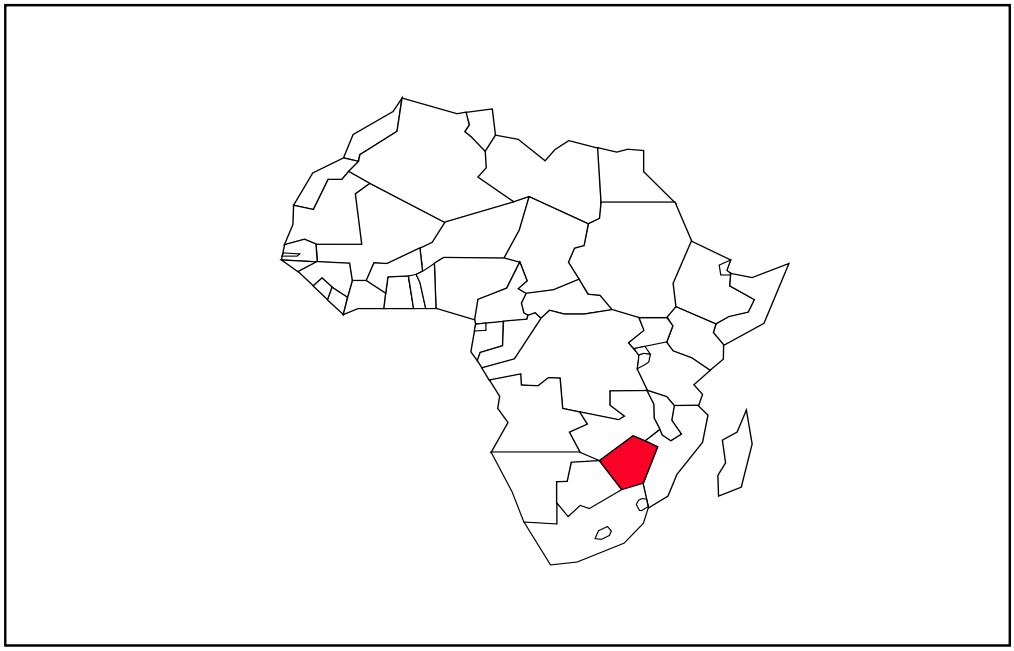
FAO - NUTRITION COUNTRY PROFILES

ZIMBABWE



FOOD AND AGRICULTURE ORGANIZATION

OF THE UNITED NATIONS

Note for the reader

The objective of the Nutrition Country Profiles (NCP) is to provide concise analytical summaries describing the food and nutrition situation in individual countries with background statistics on food-related factors. The profiles present consistent and comparable statistics in a standard format. This pre-defined format combines a set of graphics, tables and maps each supported by a short explanatory text. Information regarding the agricultural production, demography and socio-economic level of the country are also presented.

In general, data presented in the NCP are derived from national sources as well as from international databases (FAO, WHO...).

Technical notes giving detailed information on the definition and use of the indicators provided in the profile can be obtained from ESNA upon request. An information note describing the objectives of the NCP is also available.

Useful suggestions or observations to improve the quality of this product are welcome.

The data used to prepare the maps are available in Excel upon request at:

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FAO, 2001

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Graphs, tables and maps can be visualised by clicking on the words in bold and underline, only in the "Full profile" pdf file.

SUMMARY

*For children under 3 years the prevalence of underweight was 15.5% in 1994. 21.4% of the children were stunted and 5.5% wasted (**Table 4a**). Children living in rural areas seemed to have a greater risk for underweight and stunting then their urban counterparts. The prevalence of underweight ranged from 7.1% in Bulawayo to 24% in Matabeleland North (**Map 2**). The prevalence of wasting ranged from 1.9% in Mashonaland East to 9.8% in Matabeleland North (**Map 4**). Matabeleland North, known to be dry and drought prone also exhibited the highest prevalence of stunting (28.5%). The distributions of underweight, wasting and stunting almost coincide with the exception of the provinces Mashonaland Central and Matabeleland South, which show a greater risk for stunting than for wasting and underweight (**Map 3**).*

*Since the last 10 years the prevalence of underweight has deteriorated (**Figure 6**). Especially troubling is the proportion of severely underweight. Several intervention programmes seem to have had a positive effect on the prevalence of stunting. Despite the reduction in the prevalence of stunting in the two DHS surveys, it is still considered a problem. The prevalence of wasting rose considerably from DHS 1988 to DHS 1994, probably due to severe droughts between these two surveys.*

*Pattern of malnutrition in children and adults do not appear to overlap. A study carried out 1992 showed very little moderate to severe chronic energy deficiency (1,6% male and 3.1% females), however 5.6% of the men and 17.4% of the women were overweight and obese (**Table 4b**). Moreover, while 5% of the women between 15 and 49 years studied in the DHS survey had a BMI below 18.5 (**Map 5**), 21.5 % of the nonpregnant women were overweight and obese (**Table 4b**). Women in urban areas have the highest risk of overweight. The rise in the prevalence of overweight is accompanied by an increasing trend of cardiovascular diseases and diabetes. The growing prevalence of non-communicable diseases seem to be related to unhealthy lifestyles and changes in eating habits coupled with a high fat, sugar and salt intake. Infections (tuberculose and malaria) but most important HIV/AIDS, seem to be the main health threats for adults.*

The fact that childhood malnutrition persists coinciding with an onset of adult obesity suggests that the principal problem in households in Zimbabwe might not be household food security but insufficient sanitation and inadequate health care services. Furthermore, inadequate intake of food, unfavourable patterns of infant feeding and the burden of repeated infections (mainly ARI) and diseases (diarrhoea) pose young children at a special risk of malnutrition.

*Micronutrient deficiencies represent also significant health problems in Zimbabwe especially, iron, vitamin A and B-vitamins, particularly niacin. The results of a study in 1997 in four provinces (Mashonaland Central, Midlands and Matebeleland North and South) showed that 33% of pregnant women, 29.6% of lactating women and 17.6% of pre-school children and 16.5% of adult males had haemoglobin levels between 11 and 9 g/dl (**Table 5**). In 1991, a vitamin A survey in Matebeleland North Province reported 0.6% of children from 6 months to 6 years with nightblindness and 0.2% with vitamin A-related corneal scars (**Table 5**). A targeted vitamin A supplementation programme for all measles cases was initiated through UNICEF funding.*

*Due to Universal Salt Iodisation in 1995, IDD has been eliminated. It was a major public health problem in 1988, when the National Goitre Survey reported a national Visible Goitre Rate of 3.7%, while the Total Goitre Rate was 42.3% (**Table 5, Map 6**). However, most likely due to poor monitoring of the quality of salt, the incidence of thyrotoxicosis increased about 2-fold in all ages between 1991 and 1995.*

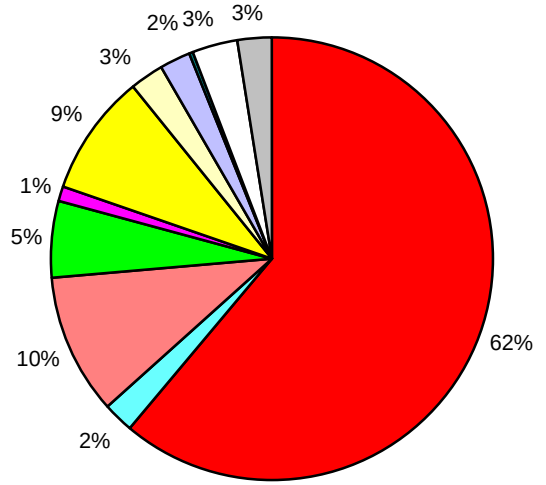
TABLE 1: GENERAL STATISTICS OF ZIMBABWE

Last updated: 24-10-00

Indicator (§)	Year	Unit	
A. Land in use for agriculture			
1. Agricultural land	1995	ha per person	1,847
2. Arable and permanent crop land	1995	ha per person	0,295
B. Livestock			
1. Cattle	1996-98	thousands	5429
2. Sheep & goats	1996-98	thousands	3239
3. Pigs	1996-98	thousands	265
4. Chickens	1996-98	millions	15
C. Population			
1. Total population	1998	thousands	11377
2. 0-5 years	1998	% of total pop.	17,3
3. 6-17 years	1998	% of total pop.	32,2
4. 18-59 years	1998	% of total pop.	46,3
5. >= 60 years	1998	% of total pop.	4,3
6. Rural population	1998	% of total pop.	66,1
7. Annual population growth rate, Total	1995-2000	% of total pop.	1,4
8. Annual population growth rate, Rural	1995-2000	% of rural pop.	0,4
9. Projected total population in 2025	2030	thousands	15853
10. Agricultural population	1995	% of total pop.	65,5
11. Population density	1995	pop. per sq Km	27,8
D. Level of Development			
1. GNP per capita, Atlas Method	1997	current US$	720
2. Human Development Index rating (new)	1997	min[0] - max[1]	0,560
3. Incidence of poverty, Total	1991	% of population	39,7
4. Incidence of poverty, Rural	1988	% of population	60
5. Life expectancy at birth (both sexes)	1998	years	44,8
6. Under-five mortality rate	1998	per 1,000 live births	89
E. Food Trade			
1. Food Imports (US $)	1996-98	% of total imports	5,5
2. Food Exports (US $)	1996-98	% of total exports	10,8
3. Cereal Food Aid (100 MT)	1996-98	% of cereals imports	8,7
F. Indices of Food Production			
1. Food Production Index	1996-98	1989-91=100	103,9
2. Food Production Index Per Capita	1996-98	1989-91=100	91,3

Indicator (§)	Year	Unit	
G. Average Food Supply			
1. **Dietary Energy Supply (DES)**	1996-98	Kcal/caput/day	2143

Percentage of DES by major food groups



Note: Value not indicated if below 1%

% Energy from:			
2. Protein	1996-98	% of total energy	10.1
3. Fat	1996-98	% of total energy	21.4
4. **Proteins**	1996-98	g/caput/day	53
5. Vegetable products	1996-98	% of total proteins	82,3
6. Animal products	1996-98	% of total proteins	17,7
H. Food Inadequacy			
1. Total population "undernourished"	1995-97	millions	4,3
2. % population "undernourished"	1995-97	% of total pop.	39,0

... no data available § see References for data sources used

See Technical Notes for definitions used.

ZIMBABWE

I. OVERVIEW

1. Geography

Zimbabwe is a land-locked country covering a land area of 390 580 square kilometres and borders South Africa to the south, Zambia to the north, Mozambique and Malawi to the east and north east respectively; and Angola and Botswana to the west and south west respectively.

Administratively the country is divided into 8 provinces, and further into 52 districts (**General map of Zimbabwe**). The country is dominated by a high plateau with a ridge forming a central backbone. Major urban areas besides the capital Harare include Bulawayo, Chitungwiza, Gweru and Mutare. The country enjoys a subtropical climate with four overlapping seasons. The average daily temperature in the winter ranges from 13 to 23° C and in the summer from to 25 to 30° C. Rainfall is highest in the Eastern Highlands and on the plateau, which receives about 1000mm per year, while annual rainfall in the Lowveld region is often below 400mm per annum. Geophysically, the country is graded into five agro-ecological zones: Regions I to V, reflecting the range from high- to low-quality land. The rainfall patterns and crop production progressively deteriorate from Region I to Region V.

2. Population

In 1998, the total population in Zimbabwe was estimated to be more than 11.4 million inhabitants (**Table 1**). In 1995 the population density was about 27.8 persons/km^2 (**Table 1**) (**Map 1**). The population in Zimbabwe is growing at an annual rate of 1.4% and is estimated to reach 15.8 million inhabitants by the year 2030. The rapid population growth continues despite the high under five-mortality rate (89‰ in 1998) and the low life expectancy at birth (44.8 years) (**Table 1**). Zimbabwe is characterised by a young age structure (around 50% of the population are less than 18 years of age). 65% of the population resided in rural areas in 1995 (**Table 1**). Nearly two thirds of the rural population live in communal lands, formerly called the Tribal Trust lands. Almost 75% of the communal lands are in Natural Regions IV and V characterised by low rainfall and poor soils.

About 74% of the population speak Shona as their mother tongue, while 18% speak Ndebele, 4% English and 4% other languages. English is the language of communication in government and business. However, all three languages are now officially taught in schools and used on all public notices. Christianity is the main religion, but local traditional ethnic beliefs do persist on a limited scale.

3. Level of development: poverty, education and health

A Poverty Assessment Study Survey (PASS) was carried out in Zimbabwe in 1995 (MPSLSW, 1997). The study calculated two poverty lines, the Food Poverty Line (FPL) and

the Total Consumption Poverty Line (TCPL). Persons whose income was below the TCPL but above the FPL were termed "poor" and those with income below the FPL were "very poor".

By this classification, about 61% of the Zimbabwean population were poor and 45% of them very poor. It should be noted, however, that the PASS was carried out during a drought year so the figures represent the worst scenario. The World Bank reports a similar figure with 63% of the population below the national poverty line (World Bank, 1999a). 75% of the households in the communal areas were poor in the PASS compared to 39% of the urban households. Regional comparison identified the Binga district, Manicaland and Mashonaland East Provinces as most disadvantageous and the Umguza district and the Harare and the Bulawayo Province as least affected. Female-headed households were more likely to be very poor or poor compared to those headed by men. Given that women headed one in three households a high proportion of households is at risk of poverty. Furthermore, the risk of poverty for a rural household is higher than for an urban household. While the incidence of poverty was 39.7% in 1991 of the total population, it was 60% in 1988 for people residing in rural areas (**Table 1**).

The education sector has shown the most rapid expansion in post-independent Zimbabwe (1980-1990). Free primary education was introduced, and entry to secondary school was facilitated resulting in an enrolment of nearly 50% of the 12-16 years age group in secondary schools. School attendance figures consequently rose from 1979 to 1987: in primary schools from 820,000 to 2,264,000; and in secondary schools from 60,000 to 600,000. The provision for education in the budget increased from US$ 150 million in 1979 to US$ 550 million in the 1995/96 financial year. There has been a steady increase in literacy rates during the last 30 years. Adult literacy rate is now 85%, with 90% male and 80% female literacy (UNICEF, 1998). Between 1980 and 1990 the University of Zimbabwe experienced a dramatic expansion from less than 2000 to 10,000 students. Subsequently the National University of Science and Technology, two private universities and the Gweru University for teacher education were established in the following years.

In 1985-87 the percentage of people with access to health services in Zimbabwe was 71% (UNDP, 1990). Health care provision improved at independence and service is free for all those earning less than ZW$ 400 per month. For the rest of the population there is a large private sector supported by private medical insurance associations. State expenditure on health rose from ZW$ 60million in 1979 to ZW$ 1.9 billion in 1995/96 (Zimbabwe homepage). The urban areas still enjoy greater access to health facilities than the rural areas.

During the 1980s access to health services, particularly antenatal and postnatal and family planning services improved markedly resulting in a record drop in infant, child and maternal mortality rate. This progress achieved in the first half of the eighties, however, slowed significantly during the second half deteriorating the situation (Sanders D. 1988; Tumwine JK. 1992). Several factors like the economic regression, the HIV/AIDS epidemic, lack of environmental sanitation in overcrowded areas and unsafe motherhood have contributed to this turn of events.

Infections (HIV/AIDS, tuberculosis and malaria) and cardiovascular diseases seem to be the main health treats for adults. They accounted for 50% of the diagnoses made in patients at the Medical Department of United Bulawayo Hospitals from 1987 to 1994 (Mudiayi TK. et al, 1997). Cardiovascular diseases showed an unexpectedly high prevalence. The greatest concern, however, is the HIV/AIDS epidemic. Among 11 million adults, 22% are estimated to be HIV positive, and nearly 200,000 AIDS- related deaths occur annually (USAID, 1999).

For children the main health threats seem to be malnutrition, acute respiratory infections and diarrhoea (ZDHS, 1996) accounting for 69.7% of 902 under-fives admissions to Chimanimani Hospital (Tumwine JK et al. 1992). Immunisation coverage is high in Zimbabwe. In 1995-96, 92% of one year old infants were immunised for TB, 90% for DPT, 90% for Polio and 88% for measles (UNICEF, 1998a). Full immunisation coverage rates in one rural district of Zimbabwe in the 12-23-month-olds increased from 44.3% in 1984 to 70% in 1989 (Tumwine JK et al. 1992). In 1993, 85% of 162 children under five years in households in Chitungwiza were given appropriate immunisation (Watts TE. et al, 1998).

Specific child survival interventions include the Expanded Programme on Immunisation (EPI), the national Control of Diarrhoeal Diseases (CDD) programmes, Acute Respiratory Infection (ARI) management programme, Breast-feeding promotion, micronutrient supplementation and child supplementary feeding.

4. Agricultural production, land use and food security

Although accounting for only 18% of Zimbabwe's gross domestic product (in 1996), the agricultural sector remains the backbone of the economy and society (World Bank, 1998). It provided income and employment for 65.5% of the population in 1995 (**Table 1**), accounting for some 45% of the country's merchandise exports, and being the focus of a large share of the country's domestic trade and transport services.

Zimbabwe's agriculture is characterised by a highly dualistic structure (World Bank, 1998). Some 4,500 large-scale commercial farms occupy a large proportion of the country's higher potential agricultural land. The other major sub-sector consists of some 1.2 million smallholder households, the majority of which operate in low-to-medium potential areas. Over the past decade, Zimbabwean agriculture has grown at a very slow pace (i.e. less than 2% per annum) with most of this growth confined to parts of the large-scale commercial sub-sector.

Approximately two-thirds of the country is suitable for agriculture. Agricultural land represented 1.847 ha per person in 1995 with 0.295 ha per person as arable and permanent cropland (**Table 1**). Agriculture is characterised by a high degree of diversification including the cultivation of maize, soya bean, cotton, wheat, groundnuts, sorghum, sunflower seed, cottonseed, coffee, millet and the production of high grade beef and dairy products as main products. Food exports account for 13.6% of the total exports of the country (**Table 1**). Tobacco is one of the country's big three (with gold and ferrochrome) foreign exchange earners. It's export accounted for 532 million US$ in 1998 (World Bank, 1999a). Production in agriculture has been rising in 1999 by 2-3% due to excessive rains (EIU, 2000).

4.3 Mio of the Zimbabwean population could not meet their food requirements in the period from 1995-1997 and consequently have been considered as undernourished, representing 39% of the total population (**Table 1**). Zimbabwean households are likely to face serious food shortages if the population growth and the increase in urbanisation coinciding with an increase in price for major food items, like maize, continue. Smallholder farmers in regions IV and V are at a special risk of food insecurity due to a fragile food production system. This system is affected by a variety of factors: the periodic incidence of drought; environmental degradation in some areas; weak smallholder-agribusiness linkages and the reduced performance of public agriculture support services (World Bank, 1998).

5. Economy

The Total Gross National Product (GNP) per capita in 1997 in Zimbabwe was US$ 720 (**Table 1**) and the Gross Domestic Product (GDP) in 1998 accounted for US$ 6.5 billions (World Bank, 1999a). Zimbabwe achieved an average 1.7% growth between 1991-95. The severe drought of 1992 led to a negative growth in GDP with a decline in agricultural production and industrial output during this period. The average growth in 1996 was 7.3 % decreasing to 3.5 % in 1997. The decline in 1997 was the result of poor performance of the agriculture and mining sectors. The Zimbabwe dollar depreciated over 40 % in the first half of 1998 from Z$18 to Z$25 and recently to Z$30 (World Bank, 1999a). Zimbabwe's current economic crisis, the worst since independence in 1980, will continue throughout 2000 (EIU, 2000). Inflation rate is expected to reach 45% in the year 2000 (EIU, 2000).

Zimbabwe has a broad-based economy with three major productive sectors namely agriculture, mining and manufacturing (World Bank, 1999a). Main exports from the agriculture sector are maize, sugar, beef, cotton and tobacco. The manufacturing sector is diversified and produces more than 5 000 different products. The dominant sub-sectors are foodstuffs (24%), metal products (17%), chemicals (15%) and textiles (12%) by 1991 figures (Zimbabwe homepage). The total value of mineral production is estimated at about US$500.5 billion. Principal minerals are asbestos, nickel, copper, coal and chrome and the country's main mineral is gold (Zimbabwe homepage). The export of gold accounted for US$ 231 millions, compared to US$ 532 millions for tobaccos and US$ 642 millions for manufactured goods (World Bank, 1999a).

II. THE FOOD AND NUTRITION SITUATION

1. Trends in energy requirements and energy supplies

Between 1965 and 1996, the population nearly tripled from 4.4 to 11 million and it is projected to increase by 43% till 2030 (**Table 2**). From 1965 to 1996, average daily per caput energy requirements increased from 2109 kcal to 2159 kcal and they are expected to reach 2261 kcal by 2030. The increasing trends in energy requirements in Zimbabwe reflect the changes in population structure, the age, sex and in particular the urban-rural distribution. The urbanisation rate has more than doubled from 14.4 % to 32.5% between 1965 and 1996 and is projected to increase again to 52.2% by 2030. From 1965 till 1996-98, average daily Dietary Energy Supplies (DES) increased from 2068 kcal to 2143 kcal (**Table 2**).

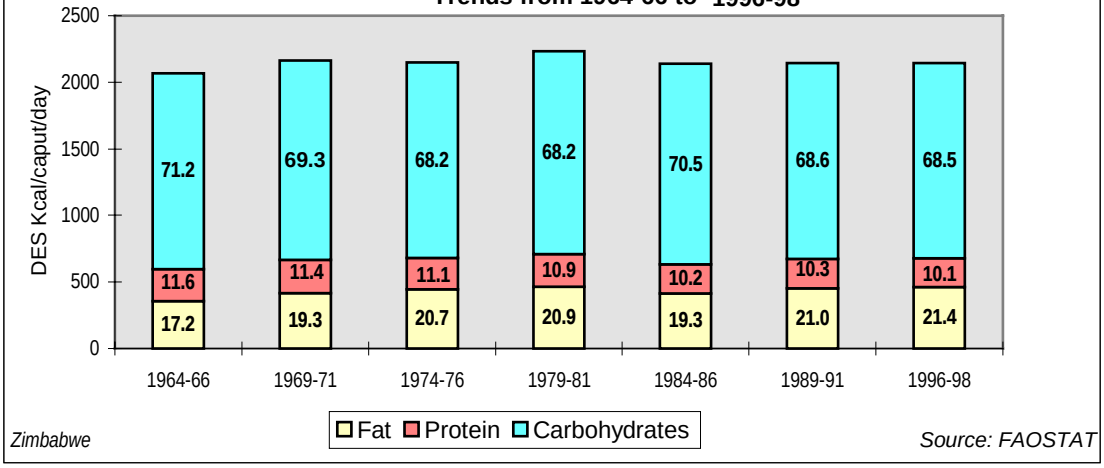
Table 2: Total population, urbanisation, energy requirements and dietary energy supplies (DES) per person and per day in 1965, 1997 and 2030

Year	1965	1997	2030
Total population *(thousands)*	4466	11045	15853
Percentage urban *(%)*	14,4	32,5	55,2
Per caput energy requirements *(kcal/day)*	2109	2159	2261
Per caput DES *(kcal/day)* *	2068	2143	—

* Three-year average calculated for 1964-66 and 1995-97 (Source: FAOSTAT)

In 1979-81 the DES totalled 2233.5 kcal/caput/day (**Figure 1**) resulting in the largest per capita energy supply soon after independence. The share of fat in total DES has increased by 24% over the period from 1964 to 1998 while the percentage of carbohydrates decreased slightly during the same period (**Figure 1**). The share of protein in total DES has continuously decreased from 11.6% in the period 1964-66 to 10% in the period 1996-98. The protein daily per caput intake decreased from 58.7 g in 1964 to 52.7 g in 1998 (**Figure 1**).

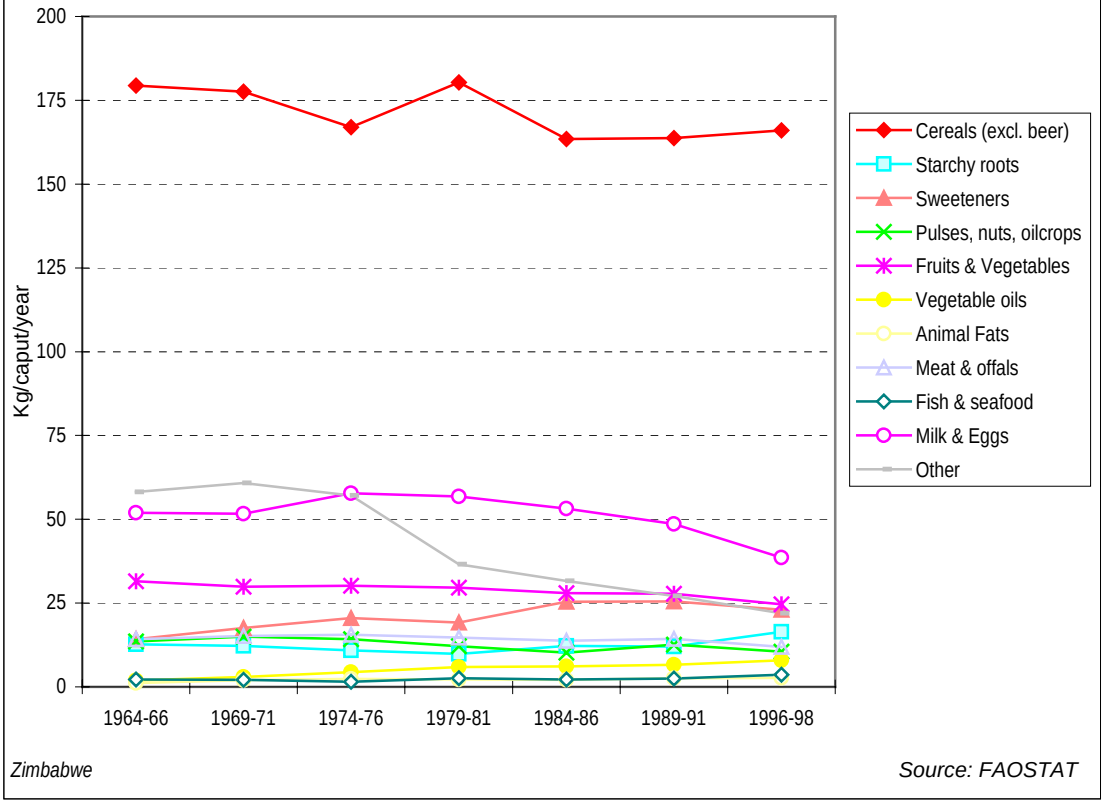
Figure 1: Share of protein, fat and carbohydrate in Dietary Energy Supply Trends from 1964-66 to 1996-98



2. Trends in food supplies

Quantity - The per capita availability of food is a function of population and food production, with adjustments made for exports, imports, food aid, wastage and livestock feed. Since 1964-66, annual per caput availability of cereals as the major food item in Zimbabwe has decreased from 179 kg/caput/year to 166 kg/caput/year in 1996-98, however, with a peak of 180.3 kg/caput/year in 1979-81 (**Figure 2**). Over the same period the supplies of milk and eggs, representing the second major food item, have increased from 51.9 kg/caput/year to 57.8 kg/caput/year in 1974-76 and decreased then to 39 kg/caput/year in 1996-98 (**Figure 2**). The availability of fruits and vegetables decreased continuously from 31.5 kg/caput/year in 1964-66 to 24.6 kg/caput/year in 1996-98. The supply of sweeteners increased from 14.2 kg/caput/year in 1964-66 to 23 kg/caput/year in 1996-98, while the supply of other food items showed slight fluctuations over this period (**Figure 2**).

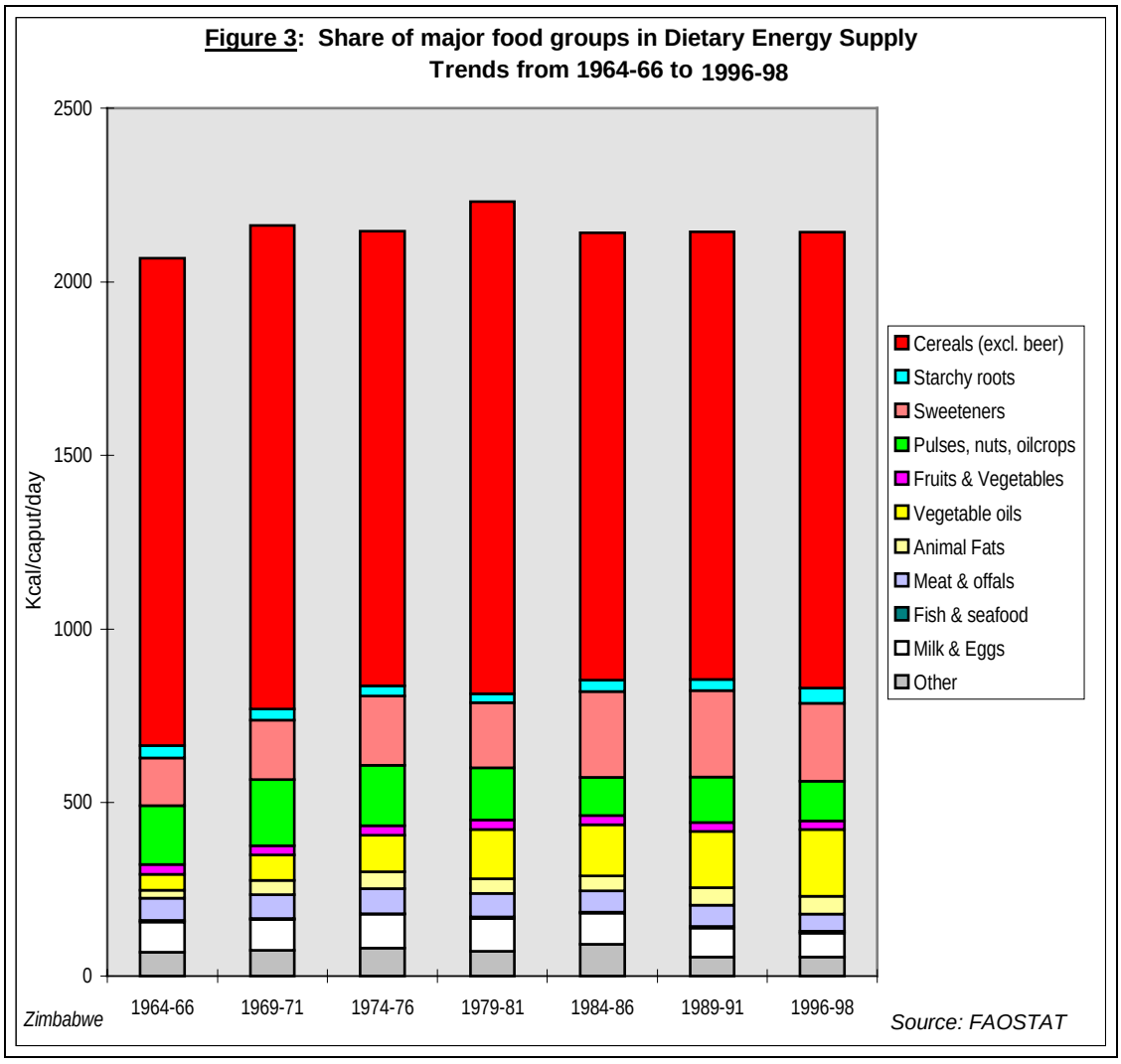
Figure 2: Supplies of major food groups (in Kg/caput/year)
Trends from 1964-66 to 1996-98



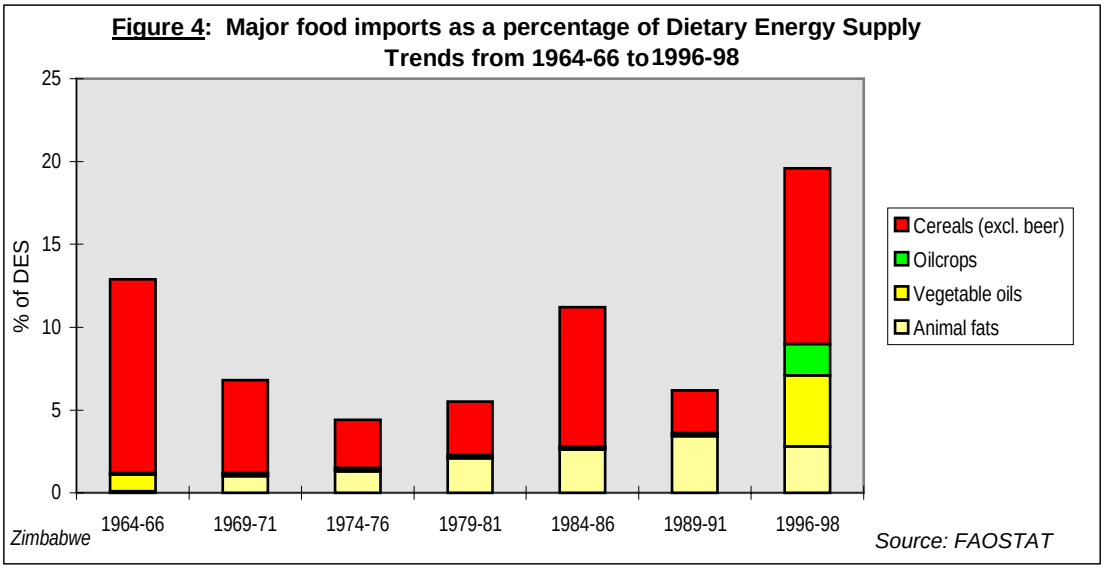
Zimbabwe *Source: FAOSTAT*

Energy - Cereals represent the main source of energy in Zimbabwe. Their share in DES decreased from 1404.4 kcal/caput/day in 1964-66 to 1311 kcal/caput/day in 1996-98 contributing 61.2% to the total DES (**Figure 3**). Sweeteners represent the second largest food group providing energy. Their share in DES increased from 137.8 kcal/caput/day in 1964-66 to 223 kcal/caput/day in 1996-98 contributing 10,4% to the total DES. Energy derived from vegetable oil increased from 46.9 kcal/caput/day in 1964-66 to 192 kcal/caput/day in 1996-98 (8.9% of the total DES), while pulses, nuts and oilcrops decreased from 168.6 to 115 kcal/caput/day over the same period (**Figure 3**). The increase of the proportion of vegetable oils, sweeteners and animal fat contributing to the DES over the period from 1964 to 1998 explains the growth in the share of fat in DES in this period (**Figure 1**). While the share of

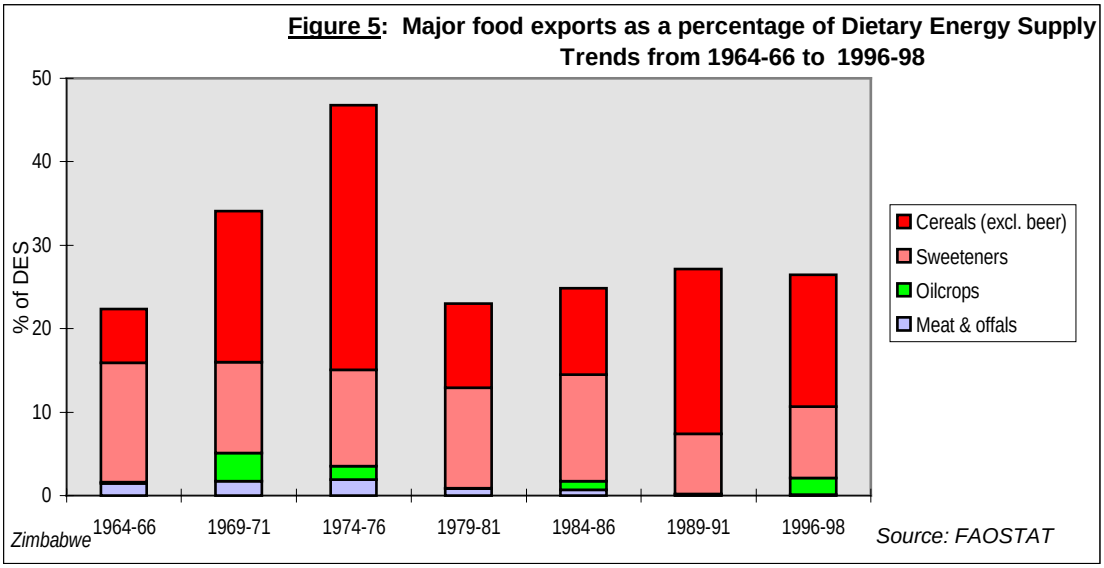
meat and offals and of milk and eggs decreased, the share of fruits and vegetables and starchy roots showed fluctuations over the years.



Major food imports – The import of cereals, representing by far Zimbabwe's major food import item, showed marked fluctuations over the period from 1964-66 to 1996-98 mainly resulting from drought periods in the country (**Figure 4**). Cereal imports decreased from 138, 164 Mt in 1964-66 to 49,031 in 1974-76 and again from 191,735 Mt in 1984-86 to 70,431 Mt in the 1989-91 period. Imports of cereals increased again in the 1996-98 period to 322,263 Mt representing 10.6% of total DES. Till 1996-98 fish and seafood represented the second largest food import item, when they have been replaced by vegetable oils (42,826 Mt). Generally food imports as a percentage of DES showed marked fluctuations in the period from 1964 to 1998 (**Figure 4**).



Major food exports – The export of cereals, representing Zimbabwe's major food export item, also showed marked fluctuations over the period from 1964-66 to 1996-98. Cereal exports increased from 77,166 Mt in 1964-66 to 533,257 Mt in 1974-76 and again from 203,921 Mt in 1979-81 to 482,077 Mt in the 1996-98 period representing 15.8% of total DES. The export of sweeteners, the second major export item, showed an increasing trend from 135,733 Mt in 1964-66 to 212,040 Mt in 1996-98 with considerable fluctuations. The export of sweeteners as percentage of DES, however, decreased from 14.3% in 1964-66 to 8.6% in 1996-98. Overall, food exports as a percentage of DES showed great fluctuations in the years, increasing from 22.6% in 1964-66 to 47.6% in 1974-76 and again from 23.9% in 1979-81 to 28% in 1996-98 (**Figure 5**).



3. Food consumption

The Poverty Assessment Study Survey provides data on food consumption patterns based on the Food Basket method (**Table 3**) (MPSLSW, 1997). Cereals and green vegetables form the major part of the Zimbabwean diet. Maize meal represents the main cereal staple and is consumed in high quantities in both rural (119 kg/caput/year) and urban (113 kg/caput/year) settings. In the rural areas, millet and sorghum are consumed in addition to maize, mostly by the poor and very poor households. While the rural population consumed bread in an amount of 8.67 kg/caput/year, people living in urban areas ate more than four times higher quantities of bread (38.78 kg/caput/year).

Mainly green vegetables accompany the maize meal based dishes prepared with cooking oil both in rural (52 kg/caput/year) and urban (43 kg/caput/year) areas (**Table 3**). The consumption rate of meat, milk, eggs and butter in the rural areas is half that in the urban areas. Protein consumption is low in the population, accounting for 5.8% of the calorie intake in rural areas compared to 8.3% in urban areas. Both in rural and urban areas sugar is consumed to the same extent (8.08 kg/caput/year).

Another quantitative dietary survey was carried out in black and white, middle class and working class, rural (several villages and farms 200 km far from Harare) and urban (Harare) Zimbabweans in 1985 (Bursztyn PG, 1985) **(Table 3)**. Energy intake ranged from 2244 kcal in males from the white middle class till 2630 kcal in men from the black middle class. Energy intake in females ranged from 1596 kcal among members of the white middle class to 1924 kcal in women from the black rural working class. Fat intake as a percentage of the energy intake was highest among the white middle class (40%) and lowest among the people from the black rural working class (22%). Protein intake varied between 16 and 17% **(Table 3)**.

Several qualitative studies have been undertaken at small scales to establish the food consumption patterns of communities in Zimbabwe. The pattern of food consumption among the people of Mutambara was studied during periods in December/January, May, and August (Benhura MA.et al., 1992). A total of 146 food items were consumed. In May the largest number of meals has been missed, mainly lunches. Home-grown foods were consumed to a greater extent in May and August than in the December/January period, while wild and semi-wild vegetables and insects were consumed only in December/January when they were available. The survey further confirmed that in average 3 meals were eaten each day and a substantial amount of food was bought.

The food consumption pattern of people during January, May and August 1989 was also studied in Dangamvura, Mutare (Benhura MA et al.1991). Most of the foods were consumed regularly throughout the year. This community only used four non-cultivated leafy vegetables and one insect. The types of foods consumed were similar to those reported as being used in Mutambara (Benhura MA et al. 1990 and 1992). Another study conducted in female-headed households in Natural Regions I, II, IV and V found that the households consumed about 60 food items (Goris A. and Koerselman L., 1994). Chinyanga et al (1992) studied the food consumption patterns of pregnant women in Harare, Wedza in the Mashonaland East and Nyanga in the Manicaland province. The study found that the pregnant women in these areas consumed few amounts of dairy products and fruit. Consumption patterns also showed seasonal variation.

Another recent survey assessed food consumption patterns and nutrient intake of 731 factory workers in Zimbabwe (Fungai Chanetsa F. 2000). The author reports a mean energy intake of 546 men to be 2310 kcal/day compared to 1899 kcal/day in 185 women. The

percentage of protein and fat of total energy intake was 15.9% and 27.8% in males, respectively and 15.5% and 29.8% in females, respectively.

Breast-feeding

Although virtually all women initiate breast-feeding (99%) only 38% start within the first hour after delivery and 53% start within the first 24 hours (ZDHS, 1996). The initiation is depending on the education of the mother, the source of antenatal care and the assistance at delivery and shows inter-provincial differences.

Exclusive breast-feeding is extremely rare (17% of all infants < 4 months). Even though only 4% of mothers report the use of infant formula, 25% give cow's milk to their infants (ZDHS, 1996). UNICEF quotes similar figures: 16% of infants below 4 months are exclusively breast-fed, while 93% of the 6 to 9 months old are partially breast-fed and 26% are continued to be breast-fed up to 23 months (UNICEF, 1998).

Introduction of complementary foods occurs very early. 29% of mothers with infants less than 2 months of age report giving water and 52% report giving other foods. By the age of 5 months 90% of the infants have been introduced complementary foods, mainly porridge (ZDHS, 1996; Cosminsky S., 1993; Moy RJ et al. 1991a). A survey carried out in households in Chitungwiza identified that the number of meals offered to a fifth of the children aged more than six months was inadequate (Watts TE. et al. 1998).

Table 3: Food consumption surveys

Source/ Year of survey	Location	Sample: Number households	Sex	Age Years	Average food intake: Major Food Groups (kg/caput/year)									
					Cereals: bread[a] maize[b] millet[c] sorghum[d]	Roots / Tubers	Pulses[a] Groundnut[b]	Vegetables: Tomatoes[a] Onion[b] Green veg.[c]	Oils/Fats: Cook.oil[a] Butter[b]	Meat[a] Poultry[b]	Fish	Milk / Eggs	Sugar	Other
Min.Labour Soc.Welfare PASS, 1997	Rural	...	...	...	8.67[a]	...	11.06[a]	3.32[a]	6.21[a]	8.74[a]	3.89	15.25	8.08	...
		...	...	...	119.61[b]	...	7.21[b]	1.92[b]	0.39[b]	4.09[b]				
		...	...	...	29.32[c]	...		52.23[c]						
		...	...	...	6.93[d]	...								
	Urban	...	...	...	38.78[a]	...	12.20[a]	3.32[a]	6.81[a]	17.94[a]	2.86	30.49	8.08	...
		...	...	...	113.54[b]	...	7.21[b]	1.92[b]	0.83[b]	3.21[b]				
		...	...	...	...	...		43.42[c]						

					Nutrient Intake (person/day)								
					Energy (kcals)		% Protein	% Fat	Protein (g)	% from Animal products	Fat (g)	% from Animal products	
	Social class				males	females							
Bursztyn, PG. 1985	white middle	...	M/F	...	2244	1596,0	16	40	...	...	...	...	
	black middle	...	M/F	...	2630.4	1584	17	30	...	...	...	...	
	black urban working	...	M/F	...	2630.4	1807.2	17	25	...	...	...	...	
	black urban middle	...	M/F	...	2611.2	1840.8	16	23	...	...	...	...	
	black rural working	...	M/F	...	2263.2	1924.8	17	22	...	...	...	...	

Notes: ... data not available

4. Anthropometric data

The nutritional status of children under five is commonly assessed using three indices: weight-for-height (wasting) which reflects acute growth disturbances, height-for-age (stunting) which reflects long-term growth faltering and weight-for-age (underweight) which is a composite indicator of both long and short term effects. Weights and heights of children are compared with the reference standards (NCHS/CDC/WHO) and the prevalence of anthropometric deficits is usually expressed as the percentage of children below a specific cut-off point such as minus 2 standard deviations from the median value of the international reference data.

Nutritional surveillance data of under-fives by the National Health Information System reports a prevalence of 12% of underweight in 1987 (MOH, 1987) **(Table 4a)**. While 12.8% of the children under 5 were underweight in rural areas, 2.2% (Chitungwiza) and 8.3% (Harare) were underweight in urban areas. The highest prevalence of underweight was found in the age group between 2 and 5 years, reaching up to 18.5% in rural areas.

The first Demographic Health Survey in 1988 reported that 11.5% of 2451 children under 5 years were underweight and 29% and 1.3% were stunted and wasted respectively (MFEPD, 1989) **(Table 4a)**. Underweight (16.4 %) and stunting (36.4 %) appeared to be most prevalent in children in the 24-36 months age group **(Table 4a)**. Children living in rural areas were more than twice as likely to be underweight and stunted (13.4 and 33.5%) compared to children living in urban areas (5.3 and 14.6%), respectively. Reviewing the anthropometric data separately for provinces, children in Mashonaland Central, East and West and Midlands seemed to have the greatest risk of being underweight, while in Matabeleland North, Mashonaland East and Manicaland stunting appeared to be most prevalent. In Bulawayo, Harare and Chituviza, children were most likely to be overweight **(Table 4a)**.

The second Demographic Health Survey in 1994 indicated 15.5% of 2014 children under 3 years to be underweight and 21.4% and 5.5% to be stunted and wasted respectively (ZDHS, 1995) **(Table 4a)**. Underweight (22.9 %) and stunting (31 %) appeared to be most prevalent in children between their first and second year, while wasting (7.6 %) was most prevalent in the 6-12 months age group **(Table 4a)**. Male children seemed to have a greater risk for underweight and stunting then their female counterparts. While 27% and 33% of the males were underweight and stunted respectively in the 12-24 months age group, 18.9% and 29% of the females were.

The urban and rural difference was still present as observed in the first DHS, however, the difference was not so obvious. Mashonaland Central and West and Matabeleland North and South have been most affected in relation to underweight and stunting **(Map 2 and 3)**. The lowest prevalence of underweight and stunting was to be found in Bulawayo, while children in Mashonaland East had the lowest risk of wasting **(Table 4a)**. The prevalence of wasting was highest in Matebeleland North, known to be a very dry and drought prone area **(Map 4)**.

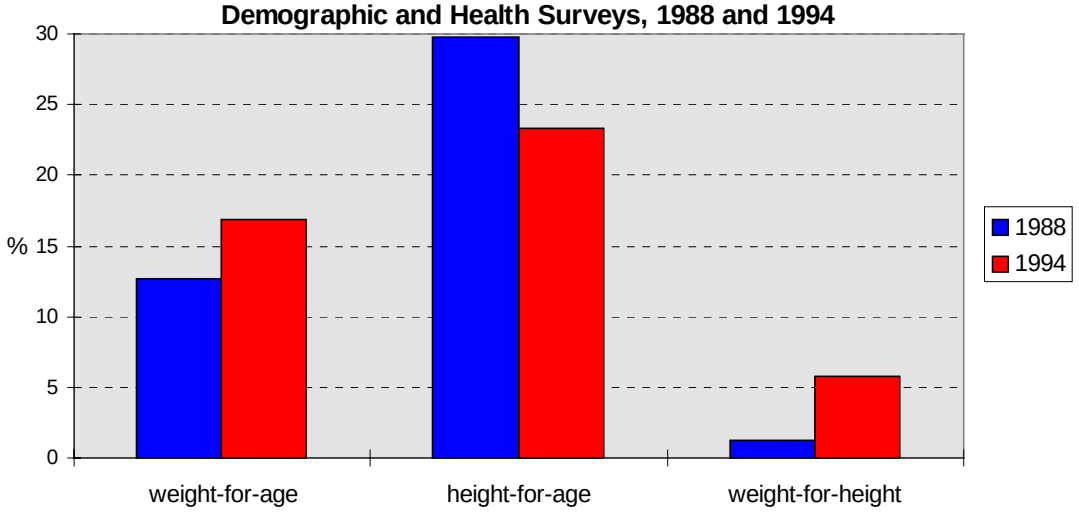
Comparison of the two DHS surveys for children aged 3 to 35 months suggests that underweight has deteriorated (**Figure 6**). Especially troubling is the proportion of severely underweight. The prevalence of stunting has decreased since the first DHS. Responsible for this decline may be the Child Supplementation Feeding Programme during drought periods and other interventions targeted to improve health care, rural development and sanitation. Despite the reduction in the prevalence of stunting in the two DHS surveys, it is still considered a serious problem and the prevalence of severely stunting is high. Stunting has previously been documented to start early in Zimbabwe followed by a clear age-specific

pattern. The data from Moy RJ et al. (1991) revealed that infants living in a deprived rural community were already stunted at six months.

The prevalence of wasting rose considerably from DHS 1988 to DHS 1994. Interpretation of this increase, however, can be misleading. Wasting is a sensible indicator reflecting an immediate or recent inadequacy in food intake and depends therefore on the time of survey - e.g. short-term fluctuations in food availability, peak of infectious diseases, etc. Reasons for this increase include the fact, that the years between the surveys were characterised by considerable drought and poor harvests, particularly in 1991, 1992 and 1994. Other possible reasons might be inadequate nutrition or reduced utilisation due to diseases like ARI and AIDS or increased food insecurity.

The DHS 1994 reports a prevalence of Low Birth Weight (LBW) of 11.8% with a difference in males (9.3%) and females (14.3%). Furthermore, differences between provinces are obvious ranging from 7.6% in Masvingo to 17.3% in the Midlands (ZDHS, 1996). These figures represent 70% of all deliveries that occur in a health facility and have therefore to be interpreted with caution. Poor women who may be at greatest risk to deliver a LBW infant may also be the least likely to deliver in health facilities. UNICEF quotes the prevalence of LBW with 14% in 1998 (UNICEF, 1998). The proportion of new-borns weighing less than 2.5 kg was 9 % in the community (n=684) and 15 % in the hospital (n=314), according to a study of the Karoi District Hospital (Le Bacq F et al., 1993).

Figure 6: Trends in nutritional status of children aged 3-35 months Demographic and Health Surveys, 1988 and 1994



Available anthropometric data of adolescents in Zimbabwe is presented as prevalence of stunting and wasting instead of mean BMI values. In 1991, the National Nutrition Unit conducted a Primary school entrants Survey among 1264 children from 15 schools in Makoni District (Manicaland province) and 13 schools from Tsholotsho District (Matebeleland North) (NNU, 1992). In the Tsholotsho district, 14.7% of children were found to be moderately to severely stunted and 4.5% were wasted. A higher percentage of boys was stunted (18.7%) compared to girls (10%). Stunting was most prevalent among the 8-year-olds. Children from communal lands appeared to have a higher risk of being stunted (17.1%) compared to children in resettlement areas (9.3%) and the commercial farms (4.4%). In Makoni District, 7.7 % were moderately to severely stunted and 2.9% were wasted. In 1992, UNESCO initiated the Zimbabwe Child Health, Nutrition and Learning Project. A pilot study for this project was

conducted in Wedza District wherein weights and heights were measured in 192 students ranging in age from 6 to 16 years (UNESCO, 1992). The study found a third of all children stunted, while 27% of the boys and 22% of the girls were wasted. The Harare City Health department maintains surveillance on the growth of school children in the 6-14 years age group. Boys showed consistently higher rates of stunting than girls did. Stunting ranged from 4.3% to 8.9% and 7.3% to 11% in girls and boys respectively.

The nutritional status of adults is usually assessed using the Body Mass Index (BMI) calculated as weight (kg) over height squared (m^2). For classifying individuals according to their nutritional status, cut-off levels of BMI have been proposed. Adults with a BMI less than 18.5 kg/m^2 are considered to suffer from chronic energy deficiency. A BMI of over 25 indicates overweight.

The DHS survey 1994 presents data on mean BMI and the prevalence of Chronic Energy Deficiency (CED) and overweight of 1799 women between 15 and 49 years, who had a birth in the 3 years preceding the survey (**Table 4b**) (**Map 5**). Mean BMI and % CED of the women were 23.1 and 5 % respectively. The prevalence of CED in rural areas (6.0%) was nearly three times higher than the one in the urban areas (2.3%). Regional differences in the prevalence of CED seem to exist ranging from 11.1 % in Matabeleland North to 0.7 % in Harare. Matabeleland North and South and Mashonaland West appeared to have the highest prevalence of CED **(Map 5)**. Matabeleland North was also the province with the highest prevalence of underweight and wasting of children below 3 years.

About 20 % of the nonpregnant women between 15 and 49 years were overweight and women living in urban settlements were twice as likely to be overweight than women residing in rural areas (ZDHS, 1996). The risk of overweight in women increased with age. Women between 35 to 49 years were nearly 3.6 times more likely to be overweight compared to women between 15 to 19 years.

An anthropometric study took place in 1991 in Chibi district in the Masvingo Province, about 400 km south of Harare. This area is drought-prone and consists of 35% land type 4 and 65% land type 5. The total sample consisted of 628 households, with a total number of 4528 individuals, excluding pregnant women. 1288 individuals were > 18 years. This study showed little moderate to severe chronic energy deficiency (2% male and 3% female), however 5.6% of the men and 17.4% of the women had a BMI above 25 (Ferro-Luzzi A. et al. 1992).

Pattern of malnutrition in children and adults do not appear to overlap. Only 1-2 % of examined households in the survey in Chibi district (1992) presented a condition, where maternal BMI and children nutritional status seemed to correspond (James WP. et al.1999). This suggests that the principal problem in households in Zimbabwe might not be household food security. In areas, where childhood malnutrition persists coinciding with an onset of adult obesity, there is a need for a variety of public health measures, e.g. immunisation and clean water together with maternal education to improve parental care.

The body mass indices (BMIs) and waist: hip (W:H) ratios of 1,509 Black Africans in 3 provinces in Zimbabwe were assessed in 1994 (Zinyowera T, 1994). Again women were found to be overweight and to have larger mean waist circumferences than men. They were, therefore, at greater risk of health problems associated with abdominal adiposity.

A study in two rural areas in Mashonaland East (Maramba and Uzumba) and one urban area in Mashonaland Central (Bindura) found that the prevalence of overweight in women ranged from 14.7% in Maramba to 46.9% in Bindura (Stene LC, 1997) **(Table 4b)**. Men were more than three times less likely to be overweight (3.6% in Maramba and 14.5% in

Bindura). The data clearly documents that women in the urban areas were at highest risk of becoming overweight. Women with a higher education tended to have higher BMI than their less educated counterparts.

The rise in the prevalence of overweight is accompanied by an increasing trend of cardiovascular diseases and diabetes suggested by data compiled in the City Health Department of Harare City. Mortality of diabetes mellitus and cardiovascular diseases was 5.3% and 9.3% respectively in 1996, compared to 3.9% and 8.9% respectively, in 1995 (Harare City Health Department. 1995; Harare City Health Department. 1996). Also, in the United Bulawayo Hospital, diabetes mellitus, cardiovascular diseases and hypertension were among the 10 leading diseases in 12,280 patients from 1987 to 1994 (Mudiayi TK. 1997). The growing prevalence of non-communicable diseases seems to be related to unhealthy lifestyles and changes in eating habits away from the consumption of the less refined traditional African diet, combined with a high fat and salt intake.

Table 4a: Anthropometric data on children

Source/ Year of survey	Location	Sample Size Number	Sex	Age Years	Percentage of malnutrition						
					Underweight % Weight/Age		Stunting % Height/Age		Wasting % Weight/Height		Overweight % Weight/Height
					< -3SD	< -2SD*	< -3SD	< -2SD	< -3SD	< -2SD	> +2SD
MOH, 1987	National	1868428	M/F	0. - 4.99	...	12	...	...	...	...	...
		419964	"	0. - 0.49	...	5.8	...	...	...	...	...
		484846	"	0.50 - 4.99	...	8.3	...	...	...	...	...
		498187	"	1	...	16.8	...	...	...	...	...
		465431	"	2.00 - 4.99	...	17.2	...	...	...	...	...
	rural	1670296	"	0. - 4.99	...	12.8	...	...	...	...	...
	"	378695	"	0. - 0.49	...	5.9	...	...	...	...	...
	"	440040	"	0.50 - 4.99	...	8.7	...	...	...	...	...
	"	443325	"	1	...	17.9	...	...	...	...	...
	"	408236	"	2.00 - 4.99	...	18.5	...	...	...	...	...
	urban	54074	"	0. - 4.99	...	2.2	...	...	...	...	...
	(Chitungwiza)	12880	"	0. - 0.49	...	0.5	...	...	...	...	...
	"	14582	"	0.50 - 4.99	...	1.3	...	...	...	...	...
	"	13842	"	1	...	2.8	...	...	...	...	...
	"	12770	"	2.00 - 4.99	...	4.3	...	...	...	...	...
	urban	144058	"	0. - 4.99	...	8.3	...	...	...	...	...
	(Harare)	28389	"	0. - 0.49	...	7.3	...	...	...	...	...
	"	30224	"	0.50 - 4.99	...	6.4	...	...	...	...	...
	"	41020	"	1	...	9.5	...	...	...	...	...
	"	44425	"	2.00 - 4.99		9.2	...	...	...	...	...
MFEPD, 1989	National	2451	M/F	0.25-4.99	1.6	11.5	8.5	29.0	0.2	1.3	4.4
1988		141	"	0.25-0.5	0.0	0.0	2.1	9.9	0.0	0.0	23.4
		263	"	0.5-0.9	0.4	6.5	4.9	20.9	0.0	0.8	11.4
		537	"	1-1.9	1.1	15.1	7.6	32.6	0.2	1.9	3.7
		555	"	2-2.9	2.7	16.4	11.4	36.4	0.5	1.1	1.3
		457	"	3-3.9	2.0	11.4	12.0	33.5	0.0	1.1	1.8
		498	"	4-4.9	1.4	8.0	6.8	22.7	0.2	1.6	1.8
		1235	M	0.25-4.99	1.6	11.3	9.3	30.0	0.2	1.3	4.4
		76	"	0.25-0.5	0.0	0.0	2.6	13.2	0.0	0.0	22.4
		130	"	0.5-0.9	0.8	5.4	5.4	20.8	0.0	0.0	11.5
		235	"	1-1.9	2.6	19.1	10.6	35.7	0.0	3.0	3.8
		288	"	2-2.9	2.4	16.3	12.5	36.5	0.7	1.4	1.4
		253	"	3-3.9	1.6	8.7	9.1	29.2	0.0	1.2	1.6
		252	"	4-4.9	0.8	7.5	8.7	27.8	0.0	0.8	2.0
		1217	F	0.25-4.99	1.5	11.6	7.7	28.1	0.2	1.2	4.4
		65	"	0.25-0.5	0.0	0.0	1.5	6.2	0.0	0.0	24.6
		133	"	0.5-0.9	0.0	7.5	4.5	21.1	0.0	1.5	11.3
		302	"	1-1.9	0.0	11.9	5.3	30.1	0.3	1.0	3.6
		267	"	2-2.9	3.0	16.5	10.1	36.3	0.4	0.7	1.1
		204	"	3-3.9	2.5	14.7	15.7	38.7	0.0	1.0	2.0
		246	"	4-4.9	2.0	8.5	4.9	17.5	0.4	2.4	1.6

Notes:... no data available

Each index is expressed in terms of the number of standard deviations (SD) units from the median of the NCHS/CDC/WHO international reference population. * Includes children who are below -3 SD.

Table 4a: Anthropometric data of children (continued)

Source/ Year of survey	Location	Sample			Percentage of malnutrition						
		Size number	Sex	Age years	Underweight % Weight/Age		Stunting % Height/Age		Wasting % Weight/Height		Overweight % Weight/Height
					< -3SD	< -2SD*	< -3SD	< -2SD	< -3SD	< -2SD	> +2SD
MFEPD, 1989	*Residence:*										
1988	Urban	582	M/F	0.25-4.99	0.3	5.3	4.5	14.6	0.3	1.4	7.9
	Rural	1869	"	"	1.9	13.4	9.8	33.5	0.2	1.2	3.3
	Region:										
	Bulawayo	162	M/F	0.25-4.99	0.0	4.9	6.2	19.1	0.0	0.6	11.1
	Harare/Chitungv.	141	"	"	0.7	2.8	2.8	11.3	0.7	1.4	7.8
	Manicaland	349	"	"	1.7	10.6	12.0	32.4	0.3	0.9	4.9
	Mashonaland C.	183	"	"	1.6	14.8	6.0	26.2	0.5	1.1	1.6
	Mashonaland E.	347	"	"	2.3	13.5	11.5	36.0	0.0	1.7	5.2
	Mashonaland W.	295	"	"	1.7	14.6	5.8	26.1	0.0	1.7	3.4
	Masvingo	317	"	"	0.6	7.9	6.0	31.2	0.0	0.9	2.8
	Matabeleland N.	121	"	"	1.7	12.4	13.2	37.2	0.0	0.0	0.0
	Matabeleland S.	183	"	"	1.1	9.8	9.8	30.6	0.0	1.1	3.8
ZDHS, 1995	National	2014	M/F	0. - 2.99	3.0	15.5	6.1	21.4	0.7	5.5	4.2
1994		353	"	0 - 0.49	0.0	1.8	1.0	3.5	0.8	3.0	9.1
		386	"	0.5 - 0.99	1.8	9.9	2.2	10.2	0.8	7.6	5.4
		635	"	1-1.9	4.0	22.9	9.8	31.0	0.9	7.4	4.1
		640	"	2-2.9	4.3	19.2	7.6	28.7	0.6	3.6	0.9
		991	M	0. - 2.99	3.4	17.3	6.9	21.7	1.1	6.5	3.8
		170	"	0 - 0.49	0.0	0.6	0.6	1.0	0.6	3.3	8.9
		200	"	0.5 - 0.99	3	13.8	2.6	11.0	1.1	9.7	4.6
		310	"	1-1.9	5.1	27.0	11.3	32.9	1.6	9.5	3.4
		311	"	2-2.9	3.8	19.0	8.6	28.9	0.8	3.2	0.9
		1023	F	0. - 2.99	2.6	13.8	5.3	21.1	0.4	4.5	4.6
		183	"	0 - 0.49	0	3.0	1.4	5.8	1.0	2.8	9.2
		186	"	0.5 - 0.99	0.6	5.8	1.7	9.3	0.5	5.4	6.3
		325	"	1-1.9	3	18.9	8.3	29.1	0.3	5.3	4.7
		329	"	2-2.9	4.9	19.3	6.7	28.5	0.3	4.0	0.9
	Residence:										
	Urban	518	M/F	0. - 2.99	1.8	12.5	5.6	17.6	0.5	6.1	4.6
	Rural	1495	"	"	3.4	16.6	6.3	22.8	0.8	5.3	4.0
	Region:										
	Bulawayo	103	M/F	0. - 2.99	0.0	7.1	3.8	12.8	0.6	3.2	...
	Harare	272	"	"	2.5	14.6	7.0	20.9	0.6	5.7	...
	Manicaland	248	"	"	3.6	12.8	6.0	19.2	0.6	6.2	...
	Mashonaland C.	179	"	"	4.8	19.2	8.6	27.7	1.4	5.3	...
	Mashonaland E.	212	"	"	2.4	11.6	4.8	22.8	0.0	1.9	...
	Mashonaland W.	239	"	"	4.4	19.7	9.0	22.3	0.9	6.8	...
	Masvingo	208	"	"	1.6	15.2	5.8	24.6	0.5	2.1	...
	Matabeleland N.	157	"	"	6.1	24.0	8.1	28.5	2.4	9.8	...
	Matabeleland S.	118	"	"	4.1	17.9	6.0	26.2	0.5	5.1	...
	Midlands	275	"	"	0.9	13.6	2.1	12.8	0.4	7.5	...

Notes: ... no data available.

Each index is expressed in terms of the number of standard deviation (SD) units from the median of the NCHS/CDC/WHO international reference population. * Includes children who are below – 3SD

Table 4b: Anthropometric data on adults

Source/ Year of survey	Location	Sample Size Number	Sex	Age Years	Anthropometric status and Percentage of malnutrition							
					Body Mass Index (kg/m^2)			Chronic Energy Deficiency % BMI			Overweight % BMI	Obesity % BMI
					mean	SD	median	<16.0	16.0-16.9	17.0-18.5<	25.0 - 29.9	>30.0
ZDHS, 1995	**National**	1799	F*	15-49	23.1	...	...	...	...	5.0	21.5	...
1994	*Residence:*											
	Urban	478	"	"	24.7	...	...	...	...	2.3	40.4	...
	Rural	1321	"	"	22.5	...	...	...	...	6.0	16.7	...
	Region:											
	Manicaland	236	"	"	23.1	...	...	...	...	3.8	24.0	...
	Mashonaland C.	158	"	"	22.0	...	...	...	...	5.4	13.0	...
	Mashonaland E.	188	"	"	22.7	...	...	...	...	4.7	19.0	...
	Mashonaland W.	207	"	"	22.7	...	...	...	...	7.1	16.3	...
	Matabeleland N.	140	"	"	21.8	...	...	...	...	11.1	13.1	...
	Matabeleland S.	105	"	"	22.5	...	...	...	...	7.2	17.4	...
	Midlands	240	"	"	23.2	...	...	...	...	5.2	21.8	...
	Masvingo	180	"	"	23.1	...	...	...	...	3.6	19.5	...
	Harare	252	"	"	24.8	...	...	...	...	0.7	42.8	...
	Bulawayo	93	"	"	24.3	...	...	...	...	5.7	36.0	...
	Subnational											
Ferro-Luzzi	Chibi district	806	F	…	22.0	3.3	...	1.0	2.0	9.0	14.9	2.5
et al. 1992		477	M	…	20.7	2.5	...	1.0	1.0	13.0	5.0	0.6
1991												
Stene, L.C.	Maramba, rural	170	F	…	…	…	19.5	...	...	...	14.7	...
1997	Uzumba, rural	153	"	…	…	…	20.8	...	...	...	15.0	...
	Bidura, urban	145	"	…	…	…	24.7	...	...	...	46.9	...
	Maramba, rural	111	M	…	…	…	18.2	...	...	...	3.6	...
	Uzumba, rural	66	"	…	…	…	19.7	...	...	...	4.5	...
	Bidura, urban	69	"	…	…	…	20.2	...	...	...	14.5	...

Notes: ... data not available

* Sample only includes women who had a birth in the 3 years preceding the survey.

The BMI excludes pregnant women and those who are less than 3 months post-partum. The prevalence of overweight excludes pregnant women and presents data on BMI > 25 kg/m^2

5. Micronutrient deficiencies

Iodine Deficiency Disorders (IDD)

Iodine deficiency disorders (IDD) include the clinical and subclinical manifestations of iodine deficiency. Iodine deficiency in pregnant women may cause irreversible brain damage in the developing foetus, whereas in infants and young children it may cause brain damage, psychomotor retardation and intellectual impairment.

Goitre has long been recognised by the indigenous Zimbabwean as evidenced by the existence of a variety of words for the condition in the local languages. Results from several small scale studies had suggested existence of an iodine deficiency problem early on in Zimbabwe. One survey reported a goitre rate of 44% in 188 schoolchildren in Chinamora Communal Land, while goitre prevalence was 73% (visible goitre rate 14%) in primary schools in Wedza District in 1986 (Todd CH et al 1991, Todd CH et al. 1989).

In 1988 the National Goitre Survey highlighted goitre as a public health problem (WHO/MDIS, 1993) (Marangwanda, C. 1989) **(Table 5)**. The national Visible Goitre Rate (VGR) was 3.7%, while the Total Goitre Rate (TGR) reached 42.3%. The Mashonaland Central province showed the highest degree of severity of IDD (TGR: 52,0%), followed by Masvingo (51.5%) and Manicaland (48.4%) (**Map 6**). The city Bulawayo (19.3%) and Matabeleland South (16.5 %) showed mild IDD. From the 53 districts surveyed, 20 presented severe endemia and 21 moderate endemia (WHO, 1996). Most of the regions with severe endemia were in the northeastern region, which is mountainous and has the highest rainfall. Cretinism has been documented in the severely endemic areas but at an incidence below 1% (WHO, 1997).

A National Intersectoral committee on IDD control was set up in 1989 with its terms of reference, among others, to monitor the implementation of an IDD plan of action and facilitate the enacting of appropriate legislation for the control of IDD (WHO, 1996). Within a short time Zimbabwe achieved virtual elimination of IDD through the introduction of Universal Salt Iodisation (USI) in 1995.

The law on USI of 1995 recommended 30-90 ppm at entry (ICCIDD, 1999). Iodised salt has been increasingly (80%) imported from Soda Ash Botswana. In early 1993, 47% of salt samples had at least 30 ppm but some had well in excess of 100 ppm. Since 1992, consumption of sea fish has increased to an average per capita consumption in 1995 of 6.35 kg (WHO, 1997). By 1993, some severely affected districts that had previously registered median urine iodine of 20µg/L had medians of 280µg/L in their urine (Mutamba JR, 1993). The overall median urinary iodine value has been rising from 37 µg/L in 1992 to 417 µg/L in 1998 (WHO, 1998) (WHO, 1999).

The prevalence of goitre determined by palpation in 329 primary schoolchildren of both sexes aged 6-14 years in 1996 was 9% (WHO, 1997). The prevalence in this area close to the capital Harare was 44% before the introduction of iodised salt (Delange F.et al. 1999). The median urinary iodine was 450 µg/L, double the upper limit of normal. Only 5% of the samples were below 100 µg/L.

After the elimination of IDD, which is a remarkable achievement in public health, some areas were now exposed to iodine excess mostly due to a poor monitoring of the quality of the iodised salt. The incidence of thyrotoxicosis increased about 2-fold in all ages between 1991 and 1995 with an overall incidence rising from about 2.8 in 100 000 in 1991 to 7.4 in 100 000 in 1995. Over 90% of the cases were in females with a mean age of 41 years. Fifteen

deaths in thyrotoxic patients have been recorded at the Central hospital of Harare where 604 affected patients have been treated (Todd CH.et al.1995). Iodine-induced hyperthyroidism occurred only in areas in which the introduction of iodized salt had been onset in the preceding 2 years and thus being closely related to a recent excessive increment of iodine supply (Delange F.et al. 1999).

Vitamin A Deficiency

Vitamin A is an essential micronutrient required for normal health and survival. It is involved in several critical functions in the body including vision, immune system, reproduction, growth and development. Children under five years are most susceptible to vitamin A deficiency (VAD). The consequences of VAD are dramatic and include night blindness, irreversible blindness, growth retardation and increased susceptibility to infections. Pregnant women are also prone to VAD and their children are likely to become deficient.

Zimbabwe is categorised as a country with clinical vitamin A deficiency (WHO/MDIS, 1995). Unfortunately there is no national data available. In 1991, a vitamin A survey was conducted in the Matebeleland North Province, including six districts, to establish the prevalence of xerophthalmia among 6000 children aged six months to six years (WHO/MDIS/1995) (Ncube TN et al. 1992) (**Table 5**). The prevalence of Bitot's spots and corneal scars was 0.14% and 0.23%, respectively. In one district, Binga, 1.6% of the children under 6 years had night blindness, which is above the minimum prevalence for defining clinical Vitamin A deficiency as a public health importance (WHO, 1996 a). Two districts (Binga and Tsholotsho) had alarmingly high rates of corneal xerophthalmia attaining 0.56% in Binga. This prevalence represents a matter of public health importance, although the sample size for assessing corneal scars was too small according to the WHO classifications (WHO, 1996).

A targeted vitamin A supplementation programme for all measles cases was initiated through UNICEF funding. Also subsequently targeted are cases of chronic diarrhoea and those with signs of xerophthalmia. Vitamin A capsules were also distributed to communities severely affected by the drought of 1992. Studies from Malawi suggest that maternal vitamin A deficiency may contribute to mother-to-child transmission of HIV (Semba RD et al.1994), may contribute to increased infant mortality (Semba RD et al. 1995) and possibly growth failure (Semba, RD et al. 1997). Given the high incidence and prevalence rate of HIV/AIDS in Zimbabwe, surveys to investigate the national prevalence of vitamin A deficiency will be of specific interest.

Anaemia/Iron Deficiency (IDA)

The consequences of Iron Deficiency Anaemia (IDA) include reduced physical work capacity and productivity, impaired cognitive functions and brain metabolism and reduced immunocompetence. The causes of IDA include low dietary intake in relation to the Recommended Dietary Allowances (RDA), poor bio-availability of iron in the diet, malaria and a high prevalence of parasitic infestations.

Chinyanga (1992) measured Hb in both goitrous and non-goitrous pregnant women a small-scale survey in Harare, Wedza and Nyanga. In Harare, 11.4% of the women had Hb values less than 11g/dl (n=103), while 33% in Wedza (n=91) and 10.9% in Nyanga (n= 55) had low Hb values.

The Ministry of Health and Child Welfare undertook an iron deficiency prevalence survey in 1997 (MOHCW, 1997). The study sample of 3151 was obtained from a multi-stage selection in four provinces, namely Mashonaland Central, Midlands and Matebeleland North and South. The selection was randomised at district, ward and village levels. Haemoglobin levels and serum ferritin values were measured in pre-school children, pregnant women, lactating mothers and adult males.

The results of this study showed that 33% of pregnant women, 29.6% of lactating women, 17.6% of pre-school children and 16.5% of adult males had haemoglobin levels between 9 and 11 g/dl (MOHCW, 1997) **(Table 5)**. On average, 9% of the study population had depleted iron stores as measured by serum ferritin levels of less than 10mg/L. However, it has to be born in mind that ferritin levels are elevated after infection and trauma and thereby camouflage an underlying iron deficiency anaemia. Matebeleland North had the highest prevalence of anaemia in pre-school children and pregnant women (45% and 42% respectively), while Matebeleland South had the highest prevalence in lactating women (27%).

The study did not examine parasitic infestations as a contributing factor or determine the HIV status of the study population to correct for its confounding effect. Adult males showed the highest prevalence of iron overload, with 12.5% of the study population afflicted. Of these 33% (4.1%) were haemochromatic. The Midlands province showed the highest prevalence of haemochromatosis with 9.6% affected. In a survey of 505 rural Zimbabwean, iron overload was found almost exclusively among men who consumed traditional beer brewed in steel drums (Gordeuk VR et al. 1986). Among drinkers aged over 45 years, 23 of 111 men (21%) had high serum ferritin and a transferrin saturation of over 70%, a combination that indicates a risk of liver disease and other pathological effects from excess body iron.

Niacin, Folate and Vitamin B 12 deficiencies

Pellagra, caused mainly by a deficiency of dietary niacin, is generally associated with a maize based diet. Surveillance reports from Mashonaland Central indicated increased incidence of pellagra in 1995 (Adams 1995).

Chinyanga (1992) reported folate levels of less than 2ng/ml in 7.8% and low vitamin B12 levels in 15.5% of pregnant women in Harare and low vitamin B12 levels in 15.5% in the same population (n=103). In a similar population in Wedza 44.6% of the women (n=91) had folate levels of less than 2ng/ml, while 10.3% were deficient in B12 (<150pg/ml). In Nyanga, 47.5% of the women (n=55) had folate deficiency while 46% had B12 deficiency.

In a study of the pathogenesis and clinical features of megaloblastic anaemia, vitamin B12 deficiency was diagnosed in 86.1% of 144 Zimbabwean patients with megaloblastic haemopoiesis (Savage D. 1994). Isolated folate deficiency accounted for only 5.5% of cases. A survey carried out in 1989 reported a distinct seasonal variation in the occurrence of megaloblastic anemia with a high prevalence in the wet season and a low prevalence in the dry season in 210 patients with megaloblastic anemia (Mukiibi JM et al. 1989).

In Zimbabwe, a broad-based strategy to combat micronutrient deficiencies has been adopted, through the establishment of a community food production programme, a child supplementary feeding programme, a nutrient supplementation and a food fortification programme. The food fortification programme involving the Food Industry in Zimbabwe was launched in March 1997 with the introduction of bread fortified with vitamin A, B–vitamins and iron.

Table 5: Surveys on micronutrient deficiencies

Source/ Year of survey	Deficiency	Location	Sample Size number	Sex	Age years	Percentage		
	Iodine							**VGR** **TGR**
WHO/MDIS, 1993	**Goitre**	**National**	164096	M/F	7-16	3.7		42.3
Marangwanda, C.		*Region:*						
1988		Bulawayo	4663	"	"	0.4		19.3
		Manicaland	22373	"	"	3.8		48.4
		Mashonal. C.	17133	"	"	5.0		52.0
		Mashonal. E.	21022	"	"	6.9		42.5
		Mashonal. W.	20727	"	"	1.1		39.4
		Masvingo	24549	"	"	5.6		51.5
		Matabelel. N.	16263	"	"	1.7		40.3
		Matabelel. S.	14834	"	"	0.7		16.5
		Midlands	22532	"	"	4.3		44.2
	Vitamin A	**Subnational**				**XN**	**X1B**	**C.**
WHO/MDIS, 1995		**Matebelel. N.**	6944	M/F	0,5-6	0.6	0.1	0.2
1991		Binga	1604	"	"	1.6	0.0	0.6
		Bubi	626	"	"	0.0	0.3	0.0
		Hwange	1249	"	"	0.6	0.4	0.0
		Lupana	882	"	"	0.0	0.0	0.0
		Nkayi	883	"	"	0.4	0.1	0.0
		Tsholotsho	1700	"	"	0.2	0.1	0.4
	Iron						**Hb (g/dl)**	
MOHCW,1997		**Subnational**				**11-9**	**9-7**	**< 7**
1997		**4 provinces**	799	M/F	1-5	17.6	3.3	0.4
			746	F, pregnant	15-44	33.0	4.0	0.7
			800	F, lactating	"	29.6	2.4	0.4
			811	M	"	16.5	0.6	0.0

Notes:... data not available

XN...night blindness, X1B…Bitot´s spots, C...Corneal Scars, TGR…Total Goitre Rate, VGR…Visible Goitre Rate

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References of data presented in Table 1, unless otherwise stated:

Source:	*Indicator:*
FAOSTAT. 1999	*A.1-2, B, C.10-11, E.1-3, F, G*
UN. 1998 rev.	*C.1-9, D.5*
World Bank. 1999.	*D.1*
UNDP. 1997.	*D.2*
Tabatabai H. 1996.	*D.3-4*
UNICEF. 2000. -	*D.6*
FAO/WFS. 1996.	*H*

NCP of ZIMBABWE
MAPS

- **General map** of Zimbabwe.

- **Map 1**:
Population density by Province.

- **Map 2**:
Prevalence of underweight in children under three years of age by Province.

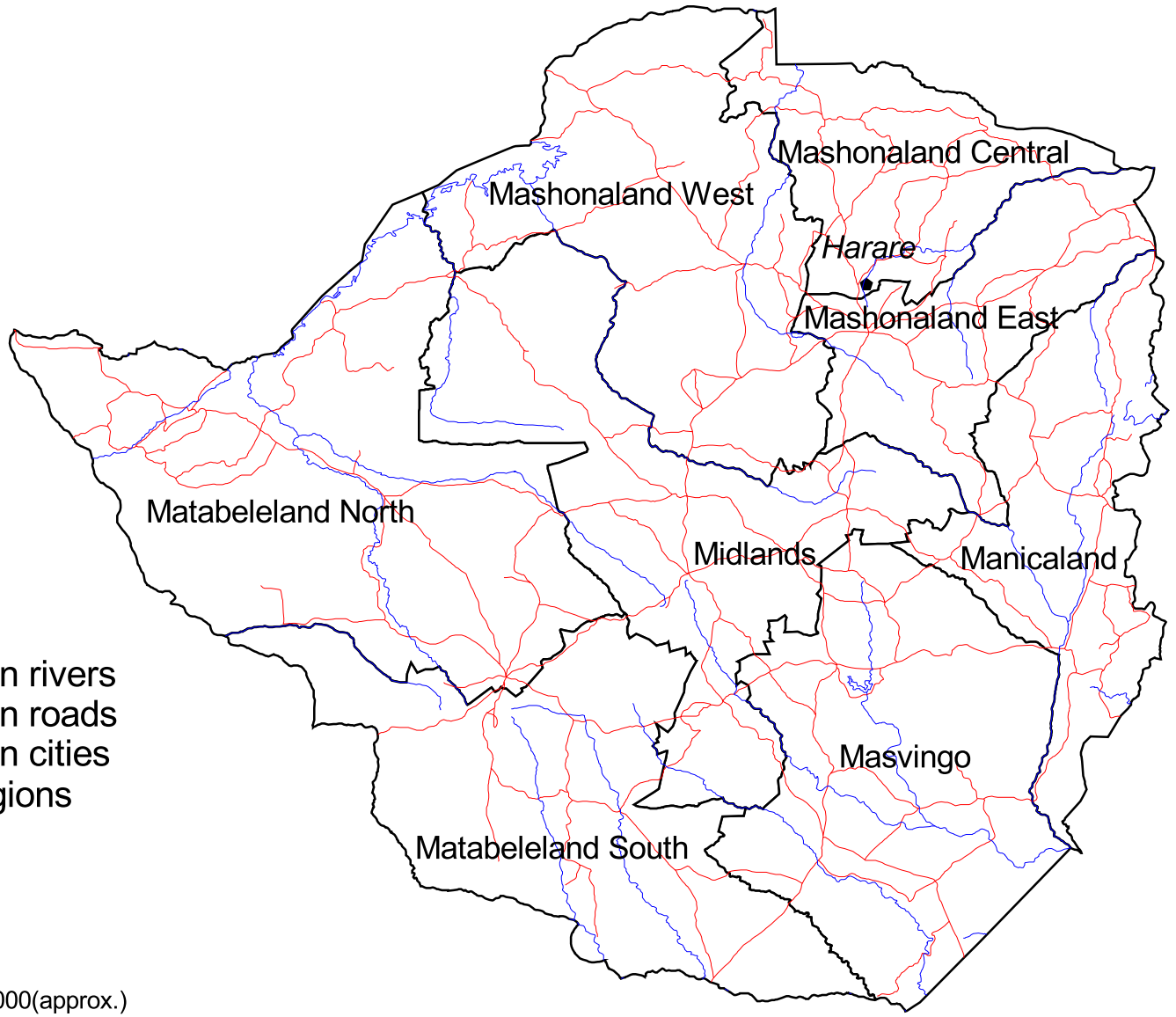
- **Map 3**:
Prevalence of stunting in children under three years of age by Province.

- **Map 4**:
Prevalence of wasting in children under three years of age by Province.

- **Map 5**:
Prevalence of BMI < 18.5 kg/m ^{2} in women 15-49 years of age by Province.

- **Map 6**:
Prevalence of Total Goitre Rate in children 7-16 years of age by Province.

General map of Zimbabwe

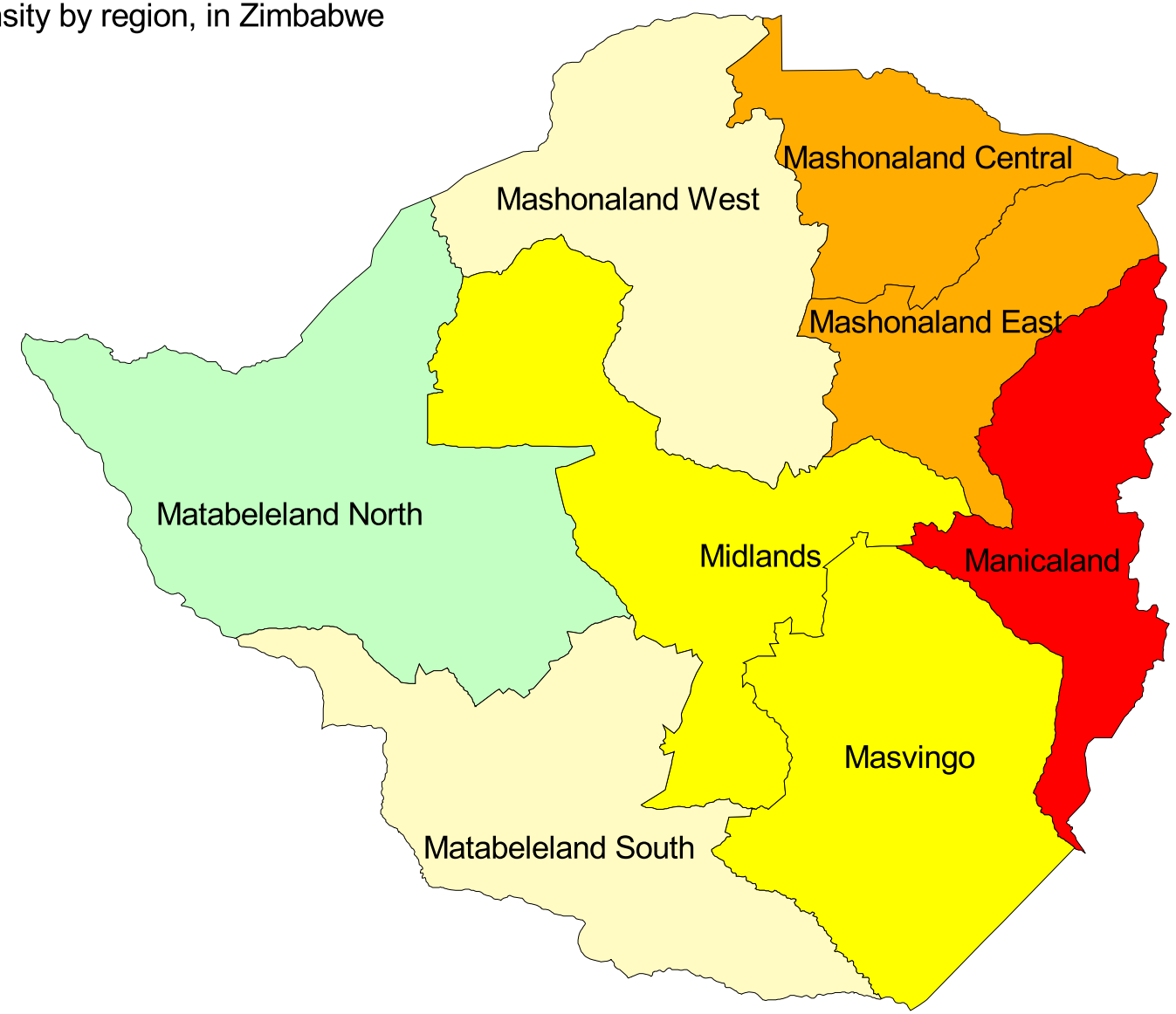


Scale 1 : 5 000 000(approx.)
Geographic Projection

FAO - ESNA, April 1999

Zimbabwe

Map1: Population density by region, in Zimbabwe



Person/km2
- <10
- 10-19.0
- 20-29.0
- 30-39.0
- >40

N
W
E
S

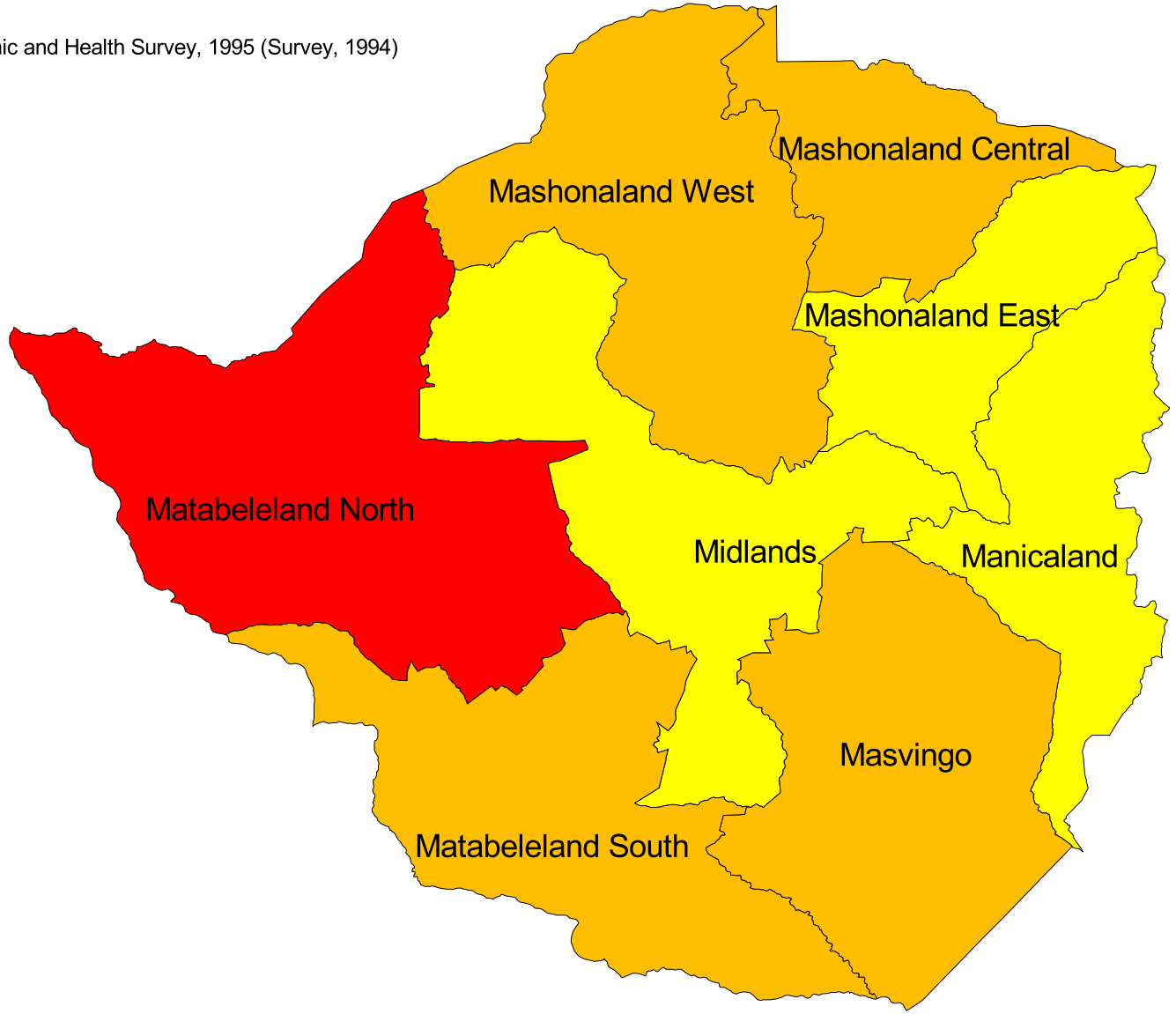
Scale 1 : 5 000 000(approx.)
Geographic Projection

FAO - ESNA, April 1999

Zimbabwe

Map2: Prevalence of underweight in children 3-59 months old by region, in Zimbabwe

Source: Zimbabwe Demographic and Health Survey, 1995 (Survey, 1994)



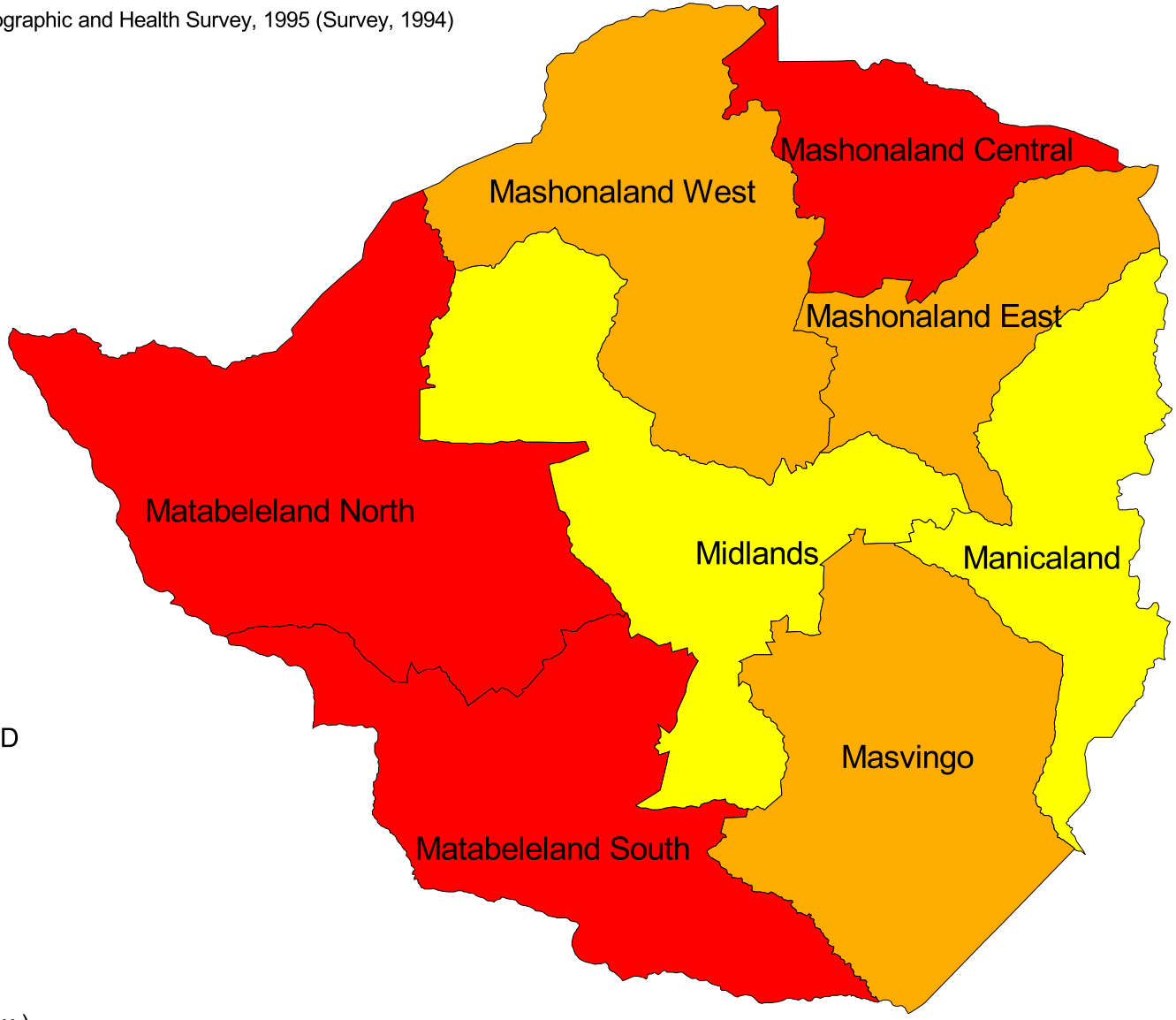
Scale 1 : 5 000 000(approx.)
Geographic Projection

FAO - ESNA, April 1999

Zimbabwe

Map3: Prevalence of stunting in children 3-59 months old, by region, in Zimbabwe

Source: Zimbabwe Demographic and Health Survey, 1995 (Survey, 1994)



% height-for-age<-2SD
- <20.0
- 20.0 - 24.9
- 25.0 - 30.0

N
W
E
S

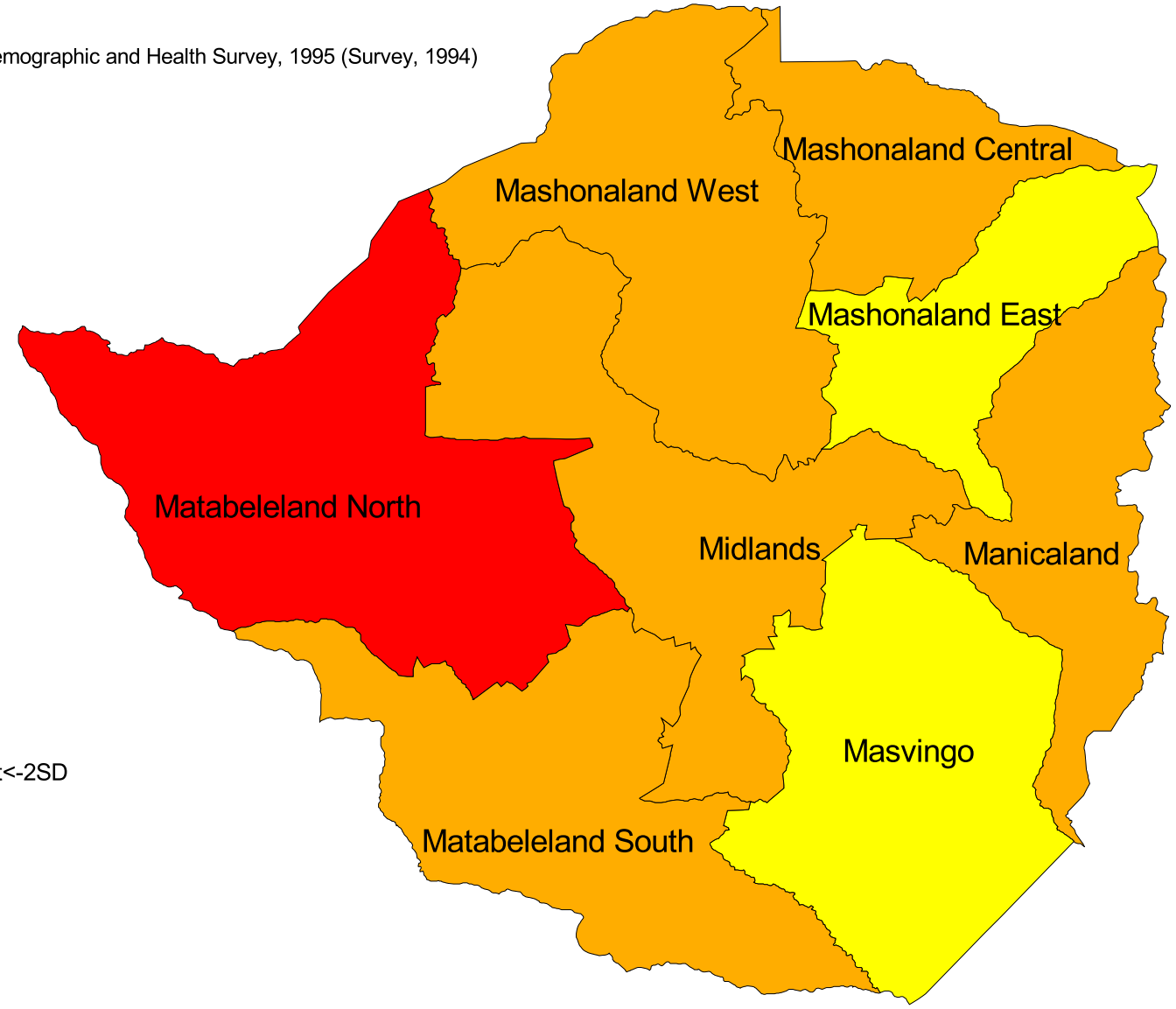
Scale 1 : 5 000 000(approx.)
Geographic Projection

FAO - ESNA, April 1999

Zimbabwe

Map4: Prevalence of wasting in children 3-59 months old by region, in Zimbabwe

Source: Zimbabwe Demographic and Health Survey, 1995 (Survey, 1994)



% weight-for-height<-2SD
- <5.0
- 5.0 - 7.5
- 7.5 - 10.0

N
W
E
S

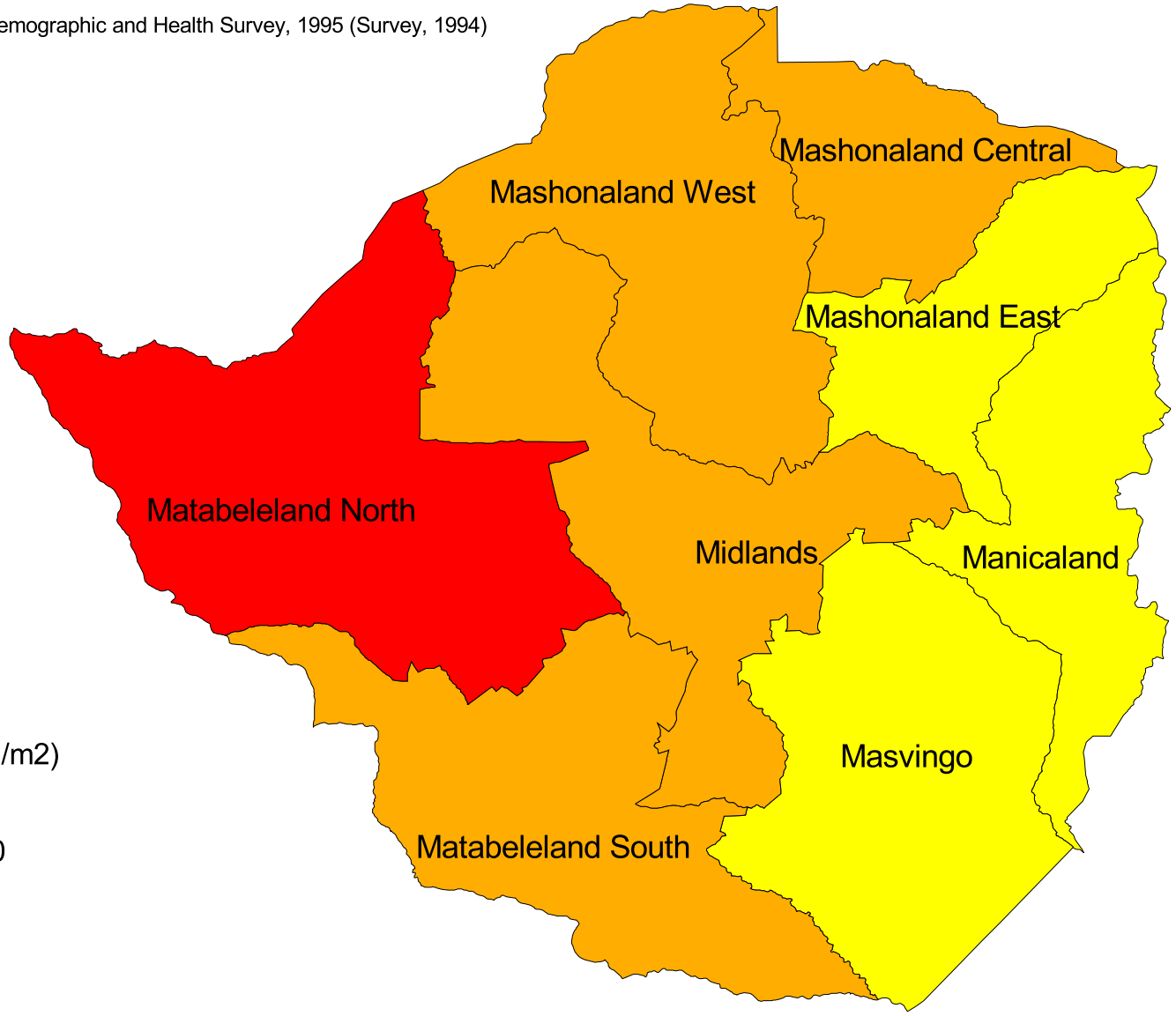
Scale 1 : 5 000 000(approx.)
Geographic Projection

FAO - ESNA, April 1999

Zimbabwe

Map5: Prevalence of women 15-49 years old with a BMI<18.5 kg/m2 by region, in Zimbabwe

Source: Zimbabwe Demographic and Health Survey, 1995 (Survey, 1994)



% BMI<18.5 (kg/m2)
- <5.0
- 5.0 - 9.9
- 10.0 - 15.0

N
W
E
S

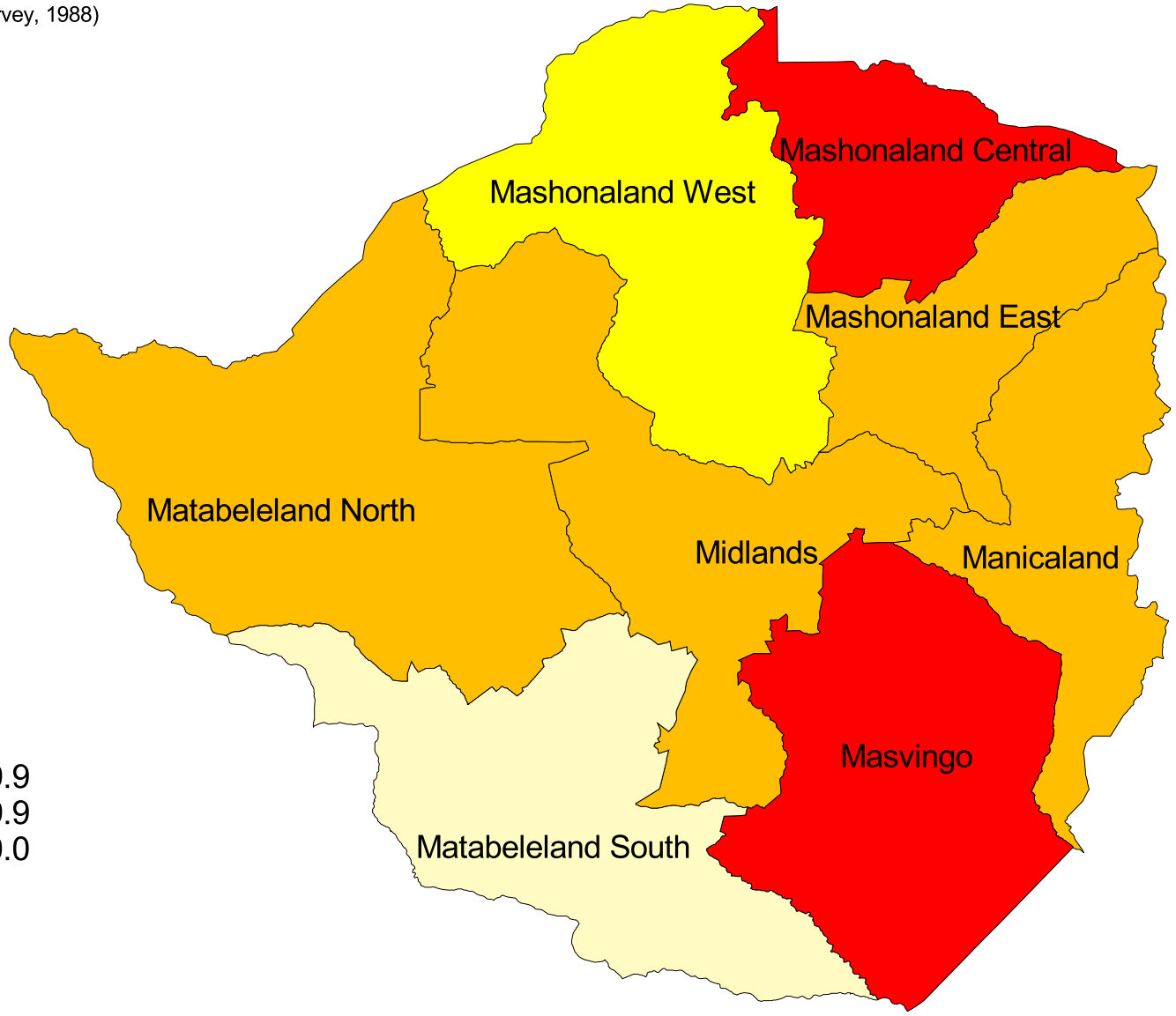
Scale 1 : 5 000 000(approx.)
Geographic Projection

FAO - ESNA, April 1999

Zimbabwe

Map6: Prevalence of Total Goitre Rate in children 7-16 years old by region, in Zimbabwe

WHO/MDIS, 1993 (Survey, 1988)



% TGR

- <30.0
- 30.0 - 39.9
- 40.0 - 49.9
- 50.0 - 60.0

N
W
E
S

Scale 1 : 5 000 000(approx.)
Geographic Projection

FAO - ESNA, April 1999

Zimbabwe