0	59.0	0.7	53.7	141	21.4	22.8	25.2	28.8	1.8	142
Mondul Kiri/Rattanak Kiri	16.6	17.8	0.6	12.4	98	40.8	28.0	13.4	17.4	0.3	98
Wealth quintile											
Lowest	39.5	32.0	0.4	31.0	1315	23.4	25.2	15.4	34.5	1.5	1316
Second	37.9	33.6	0.5	29.3	1224	19.8	25.2	15.0	38.6	1.3	1228
Middle	41.1	33.1	1.0	31.3	1389	15.8	27.0	15.5	41.0	0.6	1392
Fourth	42.1	32.3	1.6	35.2	1401	11.1	25.3	20.1	41.7	1.8	1407
Highest	56.5	26.7	1.9	38.4	1467	5.5	22.3	30.4	40.6	1.2	1473
Total	43.7	31.4	1.1	33.2	6809	14.7	24.9	19.6	39.5	1.3	6809

Table 5-3 Antenatal care visits

Percent distribution of women who had a live birth in the five years preceding the survey by number of antenatal care (ANC) visits for the most recent birth, CAS 2008						
Background characteristics	None	1	2 to 3	4 or more	Don't Know	Number of women
Mother's age						
15 - 19	7.2	13.2	36.1	43.5	-	179
20 - 29	8.2	5.9	34.2	51.2	0.5	3970
30 - 39	14.2	7.0	35.9	42.6	0.3	
40 - 49	18.9	6.1	36.3	37.8	1.0	636
Residence						
Urban	3.2	2.4	21.0	73.0	0.4	1148
Rural	12.6	7.2	37.8	41.9	0.5	5677
Province						
Banteay Mean Chey	6.6	3.7	33.9	55.8	-	317
Kampong Cham	11.2	7.6	42.4	38.4	0.3	897
Kampong Chhang	9.0	6.8	30.8	53.4	-	276
Kampong Spue	10.4	5.2	39.5	44.2	0.7	436
Kapong Thom	20.0	8.9	35.0	35.6	0.5	193
Kandal	9.4	4.6	36.3	48.7	1.0	560
Kratie	23.3	12.0	44.2	20.5	-	162
Phnom Penh	2.6	2.7	17.5	76.9	0.2	665
Prey Veng	12.7	13.0	47.6	26.7	-	519
Pursat	5.9	3.0	32.4	58.1	0.6	185
Siemreap	12.2	5.7	31.2	50.3	0.6	562
Svay Rieng	5.3	5.2	32.6	56.4	0.6	255
Takeo	6.3	3.9	43.4	45.9	0.5	479
Oddar Mean Chey	20.2	11.1	32.1	35.2	1.4	84
Battambang/Krong Pailin	15.6	6.2	22.0	55.8	0.3	566
Kampot/Krong Kep	18.1	7.3	38.6	35.2	0.7	249
Sihanouk Ville/Koh Kong	17.7	8.6	24.5	47.2	2.0	172
Preah Vihear/Stung Treng	4.4	10.4	56.8	28.0	0.4	142
Mondul Kiri/Rattanak Kiri	39.2	5.4	33.6	21.7	-	98
Wealth quintile						
Lowest	20.4	9.3	40.7	29.1	0.5	1316
Second	17.3	7.3	38.2	36.7	0.6	1227
Middle	11.2	7.6	38.2	42.8	0.3	1391
Fourth	6.8	5.4	34.2	53.1	0.5	1406
Highest	1.4	3.0	24.9	70.3	0.4	1472
Total	11.0	6.4	34.9	47.2	0.4	6826

Table 5-4 Iodized salt

Percent distribution of households with salt tested by presence of iodine in salt, according to backround charateristics, CAS 2008				
	Household with salt tested			
Backround characteristic	Percentage with no iodine	Percentage with iodine present	Total	Number of households
Rsidence				
Urban	13.8	86.2	100.0	1220
Rural	31.4	68.6	100.0	6208
Province				
Banteay Mean Chey	22.6	77.4	100.0	368
Kampong Cham	24	76	100.0	1047
Kampong Chhnang	20.5	79.5	100.0	281
Kampong Speu	21.5	78.5	100.0	471
Kampong Thom	22.7	77.3	100.0	202
Kandal	34.6	65.4	100.0	655
Kratie	16.1	83.9	100.0	170
Phnom Penh	5.9	94.1	100.0	656
Prey Veng	34.6	65.4	100.0	580
Pursat	27.4	72.6	100.0	190
Siem Reap	28.3	71.7	100.0	595
Svay Rieng	77.5	22.5	100.0	288
Takeo	38.2	61.8	100.0	522
Otdar Mean Chey	35.7	64.3	100.0	90
Battambang & Krong Pailin	32	68	100.0	591
Kampot & Krong Kep	53.2	46.8	100.0	278
Preah Sihanouk & Kaoh Kong	12.3	87.7	100.0	190
Preah Vihear & Steung Treng	13.3	86.9	100.0	145
Mondol Kiri & Rattanak Kiri	26.3	73.7	100.0	109
Wealth quinitile				
Lowest	31.4	68.6	100.0	1412
Second	33.7	66.3	100.0	1347
Middle	33.4	66.6	100.0	1531
Fourth	28.4	71.6	100.0	1564
Highest	16.6	83.4	100.0	1571
Total	28.5	71.5	100.0	7428

1.6 Survey Questionnaire

<table>
<tr><td>**CONFIDENTIAL**
All information collected in this survey is strictly confidential and will be used for statistical purposes only</td><td>Royal Government of Cambodia
Ministry of Planning
National Institute of Statistics</td><td>Household ID</td></tr>
</table>

CAMBODIA ANTHROPOMETRIC SURVEY 2008

A. To be completed by interviewer before interview		
Province /City		
District /Khan		
Commune/Sankat		
Sample Village/Mondol		
Zone		
Sector (Urban=1, Rural=2)		
Sample reference number of household		

B. To be completed by interviewer			
Name of household head		Phone:	
Address (house No., street….) of other identification)			
Date of visit to Household		Day: Month: Year:	
Team Number		Interviewer's Id:	
Interviewer's name:		Interviewer's signature:	

Reception		Preparation		Data Entry	
Id:	Date:	Id:	Date:	Id:	Date

Result Codes	Survey Result	Total Mothers/Caretakers
1 COMPLETED		
2 ENTIRE HOUSEHOLD ABSENT FOR EXTENDED PERIOD OF TIME	record after completing all interviews	record after listing mothers / caretakers
3 REFUSED		
4 DWELLING NOT FOUND, VACANT or DESTROYED		
9 OTHER		

Section 1 : Household

Record all of the birth mothers of children under 5 (0-59 months) who are currently living in the household
Record caretaker 101, 102 and 103 if child's birth mother deceased or no longer living in the household

101 Mother or Caretaker Name	102 Relationship to Head of Household	103 Age	104 Weight (kg)	105 Height (cm)	106 MUAC (cm)
No. 1	☐☐	☐☐	☐☐☐.☐	☐☐☐.☐	☐☐.☐
No. 2	☐☐	☐☐	☐☐☐.☐	☐☐☐.☐	☐☐.☐
No. 3	☐☐	☐☐	☐☐☐.☐	☐☐☐.☐	☐☐.☐
No. 4	☐☐	☐☐	☐☐☐.☐	☐☐☐.☐	☐☐.☐

Relationship Codes

1 Head	6 Parent	11 Parent-in-Law	*If more than*
2 Spouse	7 Sibling	12 Other Relatives	*4 listed,*
3 Daughter	8 Grandchild	13 Servant	*use separate*
4 Stepchild	9 Niece	14 Other non-relative	*questionnaire,*
5 Adopted Child/Foster Child	10 Sister-in-Law		*and change*
			row numbers

For a child with no birth mother to be interviewed continue section one,
go to section two and follow the directions at the top of the page for "no mother to be interviewed."
If a mother has both her own child and is a caretaker of another child, she is listed twice and separate interviews do

Section 1. Household

107	Does your household have:		YES	NO
	Electricity?	ELECTRICITY	1	2
	A radio?	RADIO	1	2
	A television?	TELEVISION	1	2
	A mobile telephone?	MOBILE TELEPHONE	1	2
	A refrigerator?	REFRIGERATOR	1	2
	A wardrobe?	WARDROBE	1	2
	A Sewing machine or loom?	SEWING MACHINE	1	2

108	MAIN MATERIAL OF THE ROOF.	NATURAL ROOFING	
		NO ROOF	11
	RECORD OBSERVATION.	PALM/BAMBOO/THATCH	12
		RUDIMENTARY ROOFING	
		PLASTIC SHEET	21
		WOOD PLANKS	22
		FINISHED ROOFING	
		METAL	31
		CALAMINE/CEMENT FIBER	32
		CERAMIC TILES	33
		CLAY TILES	34
		CEMENT	35
		OTHER _____	96
		(SPECIFY)	

109	Does any member of this household own:		YES	NO
	A bicycle or cyclo?	BICYCLE/CYCLO	1	2
	A motorcycle or moped or motor scooter?	MOTORCYCLE/SCOOTER ...	1	2
	A car or truck or van?	CAR/TRUCK/VAN	1	2
	A boat with a motor?	BOAT WITH MOTOR	1	2
	A boat without a motor?	BOAT WITHOUT MOTOR ...	1	2
	An oxcart or horsecart?	OXCART	1	2

110	Does any member of this household own any land that can be used for agriculture? *Khmer translation "have or operate" for "own"*	YES .... 1 NO 2	→ 112

111	How many square meters of agricultural land do members of this household own?	☐☐☐☐☐☐.☐ square meters	

112	Does this household own any livestock, herds, or farm animals? *DHS Khmer translation of "own" is more like "have or feed"*	YES .... 1 NO 2	→ 114

113	How many of the following animals does this household own:		
	Water buffalo?	WATER BUFFALO	☐☐
	Cows or bulls?	COWS/BULLS	☐☐
	Horses?	HORSES	☐☐
	Goats?	GOATS	☐☐
	Pigs?	PIGS	☐☐
	Chickens or ducks?	CHICKENS/DUCKS	☐☐
	IF NONE, ENTER '00'. IF MORE THAN 97, ENTER '97'. IF UNKNOWN, ENTER '98'.		

114	During the last 12 months did your family buy rice or borrow rice from other people →	YES…………………………………... 1 NO………………………………….. 2 →		⇒ 116
115	In the last 12 months, for how many months did your family buy rice or borrow rice from other people?	# of months ☐ ☐		
116	During the past month have their been times when you did not have enough money to buy food or cover other essential expenditures (health, cooking fuel, school, etc)?	YES…………………………………... 1 NO…………………………………….. 2		

117	Has anyone in your household done any of the following things during the past 30 days?	**ask for each row using provided codes;** → **one number per row**	1 every day 4 hardly at all 2 pretty often 5 never 3 once a while
a.	Rely on less preferred and less expensive food	a………………….. ☐	
b.	Borrow food or rely on help from friends or relatives	b………………….. ☐	
c.	Purchase food on credit, incur debts	c………………….. ☐	
d.	Reduce food eaten in a day	d………………….. ☐	
e.	Restrict consumption by adults in order for small children to eat	e………………….. ☐	
f.	Mothers and/or elder sisters eat less than other HH members	f………………….. ☐	
g.	Consume seed stocks held for the next season	g………………….. ☐	
h.	Decrease expenditure for fertilizer, pesticide, fodder, animal feed, vet. care	h………………….. ☐	
i.	Sell domestic assets (radio, furniture, carpet)	i………………….. ☐	
j.	Sell productive assets (farm implements, sewing machine, motorbike)	j………………….. ☐	
k.	Sell land	k………………….. ☐	
l.	Sell jewellery	l………………….. ☐	
m.	Sell more animals than usual	m………………….. ☐	
n.	Decrease expenditures for health care	n………………….. ☐	
o.	Take children out of school	o………………….. ☐	
p.	Seek alternative or additional jobs	p………………….. ☐	
q.	Increase the number of members out-migrating for work and/or food	q………………….. ☐	
r.	Increase exploitation of common property resources (fishing, foraging, etc)	r………………….. ☐	
s.	Plant more/new crops to cope with high food prices	s………………….. ☐	
118	ASK RESPONDENT FOR A TEASPOONFUL OF COOKING SALT. TEST SALT FOR IODINE.	IODINE PRESENT ……………… 1 NO IODINE ……………………… 2 NO SALT IN HH ………………… 3 SALT NOT TESTED _____ 6 (SPECIFY REASON)	

| 201 If birth mother, Line Number from Column 101 | | If caretaker, use codes: deceased 7 / not living in household 8 | If no birth mother to be interviewed, fill out 204, 205, 207, 208, 211, 212, 213, 214, 215 and end the interview | | | | | | | | | | *Record twins and triplets on separate lines* |

Now I would like to record the names of all your births in the last 5 years, whether still alive or not, starting from November of 2003. Start with the oldest.

202 What name was given to your (first/next) baby? (NAME)	203 Were any of these births twins?	204 Is (NAME) a boy or a girl?	205 In what month and year was (NAME) born? PROBE: What is his/her birthday? IF GREG. DATE OF BIRTH IS NOT KNOWN, ASK FOR THE KHMER DATE OF BIRTH AND CONVERT.	206 Is (NAME) still alive?	207 IF ALIVE: How old was (NAME) at his/her last birthday? RECORD AGE IN COMPLETED YEARS.	208 IF ALIVE: Is (NAME) living with you?	209 IF DEAD: How much time passed between the birth and death of (NAME)? IF '1 YR', PROBE: How many months old was (NAME)? RECORD DAYS IF LESS THAN 1 MONTH; MONTHS IF LESS THAN TWO YEARS; YEARS IF MORE	210 Were there any other live births between (NAME OF PREVIOUS BIRTH) and (NAME), including any children who died after birth?	211 Weight (kg)	212 Height (cm)	213 Measured lying down or standing up	214 MUAC (cm) DO NOT MEASURE IF LESS THAN 3 MONTHS OF AGE	215 Result 1 measured 2 not present 3 refused 6 other
01	SING 1 / MULT 2	BOY 1 / GIRL 2	DAY .... / MONTH . / YEAR ...	YES .. 1 / NO ... 2 → 209	AGE IN YEARS	YES ... 1 / NO 2	DAYS ... 1 / MONTHS 2 / YEARS .. 3	go to next child			lying 1 / standing 2		
02	SING 1 / MULT 2	BOY 1 / GIRL 2	DAY .... / MONTH . / YEAR ...	YES .. 1 / NO ... 2 → 209	AGE IN YEARS	YES ... 1 / NO 2	DAYS ... 1 / MONTHS 2 / YEARS .. 3	YES ... 1 / NO .... 2 **next child**			lying 1 / standing 2		
03	SING 1 / MULT 2	BOY 1 / GIRL 2	DAY .... / MONTH . / YEAR ...	YES .. 1 / NO ... 2 → 209	AGE IN YEARS	YES ... 1 / NO 2	DAYS ... 1 / MONTHS 2 / YEARS .. 3	YES ... 1 / NO .... 2 **next child**			lying 1 / standing 2		
04	SING 1 / MULT 2	BOY 1 / GIRL 2	DAY .... / MONTH . / YEAR ...	YES .. 1 / NO ... 2 → 209	AGE IN YEARS	YES ... 1 / NO 2	DAYS ... 1 / MONTHS 2 / YEARS .. 3	YES ... 1 / NO .... 2 **next child**			lying 1 / standing 2		
05	SING 1 / MULT 2	BOY 1 / GIRL 2	DAY .... / MONTH . / YEAR ...	YES .. 1 / NO ... 2 → 209	AGE IN YEARS	YES ... 1 / NO 2	DAYS ... 1 / MONTHS 2 / YEARS .. 3	YES ... 1 / NO .... 2 **next child**			lying 1 / standing 2		

If more than 5 children born in the last five years use separate questionnaire, and change row numbers

COMPARE AGE (207) TO DATE (205) WITH AGE CHART AND CORRECT IF INCONSISTENT.

Section 2.A. General Information

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
216	In what month and year were you born?	GREGORIAN MONTH .... ☐☐ GREGORIAN YEAR .... ☐☐☐☐	
217	How old were you at your last birthday? IF GREGORIAN DATE IS RECORDED IN 216, COMPARE AGE TO DATE AND CORRECT 103, 216 AND/OR 217 IF INCONSISTENT. IF RESPONDENT DOES NOT KNOW HER AGE, ASK FOR KHMER DATE OF BIRTH AND RECORD RESPONSE. _____ (specify khmer month & year of birth) USE DATE CONVERSION CHART TO CALCULATE CORRECT AGE FOR HER BIRTHDATE. RECORD THAT AGE IN BOXES ON THE RIGHT.	AGE IN COMPLETED YEARS ☐☐	
218	Have you ever attended school?	YES .... 1 NO 2	→ 221
219	What is the highest level of school you attended: primary, lower secondary, upper secondary, or higher?	PRIMARY .... 1 LOWER SECONDARY .... 2 UPPER SECONDARY .... 3 HIGHER 4	
220	What is the highest grade you completed at that level?	GRADE .... ☐☐	
221	What is your current marital status?	MARRIED/LIVING TOGETHER.......….............. 1 DIVORCED/SEPARATED................................ 2 WIDOWED... 3 NEVER MARRIED/PARTNER..................... 4	→ 225
222	Did your (last) husband/partner ever attend school?	YES .... 1 NO .... 2 DON'T KNOW.................................. 8	224 →
223	What was the highest level of school he attended: primary, lower secondary, upper secondary, or higher?	PRIMARY .... 1 LOWER SECONDARY .... 2 UPPER SECONDARY .... 3 HIGHER .... 4 DON'T KNOW 8	
224	What is/was your husband's/partner's occupation? That is, what kind of work does he mainly do?	☐☐☐ _____ _____	

225	Aside from your own housework, have you done any work in the last seven days?	YES . . . . 1 NO 2	→ 227
226	As you know, some women take up jobs for which they are paid in cash or kind. Others sell things, have a small business or work on the family farm or in the family business. In the last seven days, have you done any of these things or any other work?	YES . . . . 1 NO 2	→ 228
227	What is your occupation, that is, what kind of work do you mainly do?	_____ ☐☐☐ _____ _____	

228	CHECK 224 and 227:
	     IF EITHER IF BOTH
	       WORK IN DO NOT WORK
	     AGRICULTURE IN AGRICULTURE ———————————————
			→ 230

229	Do you or your husband work mainly on your own land or on family land or do you work on land that you rent from someone else, or do you work on someone else's land?	OWN LAND . . . . 1 FAMILY LAND . . . . 2 RENTED LAND . . . . 3 SOMEONE ELSE'S LAND 4	

65

Section 2 B. Health

230	Are you pregnant now?	YES . . . . 1 NO . . . . 2 UNSURE 8	
	Now I would like to ask you some questions about your LAST pregnancy, that of (Name)		

231	Did you see anyone for antenatal care for your last pregnancy?
	
	 IF YES: Whom did you see?
	                Anyone else?
	
	 PROBE FOR THE TYPE OF PERSON AND RECORD ALL PERSONS SEEN.
		HEALTH PROFESSIONAL
		   DOCTOR/MEDICAL
		      ASSISTANT . . . 1
		   NURSE 2
		   MIDWIFE 3
		 OTHER PERSON
		   TRADITIONAL BIRTH
		      ATTENDANT . 4
		   OTHER _____ 8
		            (SPECIFY)
		 NO ONE 9
			→ 233

232	How many times did you receive antenatal care during your last pregnancy?	NUMBER OF TIMES . ☐☐	
233	During your last pregnancy, were you given or did you buy any iron tablets? SHOW TABLETS.	YES . . . . 1 NO . . . . 2 DON'T KNOW . . . 8	→ 235
234	During the whole pregnancy, for how many days did you take the tablets? IF ANSWER IS NOT NUMERIC, PROBE FOR APPROXIMATE NUMBER OF DAYS.	NUMBER DAYS ☐☐☐ DON'T KNOW . . . 998	
235	During your last pregnancy, did you take any drug for intestinal parasites? SHOW TABLETS	YES . . . . 1 NO . . . . 2 DON'T KNOW 8	
236	During your last pregnancy, did you have difficulty with your vision during daylight?	YES . . . . 1 NO . . . . 2 DON'T KNOW 8	
237	During your last pregnancy, did you have difficulty with your vision during nighttime?	YES . . . . 1 NO . . . . 2 DON'T KNOW 8	
238	In the first 6 weeks after delivery, did you receive a vitamin A dose like this? SHOW CAPSULE.	YES . . . . 1 NO 2	
239	In the first two months after delivery, did you receive iron tablets? SHOW TABLETS	YES . . . . 1 NO . . . . 2 DK 8	

	Now I would like to ask you some questions about your last-born child, (Name)		
240	Was (NAME) weighed at birth?	YES . . . . 1 NO . . . . 2 (SKIP TO 242) ◁┤ DON'T KNOW 8	
241	How much did (NAME) weigh? RECORD WEIGHT IN KILOGRAMS FROM HEALTH CARD, IF AVAILABLE.	KG FROM CARD 1 ☐ . ☐☐ KG FROM RECALL 2 ☐ . ☐☐	
242	Has (NAME) had diarrhea in the last 2 weeks?	YES . . . . 1 NO . . . . 2 (SKIP TO 245) ◄┤ DON'T KNOW 8	
243	Was there any blood in the stools?	YES . . . . 1 NO . . . . 2 DON'T KNOW 8	
244	Does (NAME) still have diarrhea? →	YES . . . . 1 NO . . . . 2 DON'T KNOW 8	
245	Has (NAME) been ill with a fever at any time in the last 2 weeks?	YES . . . . 1 NO . . . . 2 DON'T KNOW 8	
246	Has (NAME) had an illness with a cough at any time in the last 2 weeks?	YES . . . . 1 NO . . . . 2 (SKIP TO 249) ◄┤ DON'T KNOW 8	
247	When (NAME) had an illness with a cough, did he/she breathe faster than usual with short, rapid breaths or have difficulty breathing?	YES . . . . 1 NO . . . . 2 (SKIP TO 249) ◄┤ DON'T KNOW 8	
248	When (NAME) had this illness, did he/she have a problem in the chest or a blocked or runny nose?	CHEST ONLY . . . 1 NOSE ONLY . . . . . . 2 BOTH . . . . 3 OTHER _____ 6 (SPECIFY) DON'T KNOW 8	
249	Has (NAME) ever received a vitamin A dose like this? SHOW CAPSULE.	YES . . . . 1 NO . . . . 2 ⟶ 251 DON'T KNOW 8	
250	How many months ago did (NAME) take the last dose?	MONTHS AGO ☐☐ DON'T KNOW 9 8	
251	Has (NAME) taken any drug for intestinal parasites in the past 6 months? SHOW CAPSULE.	YES . . . . 1 NO . . . . 2 DON'T KNOW 8	
252	Are you still breastfeeding (NAME)?	YES . . . . 1 NO . . . . 2 ⟶ 255	
253	How many times did you breastfeed last night between sunset and sunrise? IF ANSWER IS NOT NUMERIC, PROBE FOR APPROXIMATE NUMBER.	NUMBER OF NIGHTTIME FEEDINGS . ☐☐	
254	How many times did you breastfeed yesterday during the daylight hours? IF ANSWER IS NOT NUMERIC, PROBE FOR APPROXIMATE NUMBER.	NUMBER OF DAYLIGHT FEEDINGS . ☐☐	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
255	Now I would like to ask you about liquids, this child drank yesterday during the day or at night. Did this child drink: Plain water? Infant formula? Any other milk such as tinned, powdered, condensed, or fresh animal milk? Fruit juice? Tea or coffee? Any other liquids?	YES NO DK PLAIN WATER . . . . 1 2 8 FORMULA . . . . 1 2 8 MILK . . . . 1 2 8 JUICE . . . . 1 2 8 TEA/COFFEE . . . . 1 2 8 OTHER LIQUIDS 1 2 8	
256	Now I would like to ask you about the food this child ate yesterday during the day or at night, either separately or combined with other foods. Did this child eat: a. Any porridge? b. Any commercially produced baby cereal? c. Any bread, rice, noodles, or any other staple foods made from grains? d. Any pumpkin, carrots, squash or sweet potatoes that are yellow or orange inside? e. Any white potatoes, white yams, manioc, cassava, or any other foods made from roots? f. Any dark green, leafy vegetables? g. Any ripe mangoes or papayas? h. Any other fruits or vegetables? i. Any liver, kidney, heart or other organ meats? j. Any beef, pork, lamb, goat, rabbit or deer? k. Any chicken, duck or other birds? l. Any eggs? m. Any fresh or dried fish or shellfish? n. Any foods made from beans, peas, or lentils? o. Any nuts? p. Any fish paste? q. Any food made with oil, fat, or butter? r. Any snake, snail, frog, rat, or insects? s. Any sugary foods such as chocolates, sweets, candies cakes, or pastries t. Any other solid or semi-solid food?	YES NO DK a . . . . 1 2 8 b . . . . 1 2 8 c . . . . 1 2 8 d . . . . 1 2 8 e . . . . 1 2 8 f . . . . 1 2 8 g . . . . 1 2 8 h . . . . 1 2 8 i . . . . 1 2 8 j . . . . 1 2 8 k . . . . 1 2 8 l . . . . 1 2 8 m . . . . 1 2 8 n . . . . 1 2 8 o . . . . 1 2 8 p . . . . 1 2 8 q . . . . 1 2 8 r . . . . 1 2 8 s . . . . 1 2 8 s 1 2 8	

CHECK 256:	AT LEAST ONE "YES"	NOT A SINGLE "YES" ⟶	258

| 257 | How many times did (NAME) eat solid, semisolid, or soft foods other than liquids yesterday during the day or at night?

 IF 7 OR MORE TIMES, RECORD '7'. | NUMBER OF
 TIMES   . . . . [   ]

 DON'T KNOW . . . . 8 | |

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
258	Now I would like to ask you about the foods and liquids you had yesterday during the day or at night, either separately or combined with other foods or liquids. Did (YOU) eat or drink:		
			YES	NO	DK	
	a. Any bread, rice, noodles, or any other staple foods made from grains?	a 1 2 8	
	b. Any pumpkin, carrots, squash, or sweet potatoes that are yellow or orange inside?	b 1 2 8	
	c. Any white potatoes, white yams, manioc, cassava or any other foods made from roots or tubers?	c 1 2 8	
	d. Any dark green, leafy vegetables?	d 1 2 8	
	e. Any ripe mangoes or papayas?	e 1 2 8	
	f. Any other fruits or vegetables?	f 1 2 8	
	g. Any liver, kidney, heart or other organ meats?	g 1 2 8	
	h. Any beef, pork, lamb, goat, rabbit or deer?	h 1 2 8	
	i. Any chicken, duck or other birds?	i 1 2 8	
	j. Any eggs?	j 1 2 8	
	k. Any fresh or dried fish or shellfish?	k 1 2 8	
	l. Any foods made from beans, peas, or lentils?	l 1 2 8	
	m. Any nuts?	m 1 2 8	
	n. Any fish paste?	n 1 2 8	
	o. Any milk or other milk products	o 1 2 8	
	p. Any foods made with oil, fat, or butter?	p 1 2 8	
	q. Any snake, snail, frog, rat or insects	q 1 2 8	
	r. Any tea or coffee?	r 1 2 8	
	s. Any sugary foods such as pastry, cakes, chocolates, sweets or candies?	s 1 2 8	
	t. Any sugary drinks such as sodas or fruit juices	t 1 2 8	
259	How many times did you eat solid, semisolid, or soft foods other than liquids yesterday during the day or at night? IF 7 OR MORE TIMES, RECORD '7'.	NUMBER OF TIMES . . . . □ DON'T KNOW 8	