



THE REPUBLIC OF UGANDA  
OFFICE OF THE PRIME MINISTER

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# Reducing Malnutrition in Uganda: Summary of Uganda PROFILES 2013 Estimates to Support Nutrition Advocacy

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## Acronyms and Abbreviations

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|       |   |
|-------|---|
| FANTA | Food and Nutrition Technical Assistance III Project |
| Hb    | haemoglobin   |
| NDP   | National Development Plan                           |
| OPM   | Office of the Prime Minister                        |
| U.S.  | United States                                       |
| UDHS  | Uganda Demographic and Health Survey                |
| UNAP  | Uganda Nutrition Action Plan                        |
| USAID | U.S. Agency for International Development           |

## Background

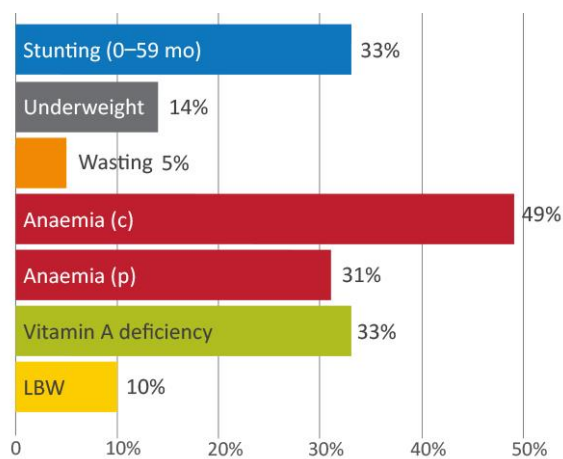
According to the 2011 Uganda Demographic and Health Survey (UDHS), 33 percent of all children under 5 years of age were chronically malnourished (stunted, or low height-for-age), 5 percent were acutely malnourished (wasted, or low weight-for-height), and 14 percent were underweight (or low weight-for-age) (Figure 1). In addition, 33 percent of children under 5 years of age in Uganda were vitamin A deficient, while 49 percent of children under 5, 31 percent of pregnant women, and 22 percent of non-pregnant women suffered from anaemia (UDHS 2011). Ten percent of all births in Uganda were of low birth weight (UDHS 2011). Stunting (or low height-for-age) decreased by 5 percentage points from 2006 to 2011 but, even with this progress, more than 2 million children in Uganda are stunted.

The Government of Uganda has committed to stepping up efforts to substantively reduce stunting and other forms of malnutrition through multi-sectoral action. In addition to including nutrition in Uganda's 5-year National Development Plan (NDP) 2010–2015, the government developed the multi-sectoral Uganda Nutrition Action Plan (UNAP) 2011–2016, which lays out a framework for all sectors to contribute to improving nutrition. A formal multi-stakeholder nutrition working group has been established along with high-level coordination of nutrition activities by the Office of the Prime Minister (OPM). In addition, district nutrition coordination committees have been established in some districts to ensure nutrition services are implemented at the local level.

However, additional efforts are needed to help maximize the effectiveness of the efforts of the government and its partners so that nutrition service delivery can be strengthened and expanded across the country. National-level advocacy must continue and the advocacy process needs to be further decentralized to create momentum for sustained change.

In 2010, PROFILES, an evidence-based tool that was developed for the purpose of nutrition advocacy, was used to estimate the benefits of improved nutrition and consequences if nutrition does not improve in Uganda. Since then, new data have become available through the nationally representative UDHS 2011. The U.S. Agency for International Development (USAID)-funded Food and Nutrition Technical Assistance III Project (FANTA) was asked to support the Government of Uganda to update the PROFILES estimates using the new data from UDHS 2011.

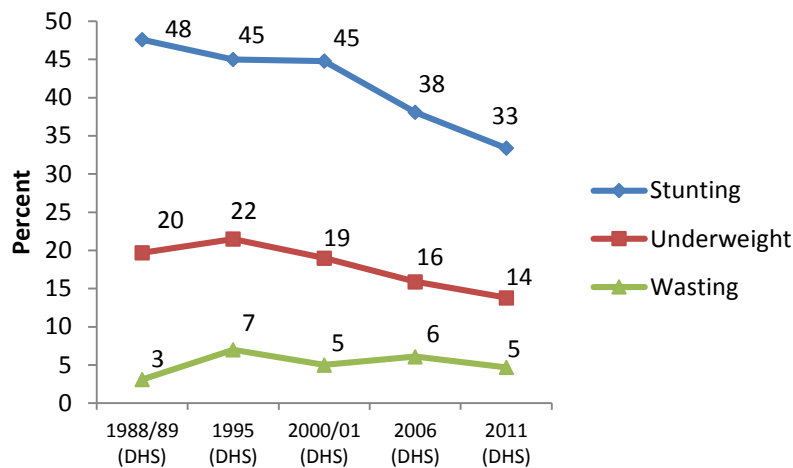
**Figure 1. Malnutrition Rates in Uganda**



**c = under-5 children; p = pregnant women; LBW = low birth weight**

Source: UDHS 2011 and UDHS 2011 Vitamin A Addendum

**Figure 2. Trends in Malnutrition in Uganda**



Note: For comparison purposes, the 1988/89, 1995, and 2000/01 anthropometric indicators were based on the 2006 WHO standards, to match the indicators from the 2006 and 2011 surveys. The values in the graph indicate percentage of children with z-scores < -2.

Source: UDHS 1988/89, UDHS 1995, and UDHS 2000/01, with additional analysis from the WHO Global Database on Child Growth and Malnutrition [http://www.who.int/nutgrowthdb/database/countries/who\\_standards/uga\\_dat.pdf?ua=1](http://www.who.int/nutgrowthdb/database/countries/who_standards/uga_dat.pdf?ua=1); UDHS 2006; UDHS 2011.

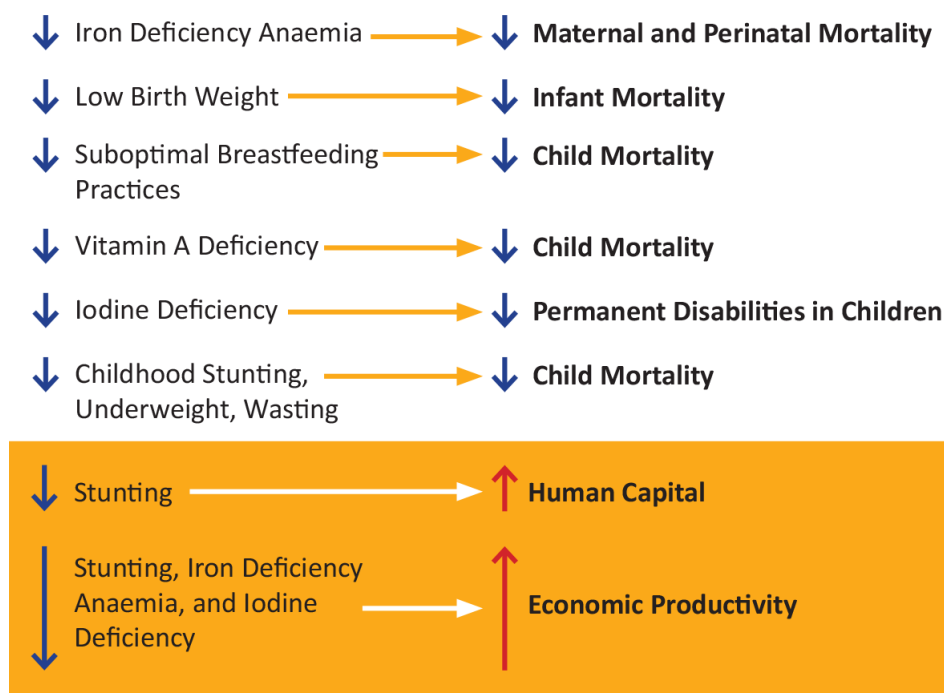
First developed in the early 1990s, PROFILES consists of a set of computer-based models that calculate estimates of the benefits of improved nutrition on health and development outcomes and the consequences if malnutrition does not improve. To calculate estimates, PROFILES requires current country-specific nutrition data. In Uganda, estimates (using the most recent DHS and other relevant sources) were calculated in terms of child and maternal mortality, economic productivity, disabilities, and human capital for the period 2013–2025.

The basic approach in PROFILES is to provide two scenarios: a ‘status quo’ scenario and an ‘improved’ scenario. The status quo scenario assumes that there will be no change from the current nutrition situation throughout a chosen time period (aside from projected changes in population size). The improved scenario—with results estimated for the same time period—assumes that nutrition interventions that are known to be effective are implemented at scale and succeed in reaching the stated targets in terms of reductions in the prevalence of the various nutrition problems. The assumption is that effective interventions would not be implemented at scale from Day 1, but rather would be implemented gradually over the selected time period, and that, hence, improvement in the nutrition indicators and consequently lives saved would be gradual. The targets reflect the proportion by which nutrition problems will be reduced over the chosen time period and are determined and agreed upon through stakeholder meetings and a PROFILES workshop. In the status quo scenario, the negative consequences are expressed, for example, in terms of lives lost, economic productivity lost, disabilities, and human capital lost. When contrasting the results from the status quo and the improved scenarios, the differences reflect the benefits of improved nutrition, expressed as lives saved, economic productivity gained (or, put another way, economic productivity losses averted), disabilities averted, and human capital gained.

In October–November 2013, Uganda- and U.S.-based nutrition experts in FANTA generated PROFILES estimates for use in nutrition advocacy. The specific nutrition indicators from which estimates were

calculated are shown in Figure 3. FANTA shared these estimates with the OPM, who reviewed and approved them.

**Figure 3. Nutrition Problems and Consequences Addressed in Uganda PROFILES 2013**



This document provides a summary of the estimates for Uganda PROFILES 2013 that will be used to develop nutrition advocacy materials. A final report of the Uganda 2013 PROFILES estimates is also available at <http://www.fantaproject.org>.

### Time Period, Prevalence, and Targets Used for Uganda PROFILES 2013 Estimates

For the purpose of the Uganda estimates, the 13-year time period starting in 2013 and running through 2025 was used.

Table 1 shows information on initial prevalence ('Initial Prevalence [2013] (used for *status quo scenario* and for first year of *improved scenario*') and target prevalence ('Target Prevalence [2025]') for each nutrition problem in PROFILES. For the *improved scenario*, a linear improvement is assumed for the time period 2013–2025 unless otherwise noted.

**Table 1. Summary of Prevalence and Targets Used for Uganda PROFILES 2013 Estimates<sup>1</sup>**

|   | Initial Prevalence [2013]<br>(used for <i>status quo scenario</i> and for first<br>year of <i>improved scenario</i><br>(%)) | Target<br>Prevalence<br>[2025]<br>(%) |
|---|---|---------------------------------------|
| <b>Anthropometric indicators<sup>2</sup></b>                                    |   |                                       |
| Moderate and severe underweight at 0–59 months<br>(weight-for-age z-score < -2) | 13.8  | 8.3                                   |
| Moderate and severe stunting at 24–35 months<br>(height-for-age z-score < -2)   | 42.7  | 25.6                                  |
| Moderate and severe stunting at 0–59 months<br>(height-for-age z-score < -2)    | 33.4  | 20.0                                  |
| Moderate and severe wasting at 0–59 months<br>(weight-for-height z-score < -2)  | 4.7   | 3.5                                   |
| <b>Vitamin A</b>  |   |                                       |
| Population 6–59 months with vitamin A deficiency<br>(including subclinical)     | 32.6  | 13.0                                  |
| <b>Iodine</b>   |   |                                       |
| Population with goitre  | 5.0   | 3.0                                   |
| <b>Anaemia (including related to iron deficiency)</b>                           |   |                                       |
| Pregnant women with anaemia (Hb < 11)   | 30.6  | 16.8                                  |
| Non-pregnant women 15–49 years with anaemia<br>(Hb < 12)                        | 22.1  | 12.2                                  |
| Men 15–64 years with anaemia (Hb < 13)  | No data   | No data                               |
| <b>Low birth weight</b>   |   |                                       |
| Babies weighing < 2,500 g at birth  | 10.2  | 7.1                                   |
| <b>Breastfeeding practices<sup>3</sup>:</b>                                     |   |                                       |
| Exclusive breastfeeding 0–5 months  | 63.2  | 90.0                                  |
| Predominant breastfeeding 0–5 months  | 9.4   | 5.0                                   |
| Partial breastfeeding 0–5 months  | 24.9  | 2.5                                   |
| No breastfeeding 0–5 months   | 2.5   | 2.5                                   |
| Any breastfeeding 6–23 months   | 77.7  | 95.0                                  |
| No breastfeeding 6–23 months  | 22.3  | 5.0                                   |

Table 2 shows information on the number of deaths that would result if the current nutrition situation continues in Uganda (*status quo scenario*) and the number of lives that would be saved over the time period if the nutrition situation improves and the targeted reductions for each nutrition problem was reached (*improved scenario*).

<sup>1</sup> The UDHS 2011 was the source of information for all indicators in this table, with the exception of goitre. Because there is no recent information, the goitre prevalence was the same as that used in the Uganda PROFILES 2010.

<sup>2</sup> The anthropometric indicators reflect a summary to give an indication of the information used by the PROFILES spreadsheet models.

<sup>3</sup> 'Predominant breastfeeding' refers to infants 0–5 months of age who received breast milk as the predominant source of nourishment during the previous day. Predominant breastfeeding 'allows' oral rehydration salts, vitamin and/or mineral supplements, ritual fluids, water and water-based drinks, and fruit juice. Other liquids, including non-human milks and food-based fluids, are not allowed, and no semi-solid or solid foods are allowed (WHO 2010; [http://www.unicef.org/nutrition/files/IYCF\\_Indicators\\_part\\_III\\_country\\_profiles.pdf](http://www.unicef.org/nutrition/files/IYCF_Indicators_part_III_country_profiles.pdf)). 'Partial breastfeeding' refers to a situation where the baby is receiving some breast feeds, but is also being given other food or food-based fluids, such as formula milk or weaning foods.



## Uganda PROFILES 2013 Estimates (presented in both tables and text)

**Table 2. Deaths Attributable to Various Nutrition Problems and Lives Saved Related to Improved Nutrition**

| Nutrition problem   | Number of deaths that would result if the current situation continues<br><i>Status quo scenario 2013–2025</i> | Number of lives that would be saved if nutrition situation improves<br><i>Improved scenario 2013–2025*</i> |
|---|---|--|
| <b>Anthropometric indicators</b>  |   |  |
| Deaths/lives saved attributable to <b>stunting</b> (severe, moderate, and mild) among children < 5 years of age | 567,621   | 118,652  |
| Deaths/lives saved attributable to <b>wasting</b> (severe, moderate, and mild) among children < 5 years of age  | 272,712   | 37,116   |
| <b>Low birth weight</b>   |   |  |
| Infant deaths/lives saved   | 196,083   | 25,820   |
| <b>Iron deficiency anaemia</b>  |   |  |
| Maternal deaths/lives saved   | 14,679  | 6,640  |
| Perinatal deaths/lives saved  | 70,922  | 19,773   |
| <b>Vitamin A deficiency</b>   |   |  |
| Child deaths/lives saved  | 221,430   | 60,923   |
| <b>Breastfeeding practices</b>  |   |  |
| Deaths/lives saved attributable to suboptimal breastfeeding practices among children < 2 years of age           | 363,399   | 101,107  |

\* These numbers assume that at-scale implementation of effective nutrition interventions will succeed in reaching the stated targets in terms of reductions (or increase in the case of exclusive breastfeeding) in the prevalence of the various nutrition problems.

Table 3 shows information on the number of children with permanent disabilities that would result if the current nutrition situation regarding maternal iodine deficiency during pregnancy continues in Uganda (*status quo scenario*) and the number of children that would be prevented from having permanent disabilities over the time period if the maternal iodine situation improves and the targeted reduction was reached (*improved scenario*).

**Table 3. Iodine Deficiency and Child Disability**

| Nutrition problem                                      | Number of children who would have mild to severe permanent brain damage if the current situation continues<br><i>Status quo scenario 2013–2025</i> | Number of children for whom disability as a result of maternal iodine deficiency would be prevented if prevalence of iodine deficiency is reduced<br><i>Improved scenario 2013–2025*</i> |
|--|--|--|
| Child disability related to maternal iodine deficiency | 1,132,428 or 1.13 million  | 236,529  |

\* These numbers assume that at-scale implementation of effective nutrition interventions will succeed in reaching the stated targets in terms of reductions in the prevalence of the various nutrition problems.

Table 4 shows information on the human capital losses in terms of learning related to stunting; if there is no change, the losses would amount to 87.7 million equivalent school years of learning. Conversely, if stunting is reduced over the 2014–2025 time period, the gains would be 24.7 million equivalent school years of learning.

**Table 4. Human Capital Losses and Gains in Terms of Learning**

| <b>Nutrition problem</b> | <b>Losses in learning if the current situation continues<br/><i>Status quo scenario 2013–2025</i></b> | <b>Gains in learning if nutrition situation improves<br/><i>Improved scenario 2013–2025*</i></b> |
|--------------------------|---|--|
| Stunting                 | 82,131,000 or 82.1 million equivalent school years of learning  | 19,753,000 or 19.8 million equivalent school years of learning                                   |

\* These numbers assume that at-scale implementation of effective nutrition interventions will succeed in reaching the stated targets in terms of reductions in the prevalence of the various nutrition problems.

Table 5 shows information on the productivity losses related to stunting, anaemia, and iodine deficiency that would result if the current nutrition situation continues in Uganda (*status quo scenario*) and the productivity gains (or, put another way, economic productivity losses averted) that could be made over the time period if the stunting, anaemia, and iodine deficiency situation improves and the targeted reductions were reached (*improved scenario*).

**Table 5. Economic Productivity Losses and Gains**

| <b>Nutrition problem</b> | <b>Economic productivity losses if the current situation continues<br/><i>Status quo scenario 2013–2025</i></b> | <b>Economic productivity gains if nutrition situation improves<br/><i>Improved scenario 2013–2025*</i></b> |
|--------------------------|---|--|
| Stunting                 | 19,307,000,000,000 or 19.307 trillion Ugandan Shillings (US\$7.709 billion)                                     | 4,257,000,000,000 or 4.257 trillion Ugandan Shillings (US\$1.699 billion)                                  |
| Iron deficiency anaemia  | 1,115,000,000,000 or 1.115 trillion Ugandan Shillings (US\$445.282 million)                                     | 272,000,000,000 or 272 billion Ugandan Shillings (US\$108.774 million)                                     |
| Iodine deficiency        | 910,000,000,000 or 910 billion Ugandan Shillings (US\$363.379 million)  | 190,000,000,000 or 190 billion Uganda Shillings (US\$75.898 million)                                       |

Note: Productivity gains that could result from reduction in stunting related to improvement in the low birth weight indicator is not shown separately (there would be overlap with the productivity gains shown here associated with improvement in stunting). Productivity losses/gains related to anaemia refers to adult women.

Note: Numbers in Ugandan Shillings and US\$ are rounded. Exchange rate used is 2,504.60 Ugandan Shillings = US\$1.

\* These numbers assume that at-scale implementation of effective nutrition interventions will succeed in reaching the stated targets in terms of reductions in the prevalence of the various nutrition problems.

*Status Quo Scenario: Adverse Consequences of Nutrition Problems if There Is No Change during the Time Period (2013–2025)*

**Estimates of Future Lives Lost, Economic Productivity Lost, Permanent Disabilities, and Human Capital Lost Associated with Various Nutrition Problems, 2013–2025**

| LIVES LOST  | ECONOMIC PRODUCTIVITY LOST   | PERMANENT DISABILITIES   | HUMAN CAPITAL LOST  |
|---|--|--|---|
| <p><b>567,621</b><br/>lives of children under 5 lost related to stunting</p>                | <p><b>19.307T US\$</b><br/><b>(US\$7.7 billion)</b> lost related to stunting</p>   | <p><b>1.13 million</b><br/>children born with irreversible brain damage (ranging from severe brain damage to a decrease in IQ) related to maternal iodine deficiency</p> | <p><b>82.1 million</b><br/>equivalent school years of learning lost related to stunting</p> |
| <p><b>196,083</b><br/>lives of children under 5 lost related to low birth weight</p>        | <p><b>1.115T US\$</b><br/><b>(US\$445.3 million)</b> lost related to iron deficiency anaemia among adult, non-pregnant women</p> |  |   |
| <p><b>14,679</b><br/>women's lives lost related to maternal anaemia</p>                     | <p><b>910B US\$</b><br/><b>(US\$363.4 million)</b> lost related to iodine deficiency</p>   |  |   |
| <p><b>70,922</b><br/>lives lost during the perinatal period related to maternal anaemia</p> |  |  |   |
| <p><b>221,430</b><br/>lives of children under 5 lost related to vitamin A deficiency</p>    |  |  |   |
| <p><b>363,399</b><br/>infants' lives lost related to suboptimal breastfeeding practices</p> |  |  |   |

**Improved Scenario: Benefits if the Nutrition Situation Improves (That Is if Specified Targets Are Reached) by the End of the Time Period (2013–2025)**

**Estimates of Future Lives Saved, Economic Productivity Gained, Permanent Disabilities Averted, and Human Capital Gained, 2013–2025**

| <b>LIVES SAVED</b>  | <b>ECONOMIC PRODUCTIVITY GAINED</b>   | <b>PERMANENT DISABILITIES AVERTED</b>  | <b>HUMAN CAPITAL GAINED</b>  |
|---|---|--|--|
| <p><b>118,652</b><br/>lives of children under 5 saved related to a reduction in stunting</p>            | <p><b>4.257T USh</b><br/><b>(US\$1.7 billion)</b><br/>gained related to a reduction in stunting</p>   | <p><b>236,529</b><br/>children saved from irreversible brain damage related to a reduction in maternal iodine deficiency</p> | <p><b>19.8 million</b><br/>equivalent school years of learning gained related to a reduction in stunting</p> |
| <p><b>25,820</b><br/>infants' lives saved related to increases in birth weight</p>                      | <p><b>272B USh</b><br/><b>(US\$108.8 million)</b><br/>gained related to improvements in iron deficiency anaemia among adult, non-pregnant women</p> |  |  |
| <p><b>6,640</b><br/>women's lives saved related to a reduction in maternal anaemia</p>                  | <p><b>190B USh</b><br/><b>(US\$75.9 million)</b><br/>gained related to improvements in iodine deficiency</p>  |  |  |
| <p><b>19,773</b><br/>lives saved in the perinatal period related to a reduction in maternal anaemia</p> |   |  |  |
| <p><b>60,923</b><br/>lives of children under 5 saved related to improvements in vitamin A status</p>    |   |  |  |
| <p><b>101,107</b><br/>infants' lives saved related to decreased suboptimal breastfeeding practices</p>  |   |  |  |

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