
Nutrition of Infants And Young Children In Zambia

AFRICA NUTRITION CHARTBOOKS



U.S. Agency for International Development
AFR/ARTS and R&D/N



Macro International Inc.



Food Security and Nutrition Monitoring Project

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NUTRITION OF INFANTS AND YOUNG CHILDREN IN ZAMBIA

Findings from the 1992 Zambia DHS Survey

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March 1993

This chartbook was produced by the Africa Regional DHS Nutrition and Family Health Analytical Initiative Project funded by the U.S. Agency for International Development (AFR/ARTS) through the IMPACT Project (R&D/N)

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Introduction

Undernutrition¹ is one of the most important health and welfare problems among infants and young children in Zambia. It is a result of both inadequate intake of food and poor environmental sanitation. An inadequate intake of food is a consequence of improper feeding practices and/or insufficient food at the household level. Improper feeding practices include both the quality and quantity of food offered to young children as well as the timing of their introduction. Poor sanitation puts young children at risk of increased illness, in particular diarrhoeal disease, which adversely affects a child's nutritional status. Both inadequate food intake and poor environmental sanitation reflect underlying social and economic conditions.

Undernutrition has significant health and economic consequences. The most serious of these is the increased risk of dying. Other outcomes include increased risk of illness and a lower level of cognitive development, which results in lower educational attainment. In adulthood, the accumulated effect of long-term undernutrition can be a reduction in worker productivity and increased absenteeism in the workplace, both of which may reduce an individual and national lifetime earning potential. Furthermore, undernutrition can result in adverse pregnancy outcomes.

The Zambian data presented here are from the 1992 Zambia Demographic and Health Survey (ZDHS), a nationally representative survey conducted by the University of Zambia and the Central Statistical Office, with technical assistance from Macro International Inc. The data presented for other sub-Saharan African countries are from Demographic and Health Surveys carried out in those countries.

¹ The technical definitions for *undernutrition* as defined by the National Center for Health Statistics (NCHS), the Centers for Disease Control (CDC), and the World Health Organization (WHO) are presented in the Appendix.

Undernutrition among Children under 5 Years, Zambia

In Zambia:

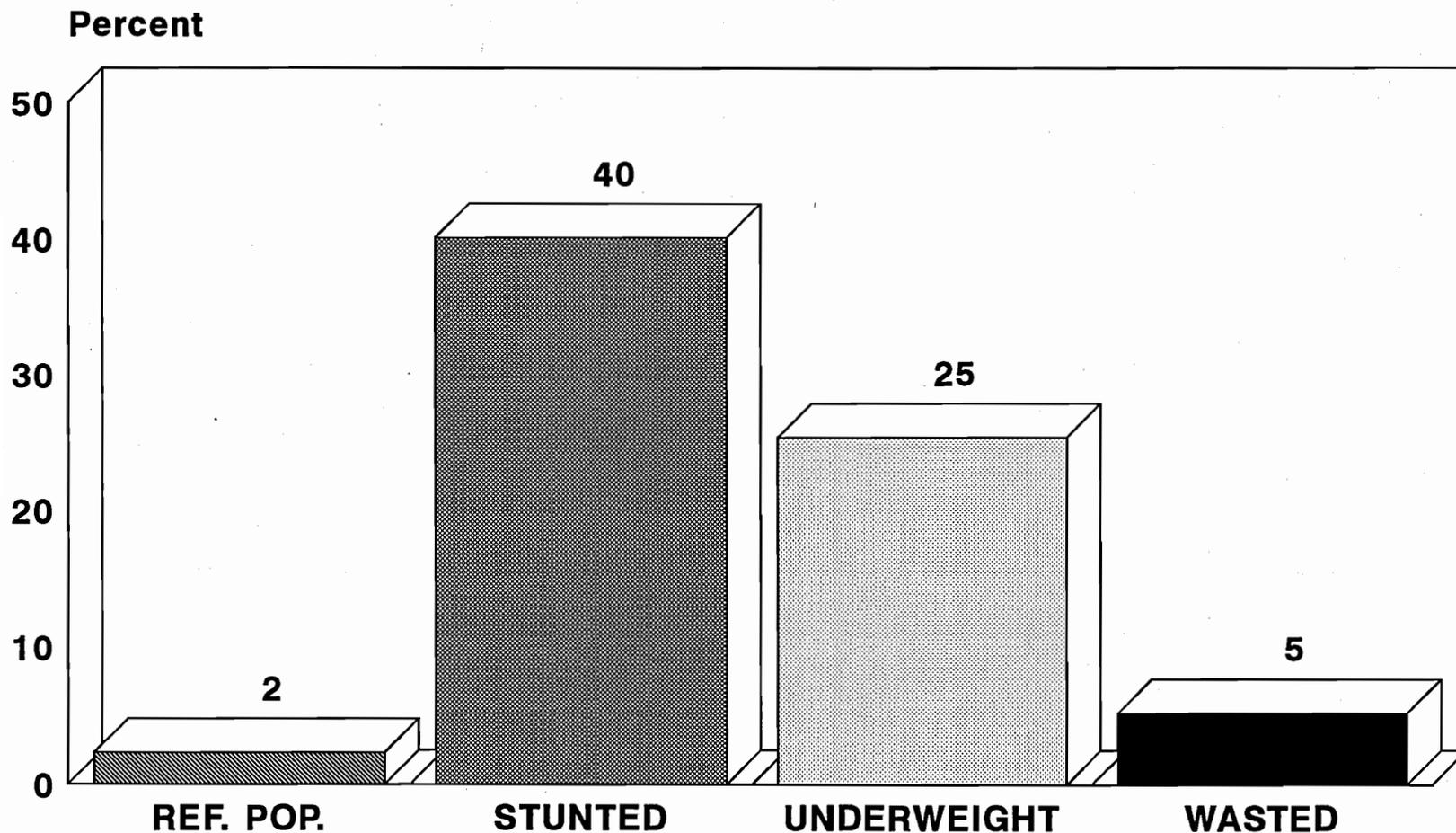
- **More than two in five children under 5 years are chronically undernourished.** In other words, they are too short for their age or *stunted*.¹ The proportion of children stunted is about **17 times** the level expected in a healthy, well-nourished population.
- **One in four children is *underweight***² for his or her age. This is **11 times** the level in a healthy, well-nourished population.
- **One in twenty children suffers from acute undernutrition.** This is manifested by the child being too thin for his or her height or *wasted*.³ The proportion of children who are wasted is **over twice** the level expected in a healthy, well-nourished population.

¹ A *stunted* child has a height-for-age Z-score that is below -2 SD based on the NCHS/CDC/WHO reference population. Chronic undernutrition is the result of an inadequate intake of food over a period of time and could also be affected by chronic illness.

² An *underweight* child has a weight-for-age Z-score that is below -2 SD based on the NCHS/CDC/WHO reference population. This condition can result from either chronic or acute undernutrition.

³ A *wasted* child has a weight-for-height Z-score that is below -2 SD based on the NCHS/CDC/WHO reference population. Acute undernutrition is the result of a recent failure to receive adequate nutrition and may be affected by acute illness, in particular diarrhea.

Figure 1
Undernutrition among Children under 5 Years, Zambia



Note: Stunted reflects chronic undernutrition; wasted reflects acute undernutrition; underweight reflects either chronic or acute undernutrition.

Undernutrition among Children Age 3 to 36 Months¹ in Zambia and other sub-Saharan Countries, DHS 1986-1991

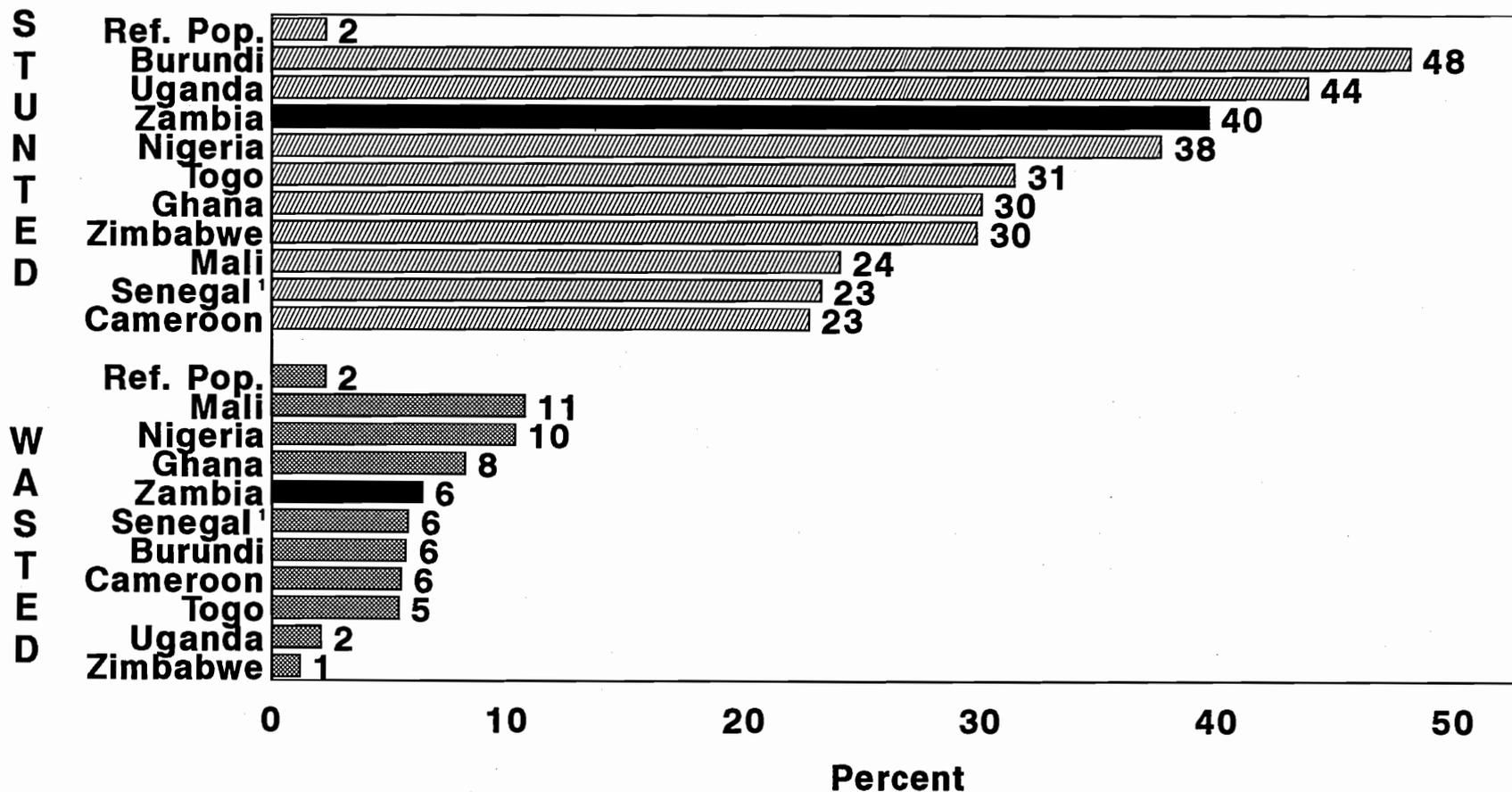
Among the sub-Saharan countries surveyed:

- **Zambia has one of the highest proportion of children who are stunted. Indeed, higher levels of stunting are found only in Burundi and Uganda.**
- **The level of acute undernutrition in Zambia is similar to that for many sub-Saharan countries.²**

¹ Unlike Zambia, in some countries data were collected only for children age 3 to 36 months. For comparative purposes data for this age range are presented.

² It is important to note that these data come from surveys carried out in different seasons between 1986 and 1991, which could affect the comparability of the results.

Figure 2
Undernutrition among Children Age 3 to 36 Months in Zambia
and other sub-Saharan Countries, DHS 1986-1991



**Note: Stunted reflects chronic undernutrition;
wasted reflects acute undernutrition.**

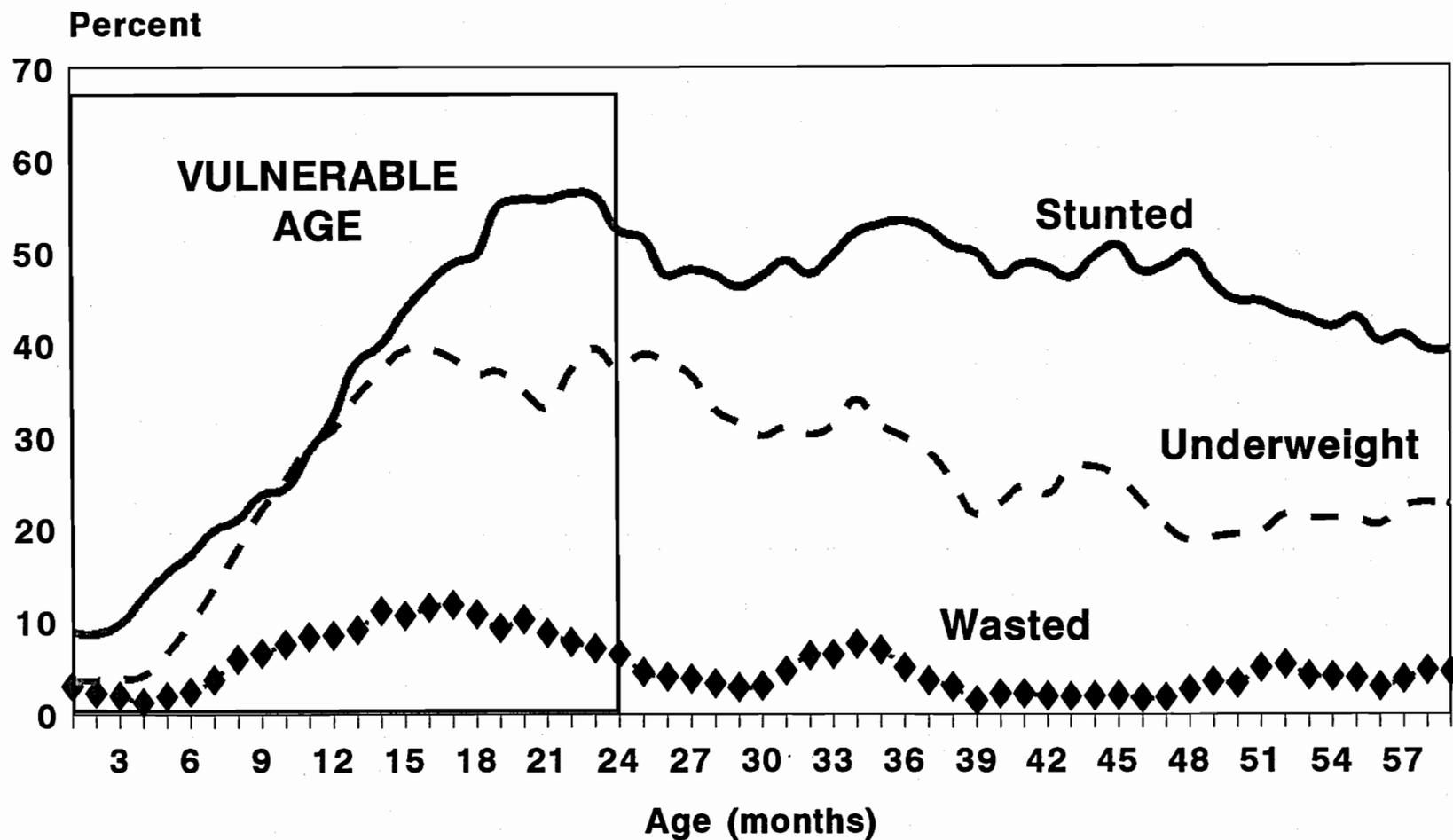
¹Infants and children age 6 to 36 months.

Undernutrition by Age, Zambia

In Zambia, the time between 1 and 24 months of age is the vulnerable age:

- **Stunting**, indicating chronic malnutrition, begins very early in life and increases until 18 months of age when it affects more than **one in two** children.
- The proportion of children **underweight** increases to over **four in ten** around the age of 15 and again at 24 months.
- **Wasting**, indicating acute malnutrition, peaks between 15 and 18 months of age and affects about **one in ten** children.

Figure 3 Undernutrition by Age, Zambia



Note: Stunted reflects chronic undernutrition; wasted reflects acute undernutrition; underweight reflects either chronic or acute undernutrition.

Feeding Practices for Infants under 4 Months, Zambia

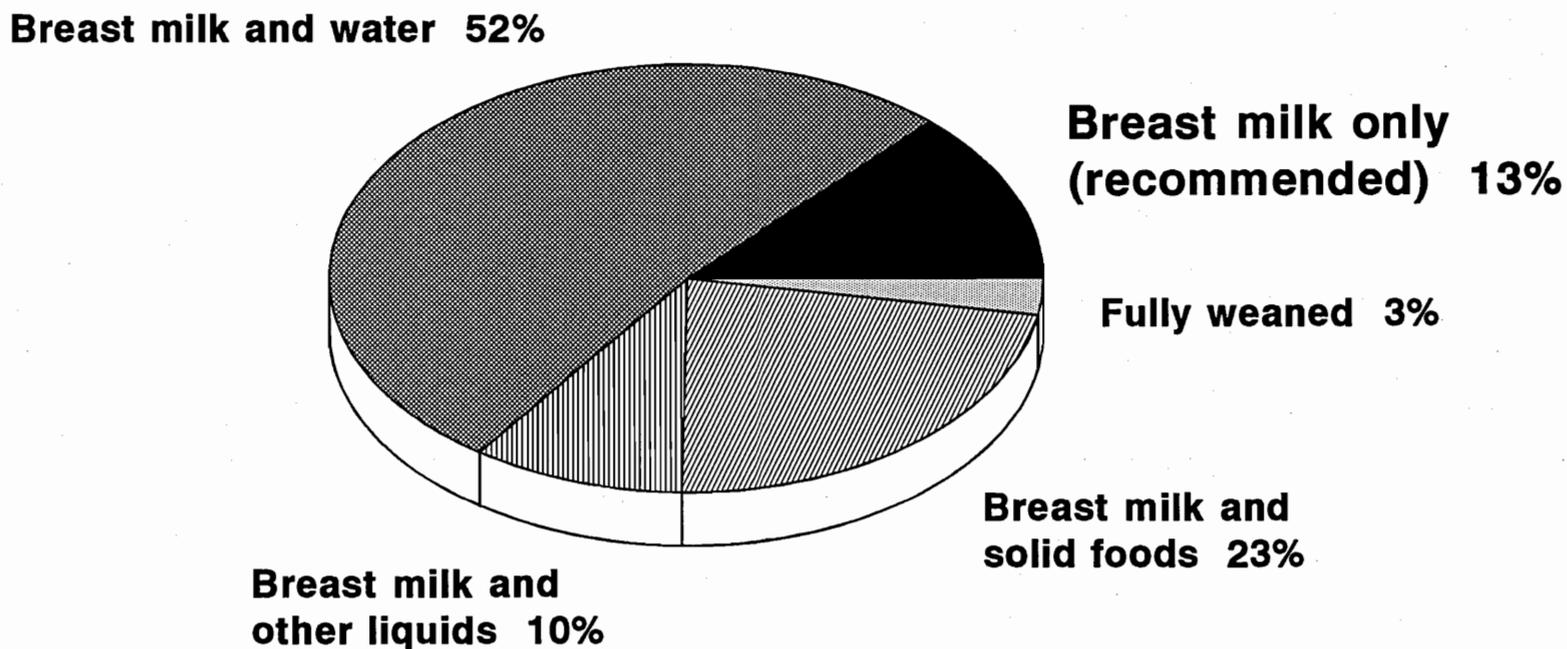
Feeding patterns, in addition to diarrhoeal disease, are important determinants of undernutrition.¹ The World Health Organization (WHO) recommends that all infants be exclusively breastfed from birth to 4 to 6 months of age. In other words they should be fed only breast milk.

In Zambia, the introduction of liquids, such as water, sugared water, teas, commercial formulae, and solid foods takes place far too early in life. This practice has a deleterious effect on nutritional status for a number of reasons. First, the liquids and solid foods offered are nutritionally inferior to breast milk. Second, the intake of liquids and solid foods results in lower breast-milk intake which, in turn, reduces the mother's supply of milk because breast-milk production is determined, in part, by both the frequency and intensity of suckling. Third, feeding young infants liquids and solid foods increases their exposure to pathogens and consequently puts them at greater risk of diarrhoeal disease.

- **Only thirteen in one hundred** Zambian children under the age of 4 months are **exclusively breastfed**, as recommended by WHO.
- **More than one in three** of the infants under 4 months are given some form of supplemental feeding, **contrary to recommendations**.
- To a large extent, the failure to exclusively breastfeed for the first 4 to 6 months of life accounts for the rapid increase in undernutrition among young infants.
- **Over one-half of Zambian mothers with children under the age of 5 years work outside the home**. This fact must be taken into consideration in efforts to improve the duration of exclusive breastfeeding and in recommendations for appropriate alternatives for infants who cannot be exclusively breastfed.

¹Information on feeding practices is based on the 24 hours preceding the survey.

Figure 4 Feeding Practices for Infants under 4 Months, Zambia



Note: WHO recommends that all infants be breastfed exclusively until they are 4 to 6 months old.

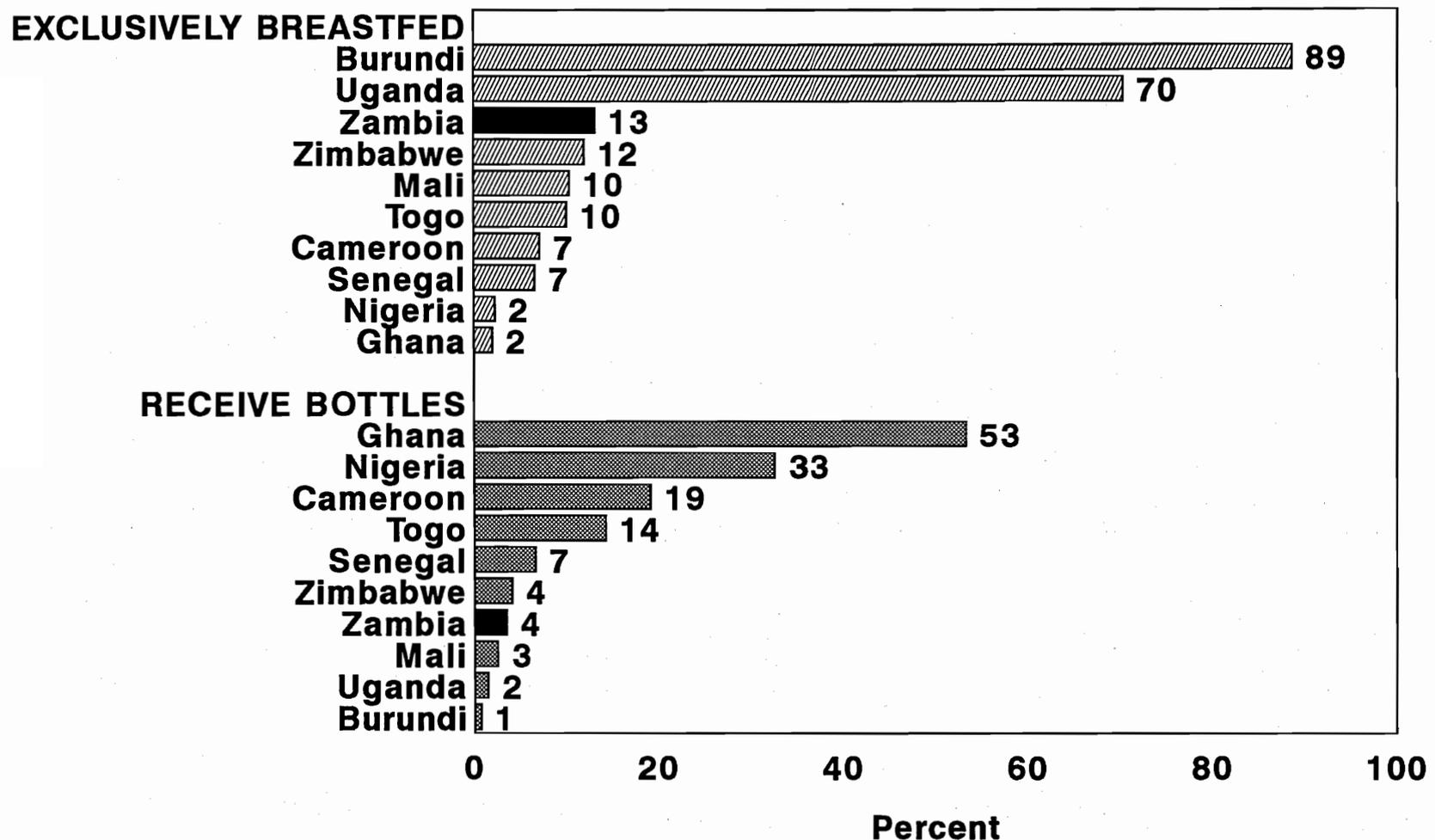
Infants under 4 Months Who Are Exclusively Breastfed and those Who Receive Supplementary Bottles in Zambia and other sub-Saharan Countries, DHS 1986-1991

Not breastfeeding exclusively and introducing liquids and solid foods prematurely both increase the risk of diarrhoeal disease, a highly important cause of mortality in Africa.

- **In the sub-Saharan countries surveyed, including Zambia, few mothers of infants under 4 months follow the recommended practice of exclusively breastfeeding. In contrast, almost all infants are exclusively breastfed in Burundi.**
- **Bottle feeding, a non-recommended practice, is used by less than one in twenty five Zambian mothers for infants under 4 months. Only Mali, Uganda, and Burundi have lower rates of bottle use among the countries surveyed.**

Figure 5

Infants under 4 Months Who Are Exclusively Breastfed and Those Who Receive Supplemental Bottles,¹ in Zambia and other sub-Saharan Countries, DHS 1986-1991



Note: WHO recommends that all infants should receive nothing but breast milk until 4 to 6 months of age.

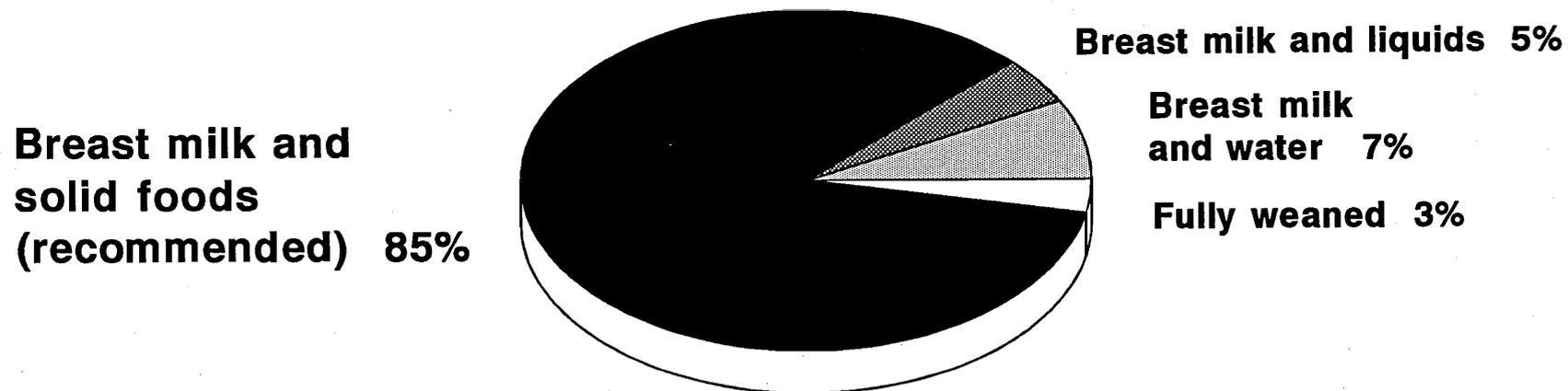
¹Information on feeding practices is based on the 24 hours preceding the survey.

Feeding Practices for Infants Age 6 to 9 Months, Zambia

The World Health Organization also recommends that solid foods be introduced to infants between the ages of 4 to 6 months because breast milk, on its own, is no longer sufficient to maintain optimal child growth. Thus, all infants over 6 months of age should be receiving solid foods along with breast milk.

- **More than 8 out of 10 Zambian infants age 6 to 9 months are fed solid food in addition to breast milk. In other words, about one-fifth of the infants between the ages of 6 and 9 months are not fed according to the recommended practice.**
- **Seven percent of infants age 6 to 9 months are still fully breastfed; 5 percent are fed liquids in addition to breast milk; and 3 percent are fully weaned from the breast.**

Figure 6 Feeding Practices for Infants Age 6 to 9 Months, Zambia

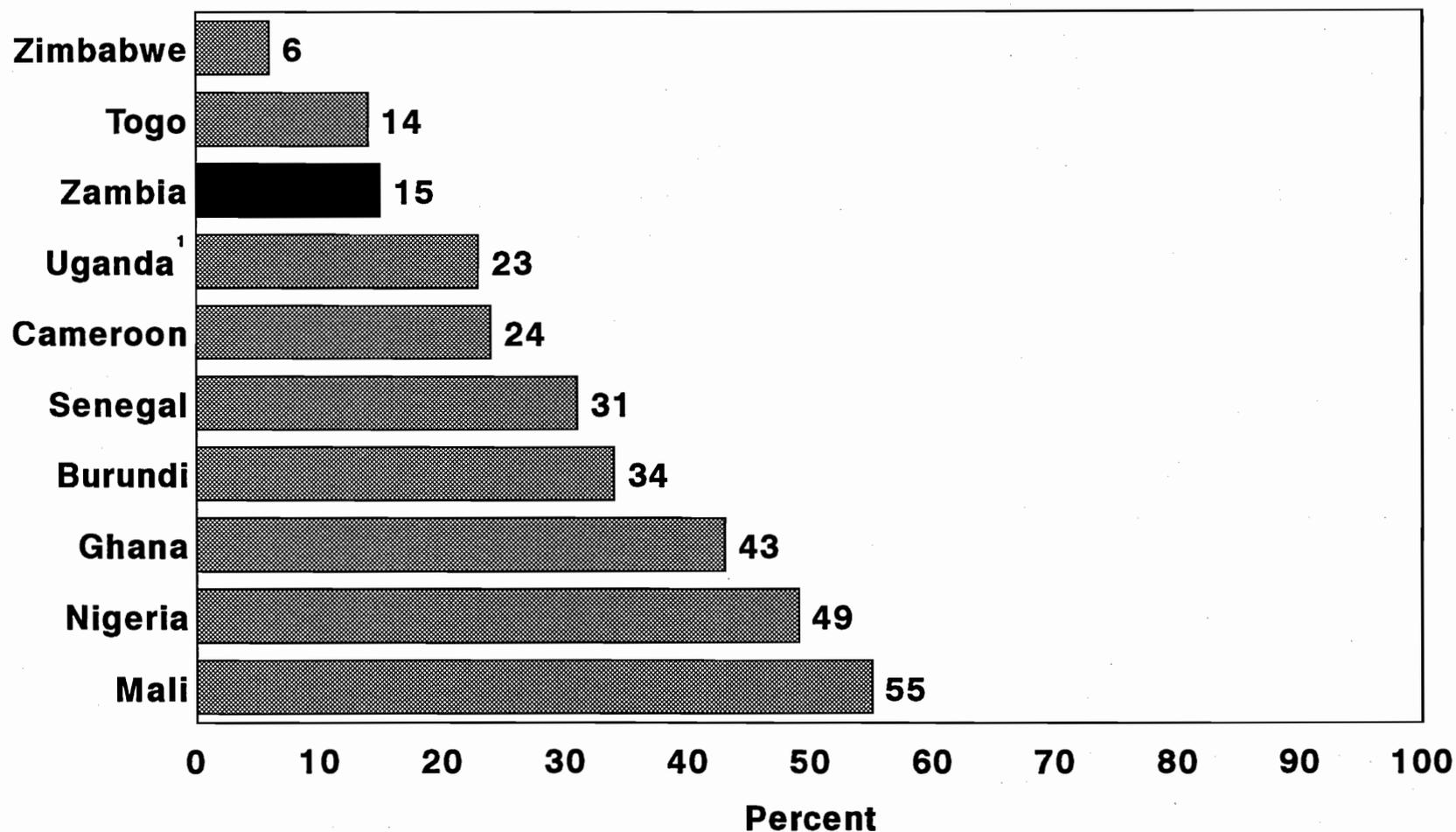


Note: WHO recommends that by the age of 6 months all infants should receive solid foods in addition to breast milk.

Infants 6 to 9 Months Not Receiving Food in Addition to Breast Milk in Zambia and other sub-Saharan Countries, DHS 1986-1991

- **In Zambia 15 percent of the infants age 6 to 9 months are not fed according to the World Health Organization recommendations. Nevertheless, Zambia has the third highest proportion that receive both breast milk and solid foods among the sub-Saharan countries for which DHS data are available.**

Figure 7
Infants 6 to 9 Months not Receiving
Receiving Food in Addition to Breast Milk in
Zambia and other sub-Saharan Countries, DHS 1986-1991



Note: WHO recommends that by the age of 6 months all infants should receive solid foods in addition to breast milk.

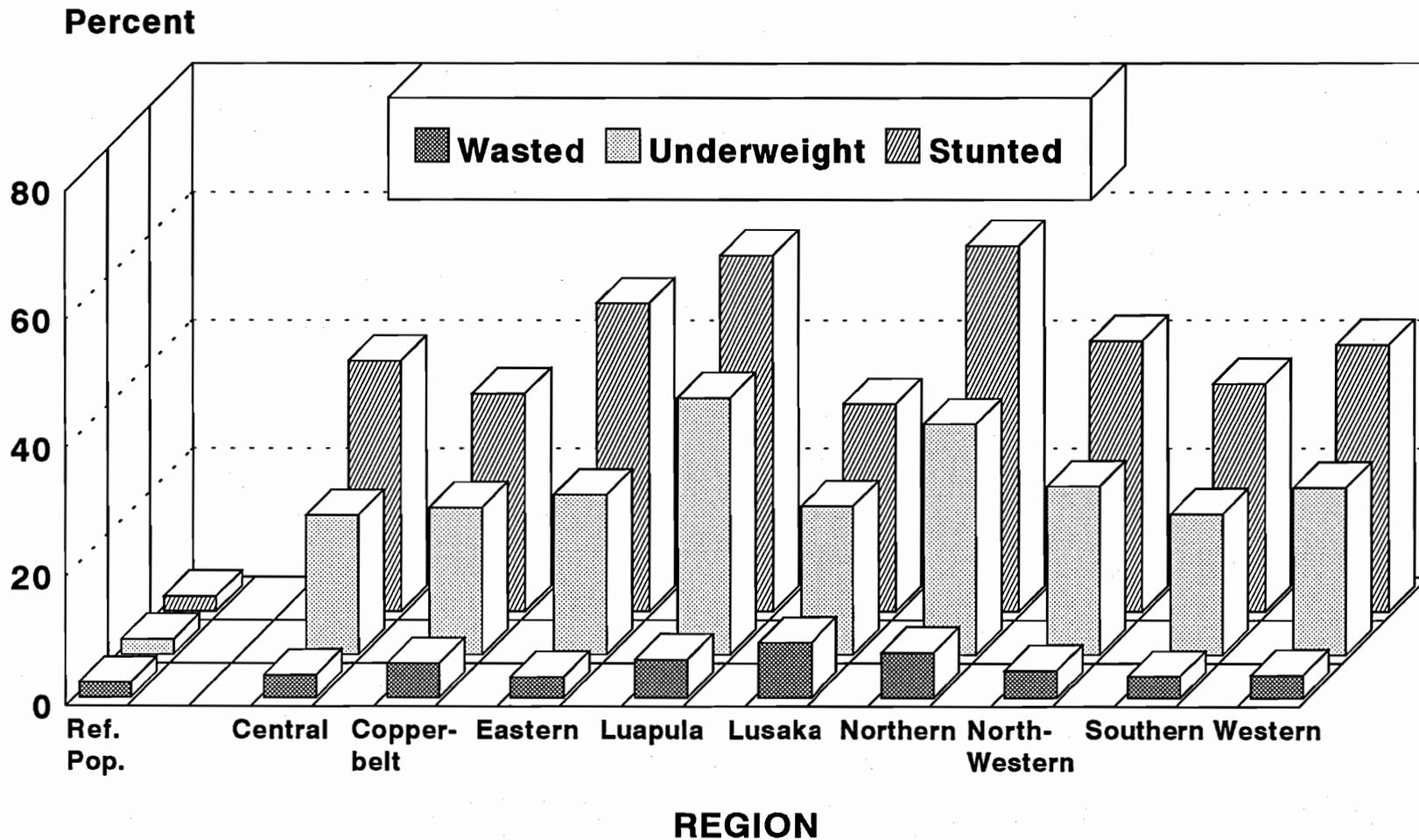
¹Includes liquids.

Undernutrition among Children under 5 Years by Province, Zambia

In Zambia:

- **More than one in two children in Luapula and Northern provinces are stunted versus between three and four in ten in the other provinces.**
- **Underweight is prevalent in all areas of Zambia, but much more so in the Luapula and Northern provinces.**
- **Wasting is particularly high in Lusaka province.**

Figure 8
Undernutrition among Children under 5 Years by Province, Zambia



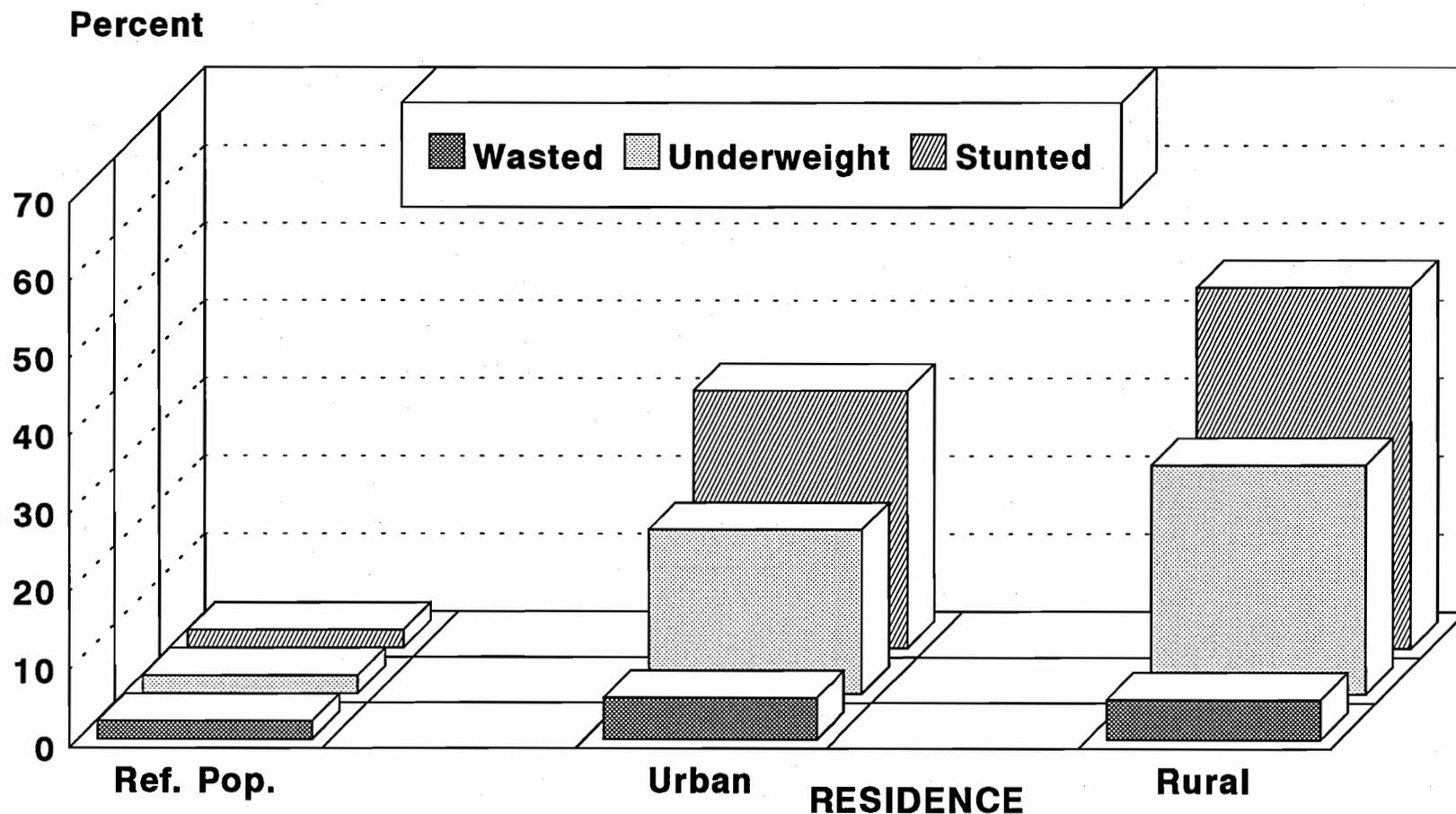
Note: Stunted reflects chronic undernutrition; wasted reflects acute undernutrition; underweight reflects either chronic or acute undernutrition.

Undernutrition among Children under 5 Years by Residence, Zambia

In Zambia:

- **Stunting occurs among nearly one in two children under five years in rural areas, where 50 percent of the Zambian population lives, whereas one in three children living in urban areas is stunted.**
- **Nearly one in three children living in rural areas is underweight, versus one in five in urban areas.**
- **One in twenty children living in both urban and rural areas is wasted.**

Figure 9
Undernutrition among Children under 5 Years by Residence, Zambia



Note: Stunted reflects chronic undernutrition; wasted reflects acute undernutrition; underweight reflects either chronic or acute undernutrition.

Undernutrition among Children under 5 Years by Mother's Education, Zambia

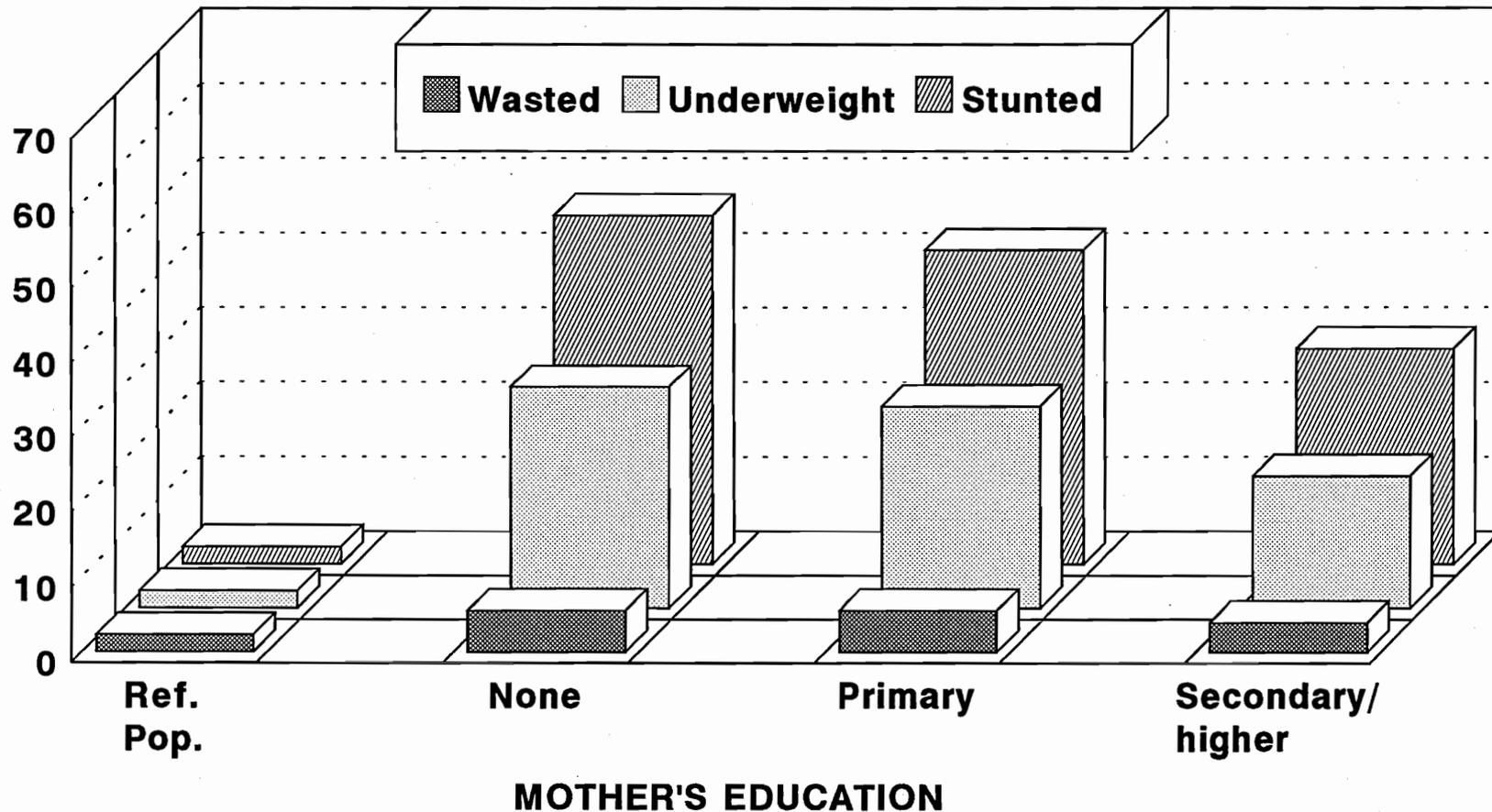
Maternal education is related to both a knowledge of good child-care practices and household wealth. Nearly one in five Zambian mothers have never attended school but there are substantial provincial differences. Over 35 percent of mothers in Eastern province have never been to school, whereas between 10 and 20 percent of mothers in Central, Luapula, Lusaka, and Southern provinces and only about five percent of mothers in Copperbelt province have never been to school.

- **Chronic undernutrition and underweight is at least one third greater among children of mothers with no education than among children of mothers with secondary or higher education.**
- **Nearly one in two children of mothers with no education is stunted whereas less than one in three children of mothers with secondary or higher education is stunted.**

It is important to note that undernutrition is high even among the children of educated women, suggesting that traditional infant and child feeding practices are inadequate for good nutrition and may have serious adverse effects on children's growth.

Figure 10
Undernutrition among Children under 5 Years by
Mother's Education, Zambia

Percent



Note: Stunted reflects chronic undernutrition; wasted reflects acute undernutrition; underweight reflects either chronic or acute undernutrition.

Undernutrition among Children under 5 Years by Source of Water and Type of Toilet, Zambia

The source of water and type of toilet owned are representative of both household wealth and environmental sanitation. Poor households are more likely to obtain water from open-air sources or wells, and are less likely to have toilet facilities. Where water is not readily available, food hygiene is often inadequate. Furthermore, poor sanitation results in an increased number of insects (particularly flies) thus increasing the risk of food contamination. Both of the above increase the risk of diarrhoeal disease, which can result in undernutrition.

- **One-fifth of Zambian households obtain water from open-air sources, about one-half use a community water supply (well or public pipe), and less than one-third have water piped to their homes.**
- **About one in three households has no toilet facilities, four out of ten have pit latrines, and one in four has a flush toilet.**

Infants and children from households that have neither a private water supply nor a flush toilet are at greater risk of being undernourished than those from households with these amenities. This reflects not only the association between environmental sanitation (and thus the risk of diarrhoeal disease) and nutritional status, but also household wealth. Wealth determines a household's food supply and the ability to have a private water supply and flush toilet. Although the availability of a private water supply or a flush toilet may be associated with a reduced risk of a child being undernourished, they do not ensure that a child will be well nourished.

- **Even among households with a private supply of water, about one in three children is too short for his or her age as is one in three children from households with a flush toilet.**
- **About one in five children from households with a private supply of water is underweight, as is about one in five children from households with a pit latrine.**

Age-related Pattern of Diarrhoea among Children Age 1 to 24 Months, Zambia

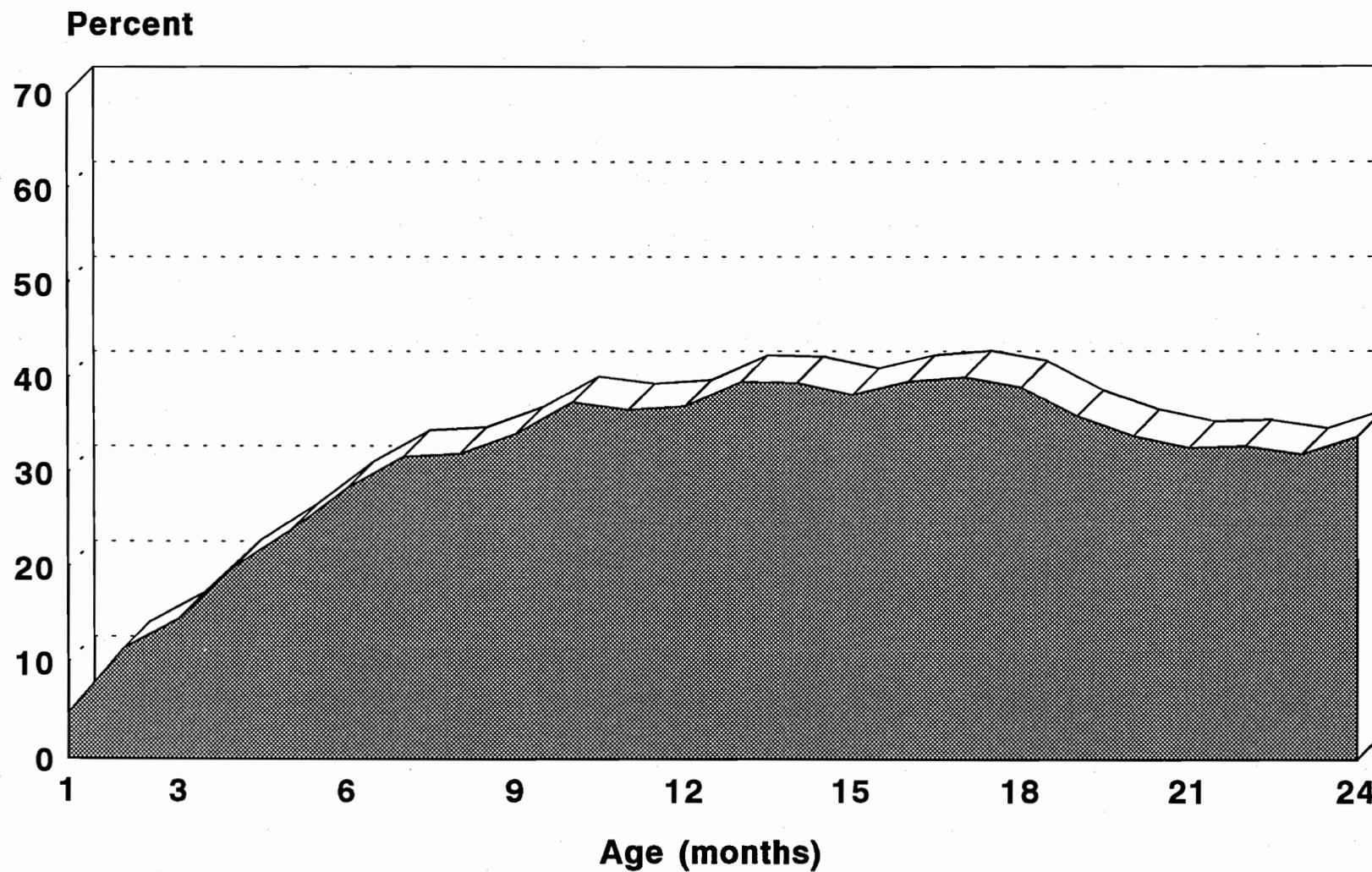
In Zambia:

- **The prevalence of diarrhoea increases rapidly and dramatically among infants under 11 months of age and remains high among children 11 to 18 months of age before declining.**
- **The age-related pattern of diarrhoeal disease is similar to that for undernutrition. This is not surprising given that diarrhoea is a major determinant of undernutrition.**

The age-related pattern of diarrhoea reflects the increased risk of pathogen contamination associated with the early introduction of water, other liquids, and solid foods. In addition, once young children begin to crawl and move around, they tend to put objects into their mouths, increasing the risk of pathogen contamination.

- **The levels of both undernutrition and diarrhoea are higher in the Northern province than in the other regions and higher in rural than in urban areas (data not shown).**

Figure 12
Age-related Pattern of Diarrhoea among
Children Age 1 to 24 Months, Zambia



Prevalence of Diarrhoea, Fever, and Cough among Children Age 1 to 24 Months¹ in Zambia and Other sub-Saharan Countries, DHS 1986-1991

- **About one in three Zambian children under 24 months had diarrhoea in the two weeks preceding the survey but this level is less than that of many of the other sub-Saharan countries surveyed.**

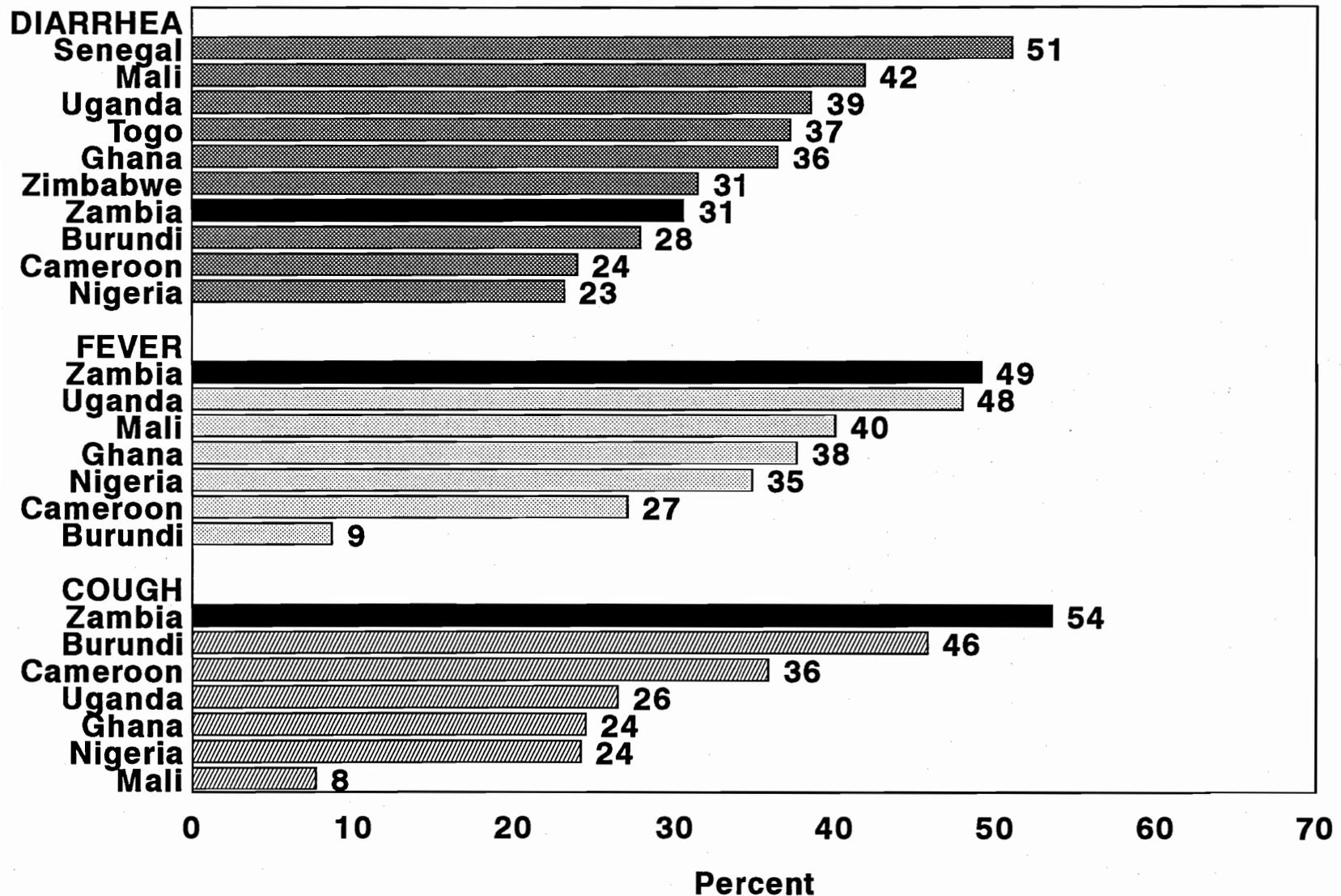
It must be borne in mind that a mother's perception of diarrhoea may differ by country and this could influence these findings.

- **One in two Zambian children was reported to have had fever in the preceding two weeks. This is the highest level found in the countries surveyed.**
- **One in two Zambian children was reported to have had a cough or rapid breathing in the preceding two weeks. This is the highest level found in the countries surveyed.**

There are seasonal patterns in the prevalence of diarrhoea, fever, and respiratory illness and also inter-country differences which must be taken into account when comparing the results of the various surveys.

¹Data are presented only for children under 2 years because this age group is the most vulnerable to diarrhoeal disease.

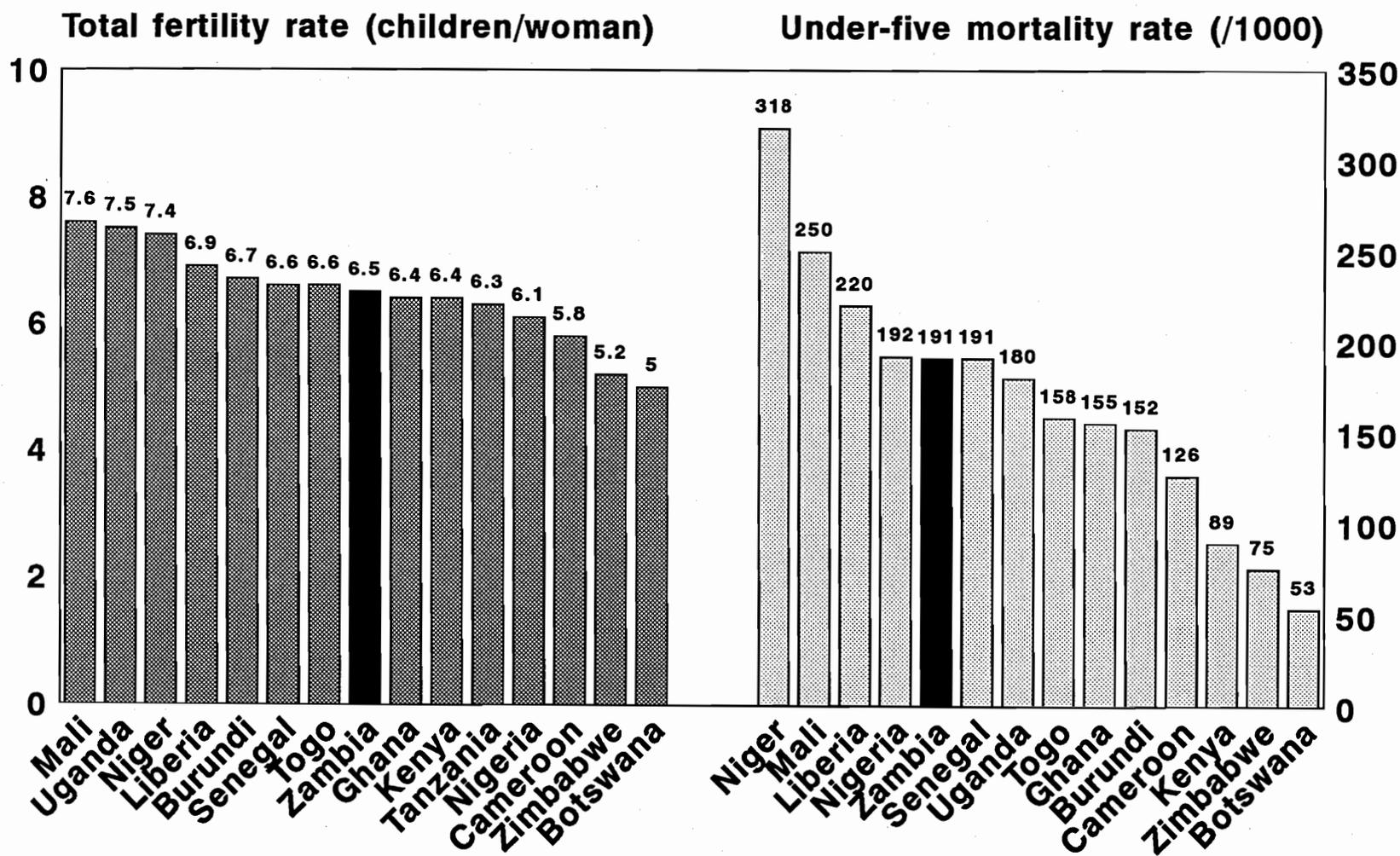
Figure 13
Prevalence of Diarrhoea, Fever, and Cough among
Children Age 1 to 24 Months in Zambia and
other sub-Saharan Counties, DHS 1986-1991



Fertility and Child Mortality in Zambia and other sub-Saharan Countries, DHS 1986-1992

- **The rate of childbearing in Zambia is very high. At current levels, Zambian women have an average of 6.5 children by the end of their childbearing years (total fertility rate for women age 15 to 49 years), which is similar to many sub-Saharan countries.**
- **About one in five Zambian children die before their fifth birthday. Zambia has an under-five mortality rate of 191 deaths per 1000 births, which is among one of the higher levels for the countries surveyed. It is likely that the relatively high mortality rate in Zambia is related to the high levels of undernutrition found in that country.**

Figure 14
Fertility and Child Mortality in Zambia
and other sub-Saharan Countries, DHS 1986-1992



Appendix

The Nutrition Standard Distribution

The assessment of nutritional status is based on the concept that in a well-nourished population the distributions of children's height and weight, for a given age, will approximate a normal distribution. This means that about 68 percent of children will have a weight within 1 standard deviation of the mean for children of that age or height, and a height within 1 standard deviation of the mean for children of that age. About 14 percent of children will be between 1 and 2 standard deviations above the mean; these are considered relatively tall or overweight for their age or fat for their height. Another 14 percent will be between 1 and 2 standard deviations below the mean; these are considered relatively short or underweight for their age or thin for their height. Of the remainder, 2 percent will be very tall or very overweight for their age or very fat for their height, and 2 percent will be very short (stunted) or very underweight for their age or very thin (wasted) for their height, i.e., these categories are more than 2 standard deviations above or below the mean.

For comparative purposes nutritional status has been determined using the International Reference Population defined by the United States National Center for Health Statistics and the Centers for Disease Control and recommended by the World Health Organization.