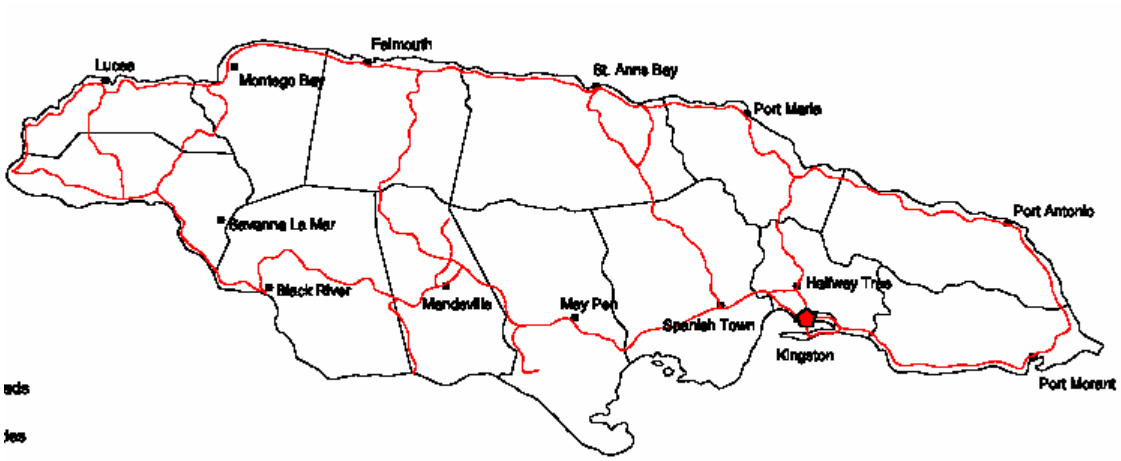
FAO - NUTRITION COUNTRY PROFILES

JAMAICA



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.

Nutrition Country Profile of Jamaica
prepared by the Caribbean Food and Nutrition Institute (CFNI) for the Food and Agriculture Organization of the United Nations.

The designations employed and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of the Food and Agriculture Organization of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers .

FAO, 2002

Table of contents

SUMMARY---------- 4

TABLE 1: GENERAL STATISTICS OF JAMAICA---------- 5

I. OVERVIEW ---------- 6

1. Geography 6
2. Population 6
3. Level of development: poverty, education and health 7
4. Agricultural production, land use and food security.....10
5. Economy 11

II. THE FOOD AND NUTRITION SITUATION ----------13

1. Trends in energy requirements and energy supplies 13
2. Trends in food supplies 14
3. Food consumption.....17
4. Anthropometric data.....19
5. Micronutrient deficiencies.....24

REFERENCES----------27

MAPS are presented after the <REFERENCES>

- General map of Jamaica.

- Map 1: Population density by parish.

- Map 2: Prevalence of underweight in children under five years of age by parish.

- Map 3: Prevalence of stunting in children under five years of age by parish.

- Map 4: Prevalence of wasting in children under five years of age by parish.

- Map 5: Prevalence of overweight in children under five years of age by parish.

- Map 6: Prevalence of anaemia among pregnant women by parish.

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

SUMMARY

*In Jamaica the anthropometric data of children under five are collected as part of the Survey of Living Conditions (SLCs) which have been carried out annually since 1989 by the Planning Institute of Jamaica (**Table 4a**). The 2000 survey estimated prevalence levels of 5% of underweight, 4% of stunting and 2% of wasting. The situation is likely to be different at sub-national level as in 1992 the parish of Hanover, in particular, reported 29% of stunting and 19% of underweight (**Map 2, Map 3 and Map 4**). When compared to the 1995 data from the Survey of Living Conditions, these results indicated an improvement for all three indicators. The prevalence of overweight (4%) did not change over the period 1990-1995, but by 2000 it increased to 5%. Again, differences are expected at the parish levels. In 1992 disparities were observed among parishes, ranging from less than 1% in St. Catherine to 4% in St. Mary (**Map 5**).*

*Among the age group 10-16 years, females have a higher mean Body Mass Index (BMI) (20.2 kg/m^2) than males (18.4 kg/m^2). Still among this age group, the highest mean BMI is in the North West, while the lowest is in the North East of the island (**Table 4b**).*

*Anthropometric measurements in adults carried out in 1997 nation-wide found that the prevalence of obesity was 20%, and that an additional 32% was overweight. Two earlier studies found that the prevalence of obesity was higher in women (15.6% in 1994-95 and 32% in 1991) than in men (4% in 1994-95 and 7% in 1991). A similar pattern emerged from these two studies with respect to the prevalence of overweight (women: 38% in 1994-95 and 33% in 1991; men: 15% in 1994-95 and 24% in 1991) (**Table 4c**).*

*Iron deficiency anaemia is the most important micronutrient deficiency in Jamaica. The prevalence, in 1997, among children aged 1-4 years and 5-16 years were respectively of 48% and 24%. The prevalence of anaemia among pregnant women in 1997 was 21%, while in 1996 about 18% of pregnant women screened at the health clinics were anaemic with prevalence varying by parish from 7% (Manchester) to 28% (Westmoreland) (**Map 6**). No surveys were done to assess Iodine deficiencies. Marginal Vitamin A deficiency is not considered to be a public health problem.*

No national surveys on food consumption have been carried out in Jamaica that could help explain the nutritional status of the different age groups. However, as indicated by the SLCs, there has been a 9% increase in the number of meals consumed outside of the home since 1992-1999. This has contributed to the high availability of fats in total dietary energy supply and may explain, in part, the high prevalence of overweight and obesity observed among adults.

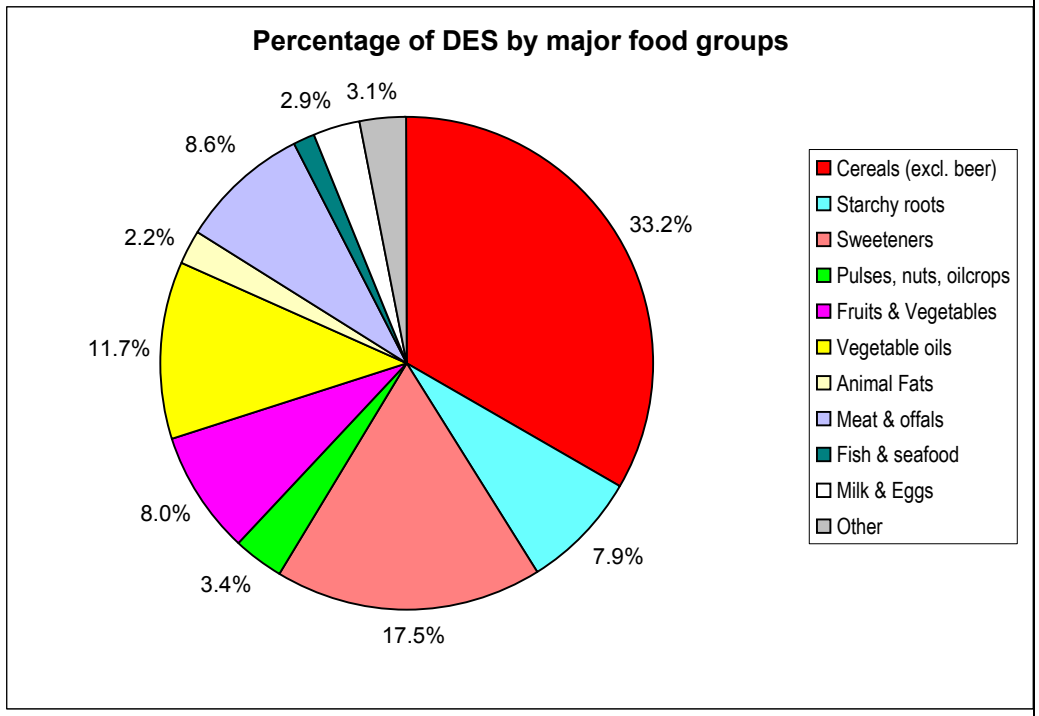
*Still, economic access to food remains the major cause of the nutritional problems assessed in the country. Among the Jamaican population, 19% are living below the poverty line, a large number of which lives in the rural areas, where a lack of adequate socio-economic infrastructures is observed (**Table 1**). The high level of malnutrition observed in the main cities also can be related to a high level of unemployment and to a certain extent to the low, yet decreasing, percentage of mothers exclusively breastfeeding in the first six weeks.*

TABLE 1: GENERAL STATISTICS OF JAMAICA

Last updated: 19/08/2003

Indicator (§)	Year	Unit	
A. Land in use for agriculture			
1. Agricultural land	1995	ha per person	0.203
2. Arable and permanent crop land	1995	ha per person	0.111
B. Livestock			
1. Cattle	1996-98	thousands	407
2. Sheep & goats	1996-98	thousands	441
3. Pigs	1996-98	thousands	180
4. Chickens	1996-98	millions	9
C. Population			
1. Total population	2000	thousands	2576
2. 0-5 years	2000	% of total pop.	
3. 6-17 years	2000	% of total pop.	
4. 18-59 years	2000	% of total pop.	5.0
5. >= 60 years	2000	% of total pop.	9.6
6. Rural population	2000	% of total pop.	43.9
7. Annual Population growth rate, Total	2000-2005	% of total pop.	0.9
8. Annual Population growth rate, Rural	2000-2005	% of rural pop.	
9. Projected total population in 2030	2030	thousands	3403
10. Agricultural population	2000	% of total pop.	20.6
11. Population density	1995	pop. per km^2	225.0
D. Level of Development			
1. GNP per capita, Atlas Method	2001	current US$	2720
2. Human Development Index rating (new)	2000	min[0] - max[1]	0.742
3. Incidence of poverty, Total	1992-1997	% of population	34.2
4. Incidence of poverty, Rural or Urban	...	% of population	...
5. Life expectancy at birth (both sexes)	2000	years	
6. Under-five mortality rate	2000	per 1,000 live birtl	20
E. Food Trade			
1. Food Imports (US $)	1996-98	% of total imports	10.9
2. Food Exports (US $)	1996-98	% of total exports	15.7
3. Cereal Food Aid (100 t)	1996-98	% of cereals impc	4.1
F. Indices of Food Production			
1. Food Production Index	1996-98	1989-91=100	120.2
2. Food Production Index Per Capita	1996-98	1989-91=100	113.2

Indicator (§)	Year	Unit	
G. Average Food Supply			
1. **Dietary Energy Supply (DES)**	1998-2000	kcal/caput/day	2680



% Energy from:			
2. Protein	1998-2000	% of total energy	11.3
3. Fat	1998-2000	% of total energy	25.9
4. **Proteins**	1998-2000	g/caput/day	68.2
5. Vegetable products	1998-2000	% of total proteins	55.0
6. Animal products	1998-2000	% of total proteins	45.0
H. Food Inadequacy			
1. Total population "undernourished"	1995-97	millions	0.3
2. % population "undernourished"	1995-97	% of total pop.	11.0

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

See Technical Notes for definitions used.

JAMAICA

I. OVERVIEW

1. Geography

Jamaica is the largest English-speaking Island in the Caribbean Sea. It is located in the Greater Antilles approximately 145 km south of Cuba and 161 km west of Haiti. With an area of 10 991 km^2, it is the third largest island in the Caribbean (**General Map**).

The Caribbean Sea and a mountain range form the backbone of the island from east to west, influence Jamaica's climate. Jamaica has a tropical climate with a more temperate inland temperature. Temperatures are relatively uniform ranging from 23-26 °C in the coldest months (December to February) to 27-33 °C in the warmest months (July and August). The rainfall pattern in Jamaica is marked by monthly, annual and spatial variability. The island's rainfall is bimodal with peaks in May and October and lows in March and June. The average annual rainfall for the entire island is 1,960 mm. February is the driest month receiving an average of 23 mm and October being the wettest month, with an average of 180mm average. The Blue Mountains and the north east coast lying in the path of the trade winds receive the highest annual rainfall (over 3,300 mm); whereas the capital, Kingston, receives less than 1,270 mm annually. Water shortages are characteristic of the southern coastal plains, making irrigation necessary for agriculture.

2. Population

Jamaica's mid-year population in 2000 was estimated at 2,576,000 inhabitants[1] and grows at an estimated average annual rate of 0.9% between 2000 and 2005 (**Table 1** & UN, 2001). In 2030, the total population is projected at an estimated 3.4 million (UN, 2002). The population growth rate has dwindled in recent years owing mainly to a downward trend in registered births from 1996 coupled with a consistently high level of net migration. Net migration ranged from 17,688 to 25,938 persons between 1996 and 2000 (ESSJ, 2001). Jamaica is highly urbanised (55.1% in 1998 and 56.1% in 2000), with Kingston and the surrounding urban parish of St Andrew alone accounting for more than one-quarter of the population; other major towns include Ocho Rios and Spanish Town, and Montego Bay the second city (**Map 1**). The traditionally high urban migration rate declined in the early 1980s, but subsequently increased reaching 1.8% over 1995-2000 (UN, 1998).

Overall, the population is young: in 1999, an estimated 33.5% were less than 15 years old and 32.3% between 15 and 34 years (PIOJ, 2000). However, data from the 1991 Census revealed a slight upward movement in the age structure of the population, with a 4% increase of persons over 18 years of age between 1991 and 1998 (from 58% to 62%). The population over 60 years of age was estimated at 9.6% in 2000 (increased from 9.4% in 1998). This proportion is expected to double by the year 2030. The dependency ratio, calculated as a ratio between the dependent population (ages 0-14 and over 60) and the population of the labour

[1] Provisional estimates gave a total mean population of 2,597,600 for the year 2000, according to national sources (PIOJ, 2001.b).

force (15-59 years), was 0.6 in 1996 (EIU, 2000). The PIOJ defines the labour force population (working age population) as the age group 15-64 years, and this group accounted for 57.9% of the total population in 2000 up from 57.5% in 1991 (PIOJ, 2001).

The crude birth rate was estimated at 20.7 per 1,000 in 2000 (lowest ever recorded for Jamaica) down from 23.5 in 1996, while the crude death rate was 6.3 per 1,000 persons down from 6.7% in 1996 (PIOJ, 2002). Thetotal fertility rate in 1997 was 2.8 children per woman; down from 3.0 in 1995 (ESSJ, 2001).

The 1991 census indicated that 90.5% of the population was black (African descent), 7.3% mixed black (Afro-Europeans), 1.3% East Indians, 0.2% white (Europeans), 0.2% Chinese and 0.6% "other races/not stated" (STATIN, 1999). English is the official language spoken in Jamaica, however, there are several local patois (EIU, 2000).

3. Level of development: poverty, education and health

Estimates of 1989 indicated about 12% of the population lived below the poverty line (Tabatabai, 1996). The incidence of poverty was 18.7% in 2000, up from 16.9% in 1999 and 15.9% in 1998 (WB, 2002). In 2000, the incidence of poverty was estimated at 9.9% for the Kingston Metropolitan Area (KMA) (10.6% in 1999), 16.6% for other towns (12.1% in 1999), and 25.1% for rural areas (22% in 1999). The incidence of poverty has declined significantly between 1991 and 2000 (from 44.6% to 18.7%). However, as indicated above, there has been a steady increase over the period 1998-2000. This downward trend, especially toward the latter part of the decade, may have been due partly to The government implemented a five-year "National Poverty Eradication Programme" in 1995/96, aimed at reducing poverty by half and eradicating poverty in the long-term. This may have been responsible for the decline in poverty over successive years between 1995 and 1998. The poverty eradication programme may need re-evaluation in the light of the increasing incidence of poverty over the last three years. The majority of the poor (69%) reside in rural areas, mostly working on small farms (less than 5 acres) with limited employment opportunities and insufficient socio-economic infrastructures (PIOJ, 2000, 2001).

National data obtained from the Surveys on Living Conditions conducted between 1990 and 2000 have shown that the average per capita consumption expenditure increased by 15.5% in real terms over that period, ranging from 8.4% in rural areas to 19.9% in Kingston Metropolitan Area (PIOJ, 1992b, 1992c, 1994, 1995, 1996, 1997, 2000, 2001). However, the average per capita consumption expenditure decreased in real terms by 6.4% between 1999 and 2000 (from J$9,396 to J$8,797 where US$1=J$55.8). Income distribution shows great disparities: approximately 30.3% of national consumption was accounted for by the wealthiest decile of the population, compared to only 2.7% for the poorest ten percent in 2000. This gap has remained more or less constant between 1990 and 1999, with the wealthiest decile having 28.9% - 32.3% of national consumption compared with 2.2% - 2.9% for the poorest decile (PIOJ, 2001). Rural areas accounted for 69.3% of the country's poor, followed by the KMA (18.2%) and other towns (12.5%) in 1999 (PIOJ, 2000).

Education in Jamaica is free and compulsory up to eleven years of age and is provided mainly through the public education system. There have been significant increases in enrolment at the early childhood (pre-primary) stage (3-5 years age cohort), especially in the rural areas. Despite high enrolment rates at primary schools (nearly 100% for children 6-11 years old in 1999), these drop significantly at secondary education levels (64% for 12-18 years). This is primarily due to the relatively low level of enrolment among the 17-18 years age group. For example in 1999, enrolment among the 12-14 years age cohort was 79.6%, among the 15-16 years age cohort 83.3%, and among the 17-18 years age group 42.4%, which

was a record high since the average level among this age group was 23.7% between 1990 and 1999 (PIOJ, 2000). Unfortunately, the proportion of the out of school population within the 12-18 years age group, consisting mainly of poor rural males, remained fairly high at 19.4% in 1999 down slightly from the 22.0% of 1998. The relatively low level of school attendance on Friday's especially in the rural areas continues to be of concern (PIOJ, 2000).

A major achievement in the 1990s has been the increase in education at all levels. Approximately 86% of the population age 15 years and older are literate (PAHO, 2002). There has been a reduction in real tuition costs for secondary level students, indicating a lessening of the financial burden on some households. In a bid to provide an adequately trained work force to face the challenges of the future, the government has introduced information technology (IT) ventures at all levels of the education system (PIOJ, 2000). Despite the gains made in the education sector, the quality of public education in Jamaica has been in a state of slow but steady decline for the past two decades, due to debt servicing and other fiscal obligations draining resources from public services. Government's allocation to education, as a percentage of total government expenditure, decreased to 5.56% in 1998/99 from 7.48% in 1990/91 (PIOJ/UNDP, 2000). This situation has been aggravated by the top-down allocation of resources, with expenditure per head on third-level students disproportionately high compared with spending on secondary and primary students (EIU, 2000). A lack of funding for lower-level education has contributed to serious problems with the literacy of the student population, and 30% of those leaving primary schools are thought to be functionally illiterate (EIU, 2000) The quality of education remains poor especially in rural areas, although major reforms are being undertaken by the government (WB, 1994a).

Several of Jamaica's health indicators have improved significantly over the last two decades, reflecting the epidemiological transition observed in other Caribbean countries (although HIV/AIDS, a communicable disease, has become a serious public health concern). There is an increased prevalence of diet-related chronic diseases, such as cardio-vascular diseases, diabetes and obesity. A national survey conducted in 1998 among adults 20 years and older, revealed that there was 31.8% pre-obesity (BMI = 25.1 - 29.9) and 19.7% obesity (CFNI, 1999a). Further, Wilks, et al. (1998) reporting on a survey of BMI in an urban population (Spanish Town, 1991), found that 30.7% of the men were overweight (7.2% were obese) and an amazing 64.7% of the women were overweight (31.5% obese). In this same study if was found that hypertension had a prevalence of 19.1% among the males and 28.2% among the females; while the prevalence of diabetes was 8.9% and 15.3% among the males and females respectively. In a later study (Spanish Town, 1993), Wilks, et al. found that the prevalence of Type 2 diabetes mellitus was 9.8% among men, 15.7% among women and 13.4% overall. Cooper et al. (1997) found a prevalence of 17.1% for hypertension and 8.1% for non-insulin dependent diabetes among the Jamaican population. There are indications that mortality and morbidity due to chronic diseases are increasing, especially among persons over 45 years of age. In fact, in Jamaica (like most other Caribbean countries) these diseases have replaced the communicable diseases as the leading cause of mortality. The increase prevalence of such chronic diseases is probably related to changes in lifestyle behaviour, especially the shift to more sedentary occupations (decreased levels of physical activity), changes in food consumption patterns and increased use of alcohol and tobacco.

Morbidity and mortality patterns have changed, with infant and child mortality declining and life expectancy increasing. In 2000, total life expectancy at birth was 73.7 years for males and 77.8 for females (UN, 2001). The mortality rate for children under five years old was 20 per 1,000 live births in 2000, down from 29 per 1,000 live births in 1995. Infant mortality rate was 17 per live birth in 2000, down from 23 per 1,000 live births in1995

(UNICEF, 2002 and UN, 98). Maternal mortality ratio declined from 120.0:100,000 per live births in 1987 to 111.0:100,000 in the decade of the 1990's (PIOJ, 2001).

Maternal and child health have been the focal point of the primary health care system developed in the 1970s. Immunisation programmes are well integrated in the system and immunisation rates are relatively high. In 1997, BCG, Polio, DPT and Measles and MMR coverage for the expanded program on immunisation for children under one year were 97.4%, 89.9%, 89.8% and 88.3% respectively (PAHO/WHO, 1999). In addition, the PIOJ report for 2000 shows the following: 93.9% of children 6-59 months received 3 or more doses of oral polio vaccines, 93.8% (6-59 months) received 3 or more doses of DPT, 97.5% (6-59 months) received BCG, and 91.3% of the 12-59 month old children received vaccines for measles (PIOJ, 2001).

This overall improvement in the health situation may be attributed to the successful implementation of public health programmes over the years, as well as to the overall social and economic development. The public health sector is comprised of 24 hospitals and an extensive nation-wide network of 366 primary health care clinics (PAHO/WHO, 1999). In 1999 the Medical Council of Jamaica (MCJ) reported about 1,800 physicians registered to practice in Jamaica. About 500 physicians work in the public sector, and many of them have private practices. There are about 1,250 registered nurses in the country (PAHO/WHO, 1999).

Over the 1998-2000 period, the Ministry of Health implemented a comprehensive rationalisation/reorganisation of the health services in order to provide more effective and efficient health service delivery. Four Regional Health Authorities (RHAs) operating as statutory bodies were established to achieve this goal (ESSJ, 2001). Although healthcare was traditionally provided free of cost by the state, user fees have now been introduced. These are quite low in relation to the economic cost of the service, however, and there is an income-based aspect to the fees charged. Financing of healthcare will be an issue of increasing importance in the future, as government seeks to maintain or improve existing levels of healthcare delivery, while trying to control the cost of the service.

Private healthcare also exists, with about 9% of the population being covered by private health insurance. Small private hospital clinics, diagnostic laboratories and private practitioners make up the rest of the private healthcare sector. Interestingly, the majority of the population seeks ambulatory care from these private healthcare facilities. However, in the last two years there has been an increase in the use of the public sector for this type of care, possibly linked to the increasing cost in the private sector. Additionally, outpatient facilities are used extensively to access ambulatory care in the public sector" (PIOJ, 2000).

4. Agricultural production, land use and food security

Agricultural land represents approximately 44% of Jamaica's total land cover, half of which is under arable and permanent crops (FAOSTAT, 1997). Approximately 270,000 ha of land are cultivated, while nearly one-fifth of the total land area is forested. The World Bank estimated that the forest area covered 3,250 km^2 in 2000 (World Bank, 2002). The agricultural sector has experienced severe difficulties in recent years, facing not only climatic challenges such as hurricanes, floods and drought, but also an overvalued Jamaican dollar, high real wage demands, and a strict interest rate regime. Agriculture, including forestry and fishing, accounted for 8.7% of GDP, at constant prices, in 1995, but was down to 7.1% in 2000 after recording its highest level of 9.2% in 1996 (ESSJ, 2001). The per capita production index of domestic food crops increased from 95.4 in 1990 to 150.6 in 1995 (FAOSTAT, 1997). Other agricultural sub-sectors, such as exports and livestock, either grew at a much slower rate or declined over that period. The food production index increased from 100 in the base period, 1989-91, to 120.2 in 1996-98 (FAOSTAT, 1999).

Only 179,000 t of sugar were produced in 1998 from 2 284 000 t of cane: this compares with the production of 231,000 t of sugar from 2,623,915 t of cane in 1996 (FAOSTAT, 1999 % EIU, 2000). In 1999/2000 crop year, sugar production was 216,387 tonnes from 2.03 million tonnes of cane, compared with 204,188 t of sugar from 2.31 million tonnes of cane in the 1998/99 crop year. The difference was due primarily to improved cane quality in 2000 (ESSJ, 2001). Current efforts at ensuring the survival of the banana industry in the face of dwindling trade preferences are centred on increased efficiency and the return of yield levels to the peak of 23.6 tonnes/ha or 134,000 t total (FAOSTAT, 1999) seen in 1991 (EIU, 2000). Banana exports have declined steadily every year since 1996, moving from 88,917 tonnes in 1996 to 42,025 tonnes in 2000. Jamaica's share of the UK market decreased from 7.4% in 1999 to 5.7% in 2000 (ESSJ, 2001).

Production of Jamaica's other main cash crops, notably cocoa (1678Mt), coffee (2660Mt), copra and citrus (85,096Mt) declined during 1988-91 (post hurricane Gilbert period). There was a recovery in 1992, particularly in citrus (152,00Mt) and cocoa production (2,478Mt), although output dipped slightly in 1993 (FAOSTAT, 1999 and EIU, 2000). Orange and grapefruit production increased spectacularly in 1994 to 70,000 t and 42,000 t respectively. Overall crop production continued to grow since 1995. Citrus production was estimated at 202,140 t in 2000, an increase over the previous year when 171,188 t were produced (PIOJ, 2001). Coffee production decreased from 16,852 t in 1996 to 16,485 t in 2000. Production reached a high of 18,612 t in 1997 and a low of 13,136 t in 1999. Similar variations were seen for the other cash crops throughout the period 1996-2000; cocoa output from processing plants moved from 1,443.2 t to 754 t (1996-2000), copra moved from 433 t to 402 t (peaked at 1112 t in 1997) over the same period.

The overall food production increased steadily from 415,446 t in 1991 to 695,044 tonnes in 1996 (EIU, 2000). A number of factors contributed to this improvement, including good rainfall over much of the period, an improved distribution system and increased productivity, particularly in fruits and tubers. But the sub-sector remains hampered by the high cost of inputs, high interest rates, poor road transport conditions and a lack of proper irrigation. The difficult climatic and financial conditions faced in 1997-98 saw the domestic food production index fall by 21.5% over the two years. In fact, total agricultural output fell sharply during this period, including food exports. There was a marginal increase in the agricultural output in 1999, but this increase was short-lived as by 2000 domestic crop production declined by 16.5%, and export crops decreased by 4.2%. In contrast, the livestock

sub-sector increased by 1.7%, influenced primarily by a 5.8% increase in poultry production (ESSJ, 2001).

Income and prices largely determine access to food. Proxy data on household income are provided in the national Surveys on Living Conditions. In 1995, it was estimated that mean per capita food expenditure in Jamaica amounted to J$ 35,522 (1 US$ = J$ 33, approximately) (PIOJ, 1997). In real terms, this represented a consumption level of 2.3% greater than 1990 levels (PIOJ, 1992). At current prices, per capita food consumption fell below 50.0% of total expenditure for the second time in 2000, reaching 42.6% down from 47.6% in 1999. Per capita food expenditure reached a maximum of 55.7% of total per capita expenditure between 1990 and 1991, the period when there was acceleration in the removal of price controls and subsidies on special food products. There has been a constant decline in food consumption expenditure, at both current and constant prices, since 1995. Data also showed marked sub-national differences in per capita food consumption expenditure throughout the 1990's, namely significant lower consumption levels in rural areas compared to urban areas (mainly Kingston Metropolitan Area), as well as in female versus male headed households (PIOJ, 2001).

In order to assist certain vulnerable population groups primarily affected by the adverse impact of the removal of general subsidies on some food items, the Jamaica Food Stamp Programme (JFSP) was introduced in 1984. This program has sought to: reduce the risk of malnutrition among pregnant and lactating women, children under 6 years of age and the elderly poor/disabled; and increase the purchasing power of households with very low income by providing monetary support. It has undergone a number of changes since its inception, but it still offers a measure of protection for the most needy of its beneficiaries. In 1999, 6.6% of the population received food stamps falling from 7.4% in 1998 owing to a deliberate effort by the government to reduce the number of beneficiaries ("purging of the list") which started in 1996.

5. Economy

Jamaica is a relatively small, open economy which makes it vulnerable to major changes in the world economy. The period 1981-1998 has been characterised by continuous economic restructuring, which for the most part resulted in devastating social consequences. The standard of living declined for most persons, but more so for the most vulnerable groups within the population. Since the 1990s, the dominant economic policies have been those of stabilisation and strict economic adjustment. These policies were in large part aimed at increasing efficiency in the productive sectors and re-orienting the economy toward export production. However, export growth has been sluggish and, coupled the rapid increase in imports as a result of trade liberalisation, has lead to a widening of trade deficits. Despite growth in some sectors, there remained significant instability with high rates of inflation and strong devaluation of the exchange rate especially between 1990 and 1995. Growth was also sluggish over the period 1990-1995 with an average real growth rate of only 1.0% in the GDP. Some degree of macroeconomic stabilisation has been achieved since 1996 (although real GDP grew between -0.4% and -2.4% over the period 1996-1999), and the economy is estimated to have grown by 0.8% in 2000, the first increase in GDP since 1995 (ESSJ, 2001). The inflation rate has declined significantly since 1995 (25.6%), moving through 15.8% in 1996 to single digit since 1997 (9.2%), 6.2% in 1999 and 8.2% in 2000 (UNDP/PIOJ, 2000 and ESSJ, 2001). However, the economy remains fragile, relatively undiversified and non-competitive (UNDP/PIOJ, 2000), which do not augur well for the social sectors and the food and nutrition situation in the country.

Besides agriculture's estimated contribution of 6.9% to national GDP in 1999, industry and manufacturing were estimated to have contributed 27.7% and 12.4% respectively, both of which have been on the decline since 1989. The services sector is the largest contributor to GDP at 65.4% in 1999, a significant increase from 50.4% in 1989 (World Bank, 2000). The official estimates of the rate of unemployment were at 16% in 2000 (PAHO, 2002).

II. THE FOOD AND NUTRITION SITUATION

1. Trends in energy requirements and energy supplies

Trends and projections of total energy requirements for Jamaica show an almost linear increase over 1965-2030 (**Table 2**). Trends in food requirements reflect the changes in population structure and in particular the age, sex and urban-rural distribution. For Jamaica a major factor is urbanisation which has increased from 37.6% to 56.1% from 1965 to 2000 and is projected to rise to 70.3% by 2030 (UN, 2002).

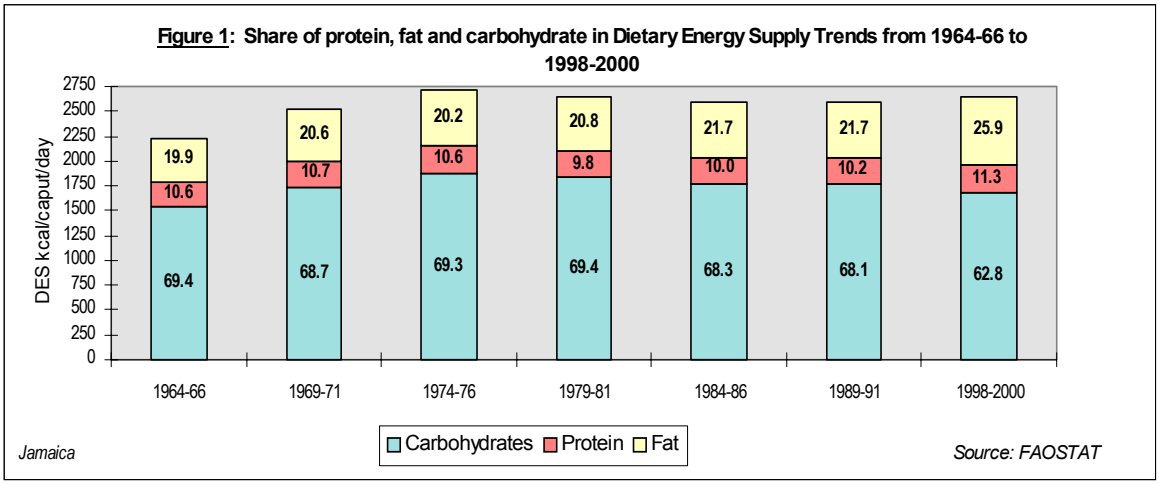
Table 2: Total population, urbanisation, energy requirements and dietary energy supplies (DES) per person and per day in 1965, 2000 and 2030

Year	1965	2000	2030
Total population *(thousands)*	1760	2576	3403
Percentage urban *(%)*	37.6	56.1	70.3
Per caput energy requirements *(kcal/day)*	2128	2226	2266
Per caput DES *(kcal/day)* *	2223	2680	—

Three-year average calculated for 1964-66 and 1998-2000 (*Source*: FAOSTAT)

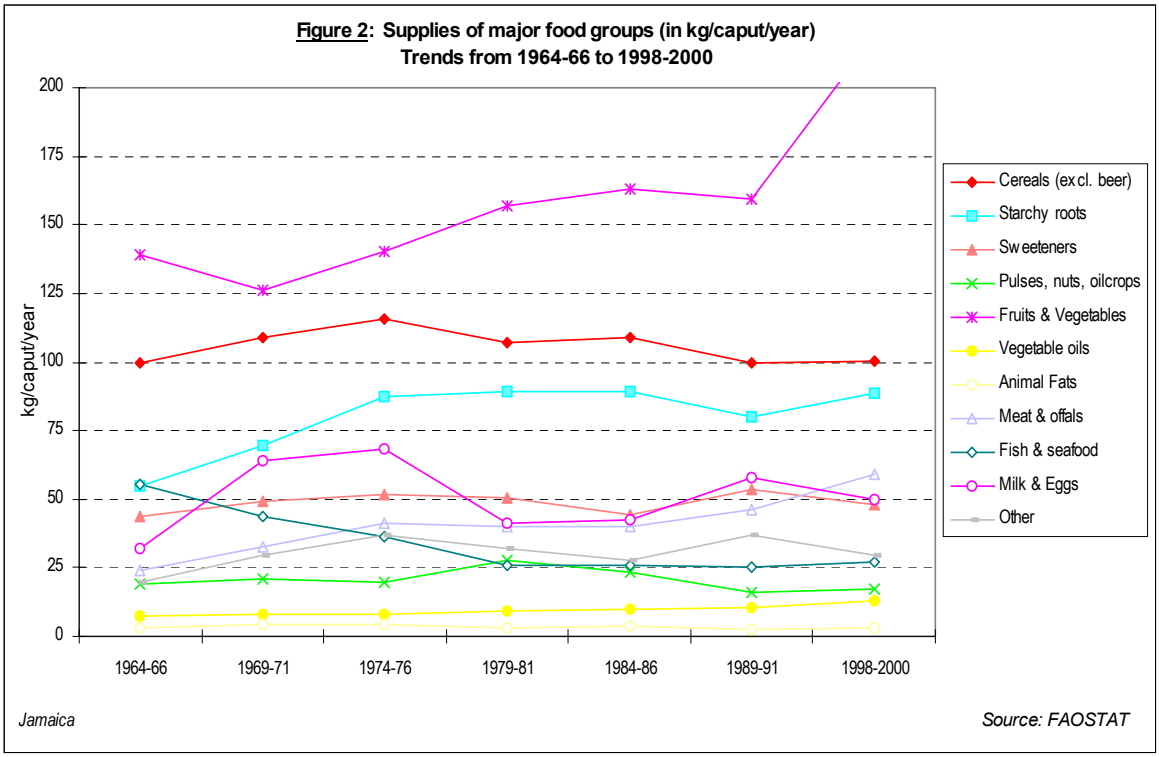
The per caput Dietary Energy Supplies has followed population growth and energy requirements trends, increasing from 2223 kcal/day in 1965 to 2680 kcal/day in 2000 (**Table 2**). During this period, DES increased by 20.6%, while energy requirements increased by 4.6% indicating an improvement in the satisfaction of energy requirements. This increase in DES can be explained in part by the significant growth of the domestic food crop production and of the total food imports observed during the same period. There is considerable inequality in food consumption in Jamaica thereby contribution to a high level of food insecurity (Strachan, 1996). In 1994, the wealthiest one-fifth was responsible for 45.9% of total consumption, while the poorest one-fifth was responsible for only 6.4% of total consumption. The 1999 Survey of Living Conditions report suggests that this inequality is not declining, as in 1999 the mean per capita annual consumption of the wealthiest 10% of the population was 12.5 times that of the poorest 10% of the population. In 1998 the wealthiest decile, on average, consumed more than 11 times that of the poorest decile.

As shown in **Figure 1,** the percentage of fat in total DES has increased by 6 percentage points over the period 1964-2000 reaching 25.9% in 1998-2000, whereas proteins increased marginally over the period. Carbohydrate in total DES dropped to 62.8% in 1998-2000, after being stable at around 69% over the period 1964-66 and 1979-81, with only a 1% drop from 1984-86 to 1989-91.



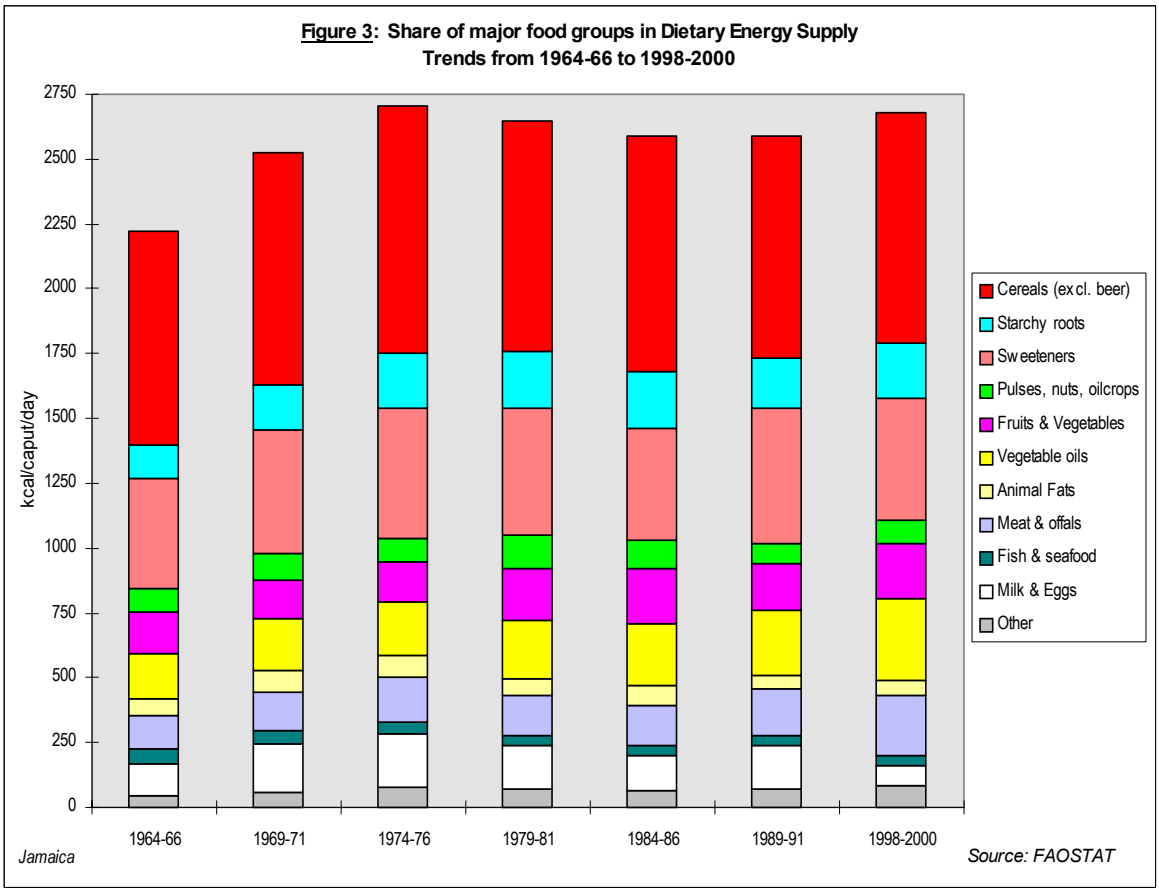
2. Trends in food supplies

Quantity – **Figure 2** shows three main patterns of food availability in Jamaica over several periods. First, fruits and vegetables, starchy roots and meat and offals have increased in availability over the years, except for 1989-91 due to the effects of Hurricane Gilbert (1988). Second, availability has been stable for sweeteners, pulses, nuts and oilcrops. Finally, the availability of cereals (most of which are imported), and fish and seafoods has decreased noticeably over all time periods.



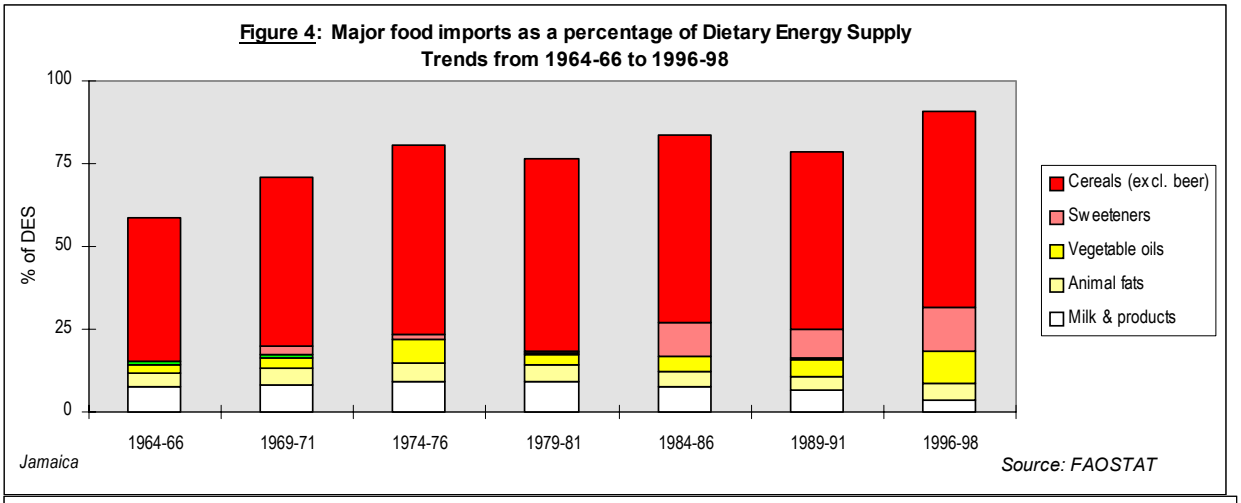
Energy - As shown in **Figure 3**, cereals are the main source of both energy and protein availability in Jamaica. Sweeteners occupy an important place as the second largest food group to provide energy (around 20%). The share of vegetable oils, meat and offals, milk and eggs, and sweeteners groups in DES showed a slight increase in the 1964-2000 period. In

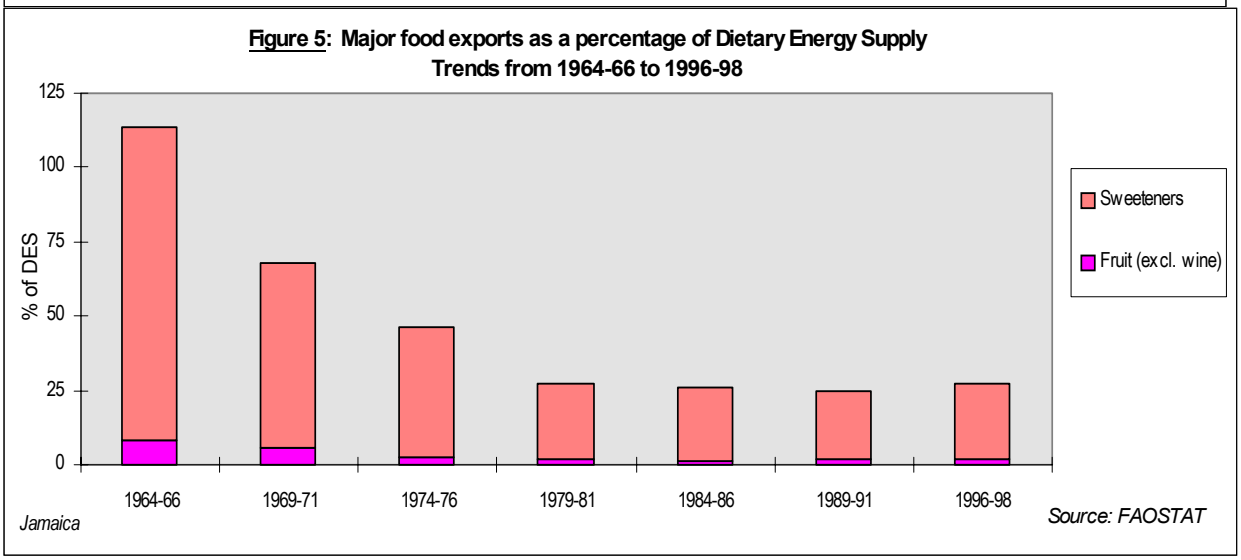
particular, the increase of vegetable oils and meat can help explain the growth of the share of fat in DES observed in **Figure 1**. No clear trend in the development of the shares of cereals, pulse, nuts, oilcrops, fruit and vegetables and animal fats groups in DES exists, while a significant growth can be observed in the share of starchy roots and tubers which was only interrupted in 1989-91, following the trend observed in the supplies of this same group.



Major food imports - Jamaica has traditionally been dependant on cereal imports, which are the country's major food import (**Figure 4**). Cereal imports accounted for 426251.8 t in 1996-98 with maize and wheat as main commodities (FAOSTAT, 1999). Milk was the second largest food import but has been surpassed since 1984-86 by sweeteners.

Trends in the 1964-1998 period showed an increase in percentage of DES for cereals, vegetable oils, sweeteners and oilcrops. In particular, it is interesting to note that these two last groups did not appear as component of the DES in 1964-66. The agricultural sector improved over the period 1990-1995, resulting in significant growth in domestic food crop production. Over the same period, while total food imports increased, the overall import of basic food commodities declined resulting in a positive agricultural trade balance (EIU, 2000). In 1996-98, food imports accounted for a 94.7% of Dietary Energy Supply (FAOSTAT, 1999).





Major food exports - In food exports the same food group of sweeteners as a percentage of DES dropped dramatically since 1964-66, until it stabilised in 1979-81, while also the amount of fruit exports decreased considerably. Overall food export as a percentage of DES dropped from over 100% in 1964-66 to 28.5% in 1996-98 (**Figure 5**). Sugar, processed from sugarcane, is the main export crop of Jamaica. Most of the island's sugar production is exported to the EU, which offers Jamaica a standard export quota of 126,000 tonnes plus an additional 30,000 tonne quota allocated to the country in 1994. In 1998 sugar exports amounted to 167,503 tonnes, 80% of which went to the UK (EIU, 2000).

The banana industry expanded during the last years and was the fourth largest earner of foreign exchange. Since 1997 the industry has been threatened by uncertainty over the European Union's banana import regime, which has been challenged by the United States and a number of Latin American producers. Jamaica's trade preferences under the regime are likely to be considerably reduced under reformulated rules (EIU, 2000). These problems were added to by drought in 1997-98, when production fell by 30%, resulting in an export volume drop of over 20%. Total export of fruit dropped from 8.2% in 1964-66 to only 1.7% in 1996-98 (FAOSTAT, 1999). Other important traditional export crops are coffee (in particular the famous Blue Mountain Coffee) cocoa, citrus fruits and peppers. Non-traditional export crops include yam, papaya, plantain, pumpkin and sweet potato (Strachan, 1996).

3. Food consumption

No national surveys on food consumption have been carried out in Jamaica. The only data available concern household food consumption expenditures as part of the Surveys of Living Conditions carried out each year since 1989 by the Planning Institute of Jamaica (PIOJ, 1989, 1992a, 1992b, 1992c, 1994, 1995, 1997, 2000, 2001).

The SLC of 2000 showed that 43.4% of total consumption (at constant prices) were spent on food and beverages, a decline from 1999 (47.9%) and 1995 (51.9%), which still reflects the relatively high level of food prices in the country. "Meals away from home" formed the largest commodity group in the expenditure on food and beverages, with the all-Jamaica figure moving to 27% in 2000, down from 31.1% in 1999. The "meat, poultry and fish" group remained the second highest expenditure group (22.5% in 2000, compared to 21% in 1999), followed by "cereals and cereal products" (11.4% in 2000, up from 11.1% in 1999) (PIOJ, 2000, 2001).

When compared to 1994, total expenditure on food and beverages decreased by 3.2% in 1999. The share of "meals away from home" showed an increase of 9.2% between 1992 and 1999. As expected the percentage of "meals away from home" was highest for the Kingston Metropolitan Area with 37.7% (up from 33.8% in 1994) and lowest in the rural areas with 26.1%, up from 21.5% in 1994, (PIOJ, 2000).

The trend of urbanisation is responsible for the growth in "meals away from home". In Kingston Metropolitan Area both the street foods sector and the large fast foods chains are present, in addition to numerous successfully operating small scale restaurants. The fast food sector is gaining popularity, which contributes to the higher availability of fat in DES (**Figure 4**), and consequently can explain, in part, the high prevalence of overweight and obesity observed among adults.

When expenditure by area is compared, the largest commodity group in the rural areas is meat, poultry and fish followed by "cereals and cereal products" and "diary products". The rural area residents spent a greater proportion of their income on these three commodity groups than did residents of the KMA or those in other towns (PIOJ, 2000). In a survey among rural school children (Chambers and CFNI, 1993) cereals form the major food group contributing to RDA for energy. Sugar and Syrups are the second largest food group in this respect, followed by the food group Starchy Fruits, Roots and Tubers.

Household food expenditure data for 1989 were used to calculate nutrients intake (Simeon, Patterson and CFNI, 1994). In 1989, the mean per capita daily energy and protein intakes were 2,170 Calories and 64 g respectively. Cereals contributed the most to energy (45%), followed by animal products (22%), fat/oils (14%), sugar (12%) and starchy fruits/roots (7%). Animal products made the greatest contribution to protein accessibility (58%), followed by cereals (39%), while the contribution of cereals to protein accessibility was more important among poorer households.

A CFNI study (CFNI/PAHO, 1996), using discussion groups, presented the most commonly consumed dishes and foods in Jamaica. For Jamaica the top five dishes were, in order of popularity: plain rice, fried chicken, boiled yellow yam, rice and peas, and boiled dumplings. Although "ackee and saltfish" was not in the top five, it is considered to be the national dish of Jamaica and forms the main part of an extensive (Sunday) breakfast. Ackee, a tree-fruit originating from Africa contains 15% of fat equalling avocado and has the highest fat content among fruits on the list of items eaten weekly. "Rice and peas" is the traditional

Sunday dish in which rice is seasoned with red peas and coconut milk. It is commonly served in restaurants to accompany chicken, fish, beef or "jerk". Jerk is a popular street food eaten throughout the island and can be either chicken or pork, seasoned with Jamaican spices and cooked over charcoal. Also "Red Peas Soup" and "curried goat" are popular dishes in Jamaica. Rice emerged as the staple food from this survey followed by yellow yam and green bananas or "figs".

In another CFNI study (CFNI/PAHO, 1998), a short food frequency questionnaire focused on the intake of selected food items rich in vitamin A and/or iron and was administered among children (1-4 years and 5-16 years) and pregnant women. The selected food items included: paw paw, tea, liver, tin mackerel, cornmeal porridge, egg, pumpkin, callaloo, carrot, peas, mangoes (when in season), citrus, and dairy. Among the children 1-4 years old, dairy was the most frequently consumed food followed by citrus. Citrus and peas were the most frequently consumed foods by both the pregnant women and children 5-16 years old. Paw-paws, tea, liver and tin mackerel were the least consumed foods among these two groups. Adults consume three meals a day if they can afford it. The breakfast varies from only a hot beverage to American style breakfast. Lunch and dinner tend to be similar often drawing from the above mentioned top five dishes (Campbell, 1988).

In one study conducted in the parish of St. Catherine, Spanish Town, in the early 1990s (Ashley-Jackson, no date), information on dietary intake was collected from 561 females and 363 males aged 25 to 74 years. It was found that men had significantly higher intakes of all food groups except for food from animals. Intake of foods from animals was similar for men and women. All food groups, with the exception of butter and margarine as spreads were consumed at least once weekly. Mean daily energy intake was 2906 kcal in men and 2327 kcal in women. Mean protein intake was 93.9 g in men and 75.7 g in women; fat intake was 100.4 g in men and 88.4 g in women; carbohydrate intake was 417 g in men and 344.6 g in women. In males, mean percentage contribution of nutrients to daily total energy intake was 57.7% from carbohydrates, 13.05 from protein and 30.8% from fat. For females the contributions were 59.6% from carbohydrates, 13.1% from protein and 30.6% from fat.

Infants are usually weaned with cornmeal porridge, while banana, plantain and oats are other common ingredients for porridge. In regards to breastfeeding, Jamaican mothers tend to feed their infants very early in life with other liquids than breast milk. This is especially the case in the urban areas where at six weeks only 19% of the infants in urban areas are exclusively breastfed (Powell and UNICEF, 1988). The national figure is 54% reflecting the higher percentages in rural parishes like Trelawny, where 77% of the infants were exclusively breastfed for six weeks in 1996 according to the reports of the health clinics. In 2000, of the 42,323 babies who visited postnatal clinics at six weeks, only 48.6% of them were being exclusively breastfed, while 3.0% were not breastfed at all. This represented a decline from the levels of 1997 (53.9%), 1998 (52.4%) and 1999 (51.7%). In fact for the year 2000, of the 33,933 visits to health centres, only 36.0% of babies were exclusively breastfed at three months, and 5.3 % not exposed to breastfeeding (ESSJ, 2001).

Table 3: Food consumption surveys

Source/ Year of survey	Location	Sample: Number households	Sample: Sex	Sample: Age Years	Average food intake								
					Nutrient Intake (person/day)								
						Energy (kcal)	% Protein	% Fat		Protein (g)	% Animal products	Fat (g)	% Animal products
Simeon, 1994 1989	**National**	3861	M/F	...		2170	11.8	...		64.0	...	...	...
					Share of major food groups in total energy intake (%)								
					Cereals	Roots/ Tubers	Pulses	Fruits/ Vege-tables	Oils/ Fats	Meat	Fish	Milk prod.	Sweet-eners	Other
Simeon, 1994 1989	**National**	3861	M/F	...	45.0	...	7.0	...	14.0	...	22.0	...	12.0	...

Notes: ... Data not available

4. Anthropometric data

In Jamaica two institutions, the Planning Institute of Jamaica (PIOJ) and the Ministry of Health, both of which focus on infants and young children, monitor the nutritional status of the population. Since 1989 the PIOJ has carried out annual national Surveys of Living Conditions (SLC) in which data on the nutritional status of children under 5 years have been collected (PIOJ, 1989, 1992a, 1992b, 1992c, 1994, 1995, 1997, 2000, 2001).

Data since 1990 were recalculated into Z-scores by the Caribbean Food and Nutrition Institute (CFNI) and are presented in (**Table 4a-1** and **4a-2**). The results show that the prevalence of children suffering from underweight and stunting decreased from 7.2% and 8.7% in 1989 to 5.5% and 6.7%, respectively, in 1995. At the national level, the prevalence of wasting (3.4%) showed no significant changes over the period 1990-1995. Although the national prevalence figures for all three nutritional status indicators are low (WHO, 1995), the situation may differ at the sub-national level, as shown by the data collected at parish level by the 1992 survey (**Map 2, Map 3 and Map 4**). The parish of Hanover was found to be more affected, with 18.5% of underweight and 29.2% of stunting. The highest prevalence of wasting was 4.6% in St. Andrew, indicating that even at parish level, acute malnutrition was not a serious problem. Although important differences in the prevalence of malnutrition were observed among parishes in 1992, the lack of recent sub-national data does not allow us to assess if these inequalities have been reduced over time. The prevalence of overweight children under five remained around 3.7% during the 1990-1995 period. As shown in (**Map 5**), in 1992, some slight differences were observed among parishes, ranging from 0.4% in St. Catherine to 4.3% in St. Mary.

In 2000, the prevalence of underweight (low weight for age) among children 0 – 5 years old was 5.1%, stunting was 4.2%), while wasting was 2.2%. These three indicators measure the level of undernutrition. The first two were slightly above the internationally accepted reference standards (cut-off 2.0-2.3 per cent), but weight for height was within these standards. The prevalence of underweight and stunting increased over the previous year (3.9% and 3.4% respectively), but that of wasting decreased (3.6%). Although the prevalence

of undernutrition among the sample of children assessed did not allow for proper comparisons at the sub-national level, there were significant differences observed when the children where grouped by age. Stunting was most prevalent during the weaning age (12 - 23 months), while the highest prevalence of underweight and wasting was among children 0-11 months. In 2000, the prevalence of overweight children under five years old increased to 5.4%, up from 4.1% in 1999 and 3.7% in over the period 1990-1995 (PIOJ, 2000, 2001).

As part of a micronutrient study carried out by PAHO/CFNI in 1997, anthropometric data were collected and analysed for children 1-4 and 5-9 years of age. The results, some of which are displayed in **Table 4a-1** indicate that the prevalence of under nutrition among the children age 1-4 years ranged from 5.2% to 9.9%, depending on the indicator used. In addition, within this age group among the four regions (Regional Health Authorities), the highest and lowest prevalence of wasting were observed in the North West and South West respectively; slightly more males than females were wasted. Within the 5-9 years age group, undernutrition ranged from 2.5% to 4.8% (more wasted than stunted children); the South West had no case of undernutrition, but this may have been due to the small sample size. The other regions ranged from 4.3% to 15.8%; again the sample size may have been a factor in the high level of undernutrition observed in the North West. The level of undernutrition observed among the children 1-4 years was mostly higher than that observed among the children (0 - 59 months old) in the PIOJ surveys, possibly due to the great differences in sample size used in the two surveys. Of 234,249 visits to health clinics for infants 0-35 months in 2000, 7.3% were overweight and 4.2% were underweight (mildly - severely malnourished, based on the "Gomez" classification) (ESSJ, 2001).

The prevalence of Low Birth Weight in Jamaican hospitals was 9.2% in 2000 down from 10.7% in 1999, but up from 9.0% in 1998 (ESSJ, 2001). The prevalence in hospitals was 12.3% in 1994, while home deliveries that were attended and recorded showed 4.6% Low Birth Weight (PIOJ, 1996b). These percentages can be related to the high number of adolescent and single mothers in Jamaica.

A study on adolescents, which was conducted in Kingston in 1991 (**Table 4b**), indicates no PEM or undernutrition among girls aged 13-15 years (Walker, et al. 1996). On the contrary, adolescents show a tendency to overweight, as the mean Body Mass Index (BMI) appears to be higher than in the reference group (WHO, 1995). In the CFNI micronutrient study (CFNI/PAHO, 1998), an assessment of the BMI (persons with weights below the 5th percentile are underweight and those with weights above the 85th percentile are overweight) of children 10-16 years old revealed that 16.5% of this population was underweight (22.4% males and 11.5% females), while 15.1% was overweight (13.4% males and 16.6% females). As seen in (**Table 4b)**, the highest mean BMI was found in the North West (20.5 kg/m^2) and the lowest in the North East (17.7 kg/m^2); females (20.2 kg/m^2) had a higher mean BMI than did the males (18.4 kg/m^2) (PAHO/CFNI, 1999a).

A study on physical activity carried out in 1998 by CFNI among adults, 20 years and older, found that the prevalence of obesity was 19.7% and that a further 31.8% of the population was overweight (pre-obese) (CFNI, 1999). A relatively high prevalence of obesity (15.6%) was also found among urban adult women (**Table 4c**), confirming the tendency observed in adolescents (Forrester, et al., 1996). In the same urban sample, prevalence of overweight was higher in women (37.5%) than in men (15.4%). Data on Chronic Energy Deficiency were not reported. Wilks, et al. (1998) reported on a study conducted in 1991 among an urban population of adults (25 years and older), that the prevalence of obesity was also higher in women (31.5%) than in men (7.2%). In the same sample, 33.2% women and

23.5% men were overweight. A previous study on the elderly in August Town found that 23% of the subjects were overweight; while another 15% were grossly overweight (Mesfin, et al., 1987).

Table 4a-1: 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
PIOJ, 2001	National	552	M/F	< 5	...	5.1	...	4.2	...	2.2	5.4
SLC, 2000	National	298	M	< 5	...	5.4	...	5.8	...	2.1	4.8
	National	254	F	< 5	...	7.4	...	2.4	...	2.4	7.1
PIOJ, 2000	National	597	M/F	< 5	...	3.9	...	3.4	...	3.6	4.1
SLC, 1999	National	300	M	< 5	...	4.3	...	4.8	...	3.7	3.4
	National	297	F	< 5	...	3.4	...	2.1	...	3.4	4.8
CFNI/PAHO, 1998	National	290	M/F	1.0-4.0	...	9.1	...	9.9	...	5.2	4.1
Micronutrient	National	127	M	1.0-4.0	...	...	...	...	...	5.5	5.5
Study, 1997	National	163	F	1.0-4.0	...	...	...	...	...	4.9	3.1
	Regional:										
	South East	27	M/F	1.0-4.0	...	...	...	...	...	7.4	0.0
	South West	115	M/F	1.0-4.0	...	...	...	...	...	1.7	7.0
	North East	86	M/F	1.0-4.0	...	...	...	...	...	2.3	2.3
	North West	62	M/F	1.0-4.0	...	...	...	...	...	14.5	3.2
	National	107	M/F	5.0-9.0	...	4.8	...	2.5	...	9.3	0.0
	National	60	M	5.0-9.0	...	...	...	...	...	5.0	0.0
	National	47	F	5.0-9.0	...	...	...	...	...	14.9	0.0
	Regional:										
	South East	27	M/F	5.0-9.0	...	...	...	...	...	4.3	0.0
	South West	115	M/F	5.0-9.0	...	...	...	...	...	0.0	0.0
	North East	86	M/F	5.0-9.0	...	...	...	...	...	8.6	0.0
	North West	62	M/F	5.0-9.0	...	...	...	...	...	15.8	0.0

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-2: 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
PIOJ, 1997	National	784	M/F	< 5	...	5.5	...	6.7	...	3.8	3.7
SLC, 1995	National	404	M	< 5	...	4.9	...	8.0	...	4.0	4.2
	National	380	F	< 5	...	6.2	...	5.2	...	3.7	3.2
SLC	National	752	M/F	< 5	...	4.6	...	8.4	...	3.2	5.1
1994	National	383	M	< 5	...	4.2	...	10.5	...	3.7	4.4
	National	369	F	< 5	...	5.1	...	6.2	...	2.7	5.7
PIOJ, 1995	National	749	M/F	< 5	...	8.3	...	10.4	...	4.4	4.1
SLC, 1993	National	358	M	< 5	...	7.7	...	12.1	...	3.4	3.9
	National	391	F	< 5	...	8.9	...	8.9	...	5.4	4.3
PIOJ, 1994	National	1535	M/F	< 5	...	6.9	...	9.1	...	2.1	2.0
SLC, 1992	National	781	M	< 5	...	7.7	...	9.8	...	2.4	1.9
	National	754	F	< 5	...	6.1	...	8.4	...	1.9	2.1
	Kingston	50	M/F	< 5	...	10.0	...	8.0	...	2.0	2.0
	St.Andrew	197	M/F	< 5	...	7.8	...	8.5	...	4.6	2.0
	St. Thomas	45	M/F	< 5	...	0.0	...	8.9	...	4.4	2.2
	Portland	50	M/F	< 5	...	7.8	...	9.6	...	2.0	2.0
	St. Mary	92	M/F	< 5	...	6.8	...	8.0	...	2.2	4.3
	St. Ann	87	M/F	< 5	...	2.3	...	9.4	...	0.0	2.3
	Trelawny	74	M/F	< 5	...	4.0	...	2.7	...	0.0	1.4
	St. James	100	M/F	< 5	...	6.7	...	11.0	...	4.0	2.0
	Hanover	68	M/F	< 5	...	18.5	...	29.2	...	2.9	2.9
	Westm.land	109	M/F	< 5	...	11.9	...	15.0	...	2.8	2.8
	St.Elisabeth	140	M/F	< 5	...	7.7	...	8.5	...	0.7	1.4
	Manchester	132	M/F	< 5	...	8.5	...	8.3	...	2.3	3.0
	Clarendon	162	M/F	< 5	...	8.0	...	10.5	...	1.9	1.9
	St.Catherine	229	M/F	< 5	...	1.8	...	2.7	...	0.9	0.4
PIOJ, 1992c	National	616	M/F	< 5	...	6.7	...	6.1	...	5.0	1.9
SLC, 1991	National	310	M	"	...	7.9	...	9.3	...	7.4	1.9
	National	306	F	"	...	5.5	...	2.9	...	2.6	2.0
PIOJ, 1992b	National	638	M/F	< 5	...	5.6	...	7.3	...	5.8	3.8
SLC, 1990	National	328	M	"	...	6.2	...	7.7	...	7.9	3.0
	National	210	F	"	...	5.1	...	6.8	...	3.5	4.5
WB, 1990	National	860	M/F	< 5	0.9	7.2	3.0	8.7	0.5	3.4	...
1989	National	428	M	"	...	8.9	...	12.4	...	3.3	...
	National	432	F	"	...	5.6	...	5.1	...	3.5	...
	Urban	355	M/F	"	0.3	5.9	2.8	6.8	0.3	5.9	...
	Rural	505	M/F	"	1.4	8.1	3.2	10.1	0.4	3.4	...

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 4b: Anthropometric data on adolescents

Source/ Year of survey	Location	Sample Size Number	Sex	Age Years	Anthropometric status: Height (cm) mean	SD	median	Body Mass Index (kg/m²) mean	SD	median
CFNI/PAHO,	National	291	M/F	10.0-16.0	...	...	...	19.3	8.5	...
1998	National	134	M	"	...	...	...	18.4	4.1	...
Micronutrient	National	157	F	"	...	...	...	20.2	0.9	...
Study, 1997										
	Regional:									
	South East	107	M/F	10.0-16.0	...	...	...	19.7	4.4	...
	South West	47	"	"	...	...	...	18.1	3.5	...
	North East	52	"	"	...	...	...	17.7	4.5	...
	North West	86	"	"	…	…	…	20.5	14.2	…
Walker et al., 1996	Kingston	160	F	13.0-13.9	159.1	6.2	...	19.2	...	...
1991	Kingston	267	F	14.0-14.9	160.1	6.1	...	20.0	...	...

Note: ... Data not available

Table 4c: 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/m²) mean	SD	median	Overweight % BMI 25.0 - 29.9	Obesity % BMI >30.0
CFNI, 1999	National	2075	M/F	>20	…	...	...	31.8	19.7
Physical Activity									
Study, 1998									
								≥ 27.8	*≥ 31.1*
Forrester et al., 1996	Urban	337	M	25-74	23.4	...	...	15.4	3.9
1994-1995									
								≥ 27.3	*≥ 32.3*
	Urban	481	F	25-74	27.3	...	...	37.5	15.6

Note: ... Data not available

5. Micronutrient deficiencies

Available data indicates that iron deficiency is the most important micronutrient deficiency in Jamaica (**Table 5a** and **Table 5b**). As described in the 1978 national survey carried out by the Ministry of Health, in urban areas, iron deficiency anaemia was found in about 63 % of pregnant women and 55% of lactating women, showing only slight differences with that observed from rural area which were 61% and 45% respectively.

According to the 1985 MOH study, high prevalence was also found among children under five (44%), children from 5 to 9 years (55%) and adolescents from 10 to 14 years (42%), indicating that iron deficiency anaemia was a serious public health problem.

The prevalence levels of anaemia reported in the 1987 survey were about 12-13% respectively in pregnant and lactating women (Hb < 9.3 g/dL and Hb < 10.6 g/dL), 14% in children from 2 to 4 years (Hb < 10.2 g/dL), 5% in children from 5 to 9 years (Hb < 10.0 g/dL) and about 5% in adolescents from 10 to 14 years (Hb < 10.4-10.7 g/dL)(MOH/TMRU, 1987). The cut-off points mentioned above were defined for the Jamaican population and thus no comparison could be established with previous surveys that used different values.

The same limitation was found with the results of the 1991 survey conducted in Kingston and found 16% of anaemia in girls aged 13-14 years (Hb < 11.5 g/dL) (Walker, et al., 1996). Currently only pregnant women are screened for anaemia at their first visit to the health clinic. The prevalence of anaemia, assessed using a cut-off point of 10.0 g/dL, decreased from 31% in 1989 to 18% in 1996 (PIOJ, 1990 - 1997a). At parish levels, as reported in (**Table 5b**) important variations were observed, with percentages ranging from 6.9 in the parish of Manchester to 27.6 in the parish of Westmoreland (**Map 6**). However although the coverage of antenatal care is 71%, the fact that only 19 % of pregnant women before 16 weeks of pregnancy were in the sample limit the interpretation of the results.

A study on micronutrient (PAHO/CFNI, 1998), using the WHO cut-offs for low haemoglobin, found a prevalence of 53.1% for children 1-4 years old, 48.2% for pregnant women, and 23.5% for school-aged children (5-16 years). The country is divided into four health regions (South East, South West, North East and North West). Among the pregnant women, the highest prevalence was found in the North Western region (68.8%) and the lowest in the North Eastern region. Among the children 1-4 years old as well as those 5 - 16 years, the highest prevalence was found in the North Western region, 68.1% and 35.4% respectively (**Table 5a**). Children 5-9 years old showed significantly higher levels of iron deficiency (35.4%) compared to children 10 years and older (18.1%).

In order to assess the severity of the haemoglobin (iron) deficiency the cut-off was lowered to 10.0 g/dL for pregnant women and children 1-4 years old, in the micronutrient study (PAHO/CFNI, 1998). At this lower cut-off, children 1-4 years showed a prevalence of 23.2%, while for the pregnant women it was 21.0% (a slightly higher level than the 18% reported for 1996 by the PIOJ). At this lower cut-off point, the highest prevalence for iron deficiency among the pregnant women remained in the North Western region (34.4%), while the highest prevalence among the children 1-4 years old was found in the South Eastern region. In the case of the 5-16 year old children, a prevalence of 6.3% was obtained when the cut-off was lowered to 110 g/dL, and the region with the highest prevalence remained the North Western region.

The micronutrient study (CFNI/PAHO, 1998) also showed that iron deficiency was lowest among women in their 1st trimester of pregnancy and highest among women in their 3rd trimester of pregnancy. This finding suggests that iron deficiency increases as pregnancy progresses.

As part of the strategy of dealing with the problem of iron deficiency, besides the screening and supplementation of pregnant women, flour is fortified in Jamaica since 1984 and cornmeal is fortified since 1997.

No surveys were undertaken to assess the situation of Iodine deficiency. In a rapid assessment carried out in 1995 by health workers, no cases of Vitamin A deficiency were detected (Fox and UNICEF, 1995). However, a national study conducted in 1997, while confirming that Vitamin A deficiency in Jamaica was rare (< 1% of children 1-4 years old and pregnant mothers), showed that a marginal deficiency of vitamin A existed. In addition, Beta-carotene deficiency was found among children 1-4 years old (1.2%) (CFNI/PAHO, 1998).

Table 5a: Surveys on micronutrient deficiencies

Source/ Year of survey	Deficiency	Location	Sample Size Number	Sample Sex	Sample Age Years	Percentage
	Iron					
CFNI/PAHO, 1998	Hb < 11 g/dL	**National**	343	Pregnant		51.3
Micronutrient		**Regional:**				
Study, 1997		South East	87	Pregnant		51.7
		South West	106	Pregnant		47.1
		North East	89	Pregnant		43.8
		North West	61	Pregnant		68.8
	Hb < 10 g/dL	**National**	343	Pregnant		21.0
		Regional:				
		South East	87	Pregnant		23.0
		South West	106	Pregnant		17.9
		North East	89	Pregnant		13.5
		North West	61	Pregnant		34.4
	Hb < 11 g/dL	**National**	272	M&F	1.0-4.0	48.2
		Regional:				
		South East	27	M/F	1.0-4.0	59.2
		South West	109	M/F	1.0-4.0	47.7
		North East	87	M/F	1.0-4.0	34.9
		North West	47	M/F	1.0-4.0	68.1
	Hb < 12 g/dL	**National**	397	M/F	5.0-16.0	23.6
		Regional:				
		South East	134	M/F	5.0-16.0	19.4
		South West	47	M/F	5.0-16.0	8.6
		North East	89	M/F	5.0-16.0	21.3
		North West	127	M/F	5.0-16.0	35.4

Table 5b: Surveys on micronutrient deficiencies

Source/ Year of survey	Deficiency	Location	Sample Size Number	Sex	Age Years	Percentage
	Iron					
MOH, 1996						
1996	Hb < 10 g/dL	**National**	26845	Pregnant		18.0
		Parish:				
		Kingston and St. Andrew	5097	Pregnant		21.1
		St. Thomas	1283	Pregnant		12.7
		Portland	1292	Pregnant		16.0
		St. Mary	1627	Pregnant		18.2
		St. Ann	1991	Pregnant		14.7
		Trelawny	943	Pregnant		16.2
		St. James	1334	Pregnant		12.8
		Hanover	662	Pregnant		12.4
		Westmoreland	2118	Pregnant		27.6
		St. Elisabeth	2278	Pregnant		12.2
		Manchester	1589	Pregnant		6.9
		Clarendon	3494	Pregnant		23.2
		St. Catherine	3137	Pregnant		19.9
MOH, 1985	Hb < 11 g/dL	Urban & Rural	432	M/F	0-5	43.6
1985		Urban & Rural	76	M/F	0.5-1	70.4
	Hb < 12 g/dL	Urban & Rural	228	M	5-9	54.8
		Urban & Rural	213	F	5-9	55.4
		Urban & Rural	177	M	10-14	42.4
		Urban & Rural	183	F	10-14	42.1
MOH , 1978	Hb < 11 g/dL	Urban	95	Pregnant		63.2
1978		Rural	134	Pregnant		60.5
	Hb < 12 g/dL	Urban	161	Lactating		55.2
		Rural	262	Lactating		44.7

REFERENCES

Ashley-Jackson, M. (no date). *Dietary Intakes of Adult Jamaicans of African Origin and Associations with Body Mass Index.* Unpublished PH.D Thesis. Faculty of Medical Sciences. The University of the West Indies. Mona Campus. Jamaica.

Campbell, Versada. 1988. *Caribbean Foodways*, Caribbean Food and Nutrition Institute, Kingston, Jamaica.

CFNI/PAHO. 1996. *Update and computerisation of the nutrient content of Caribbean diets, final report*. Jamaica.

CFNI/PAHO. 1998. *Micronutrient Study Report: An Assessment of the Vitamin A, E, Beta-Carotene, and Iron Status in Jamaica.* Pan-American Health Organization/Caribbean Food and Nutrition Institute, Kingston, Jamaica.

CFNI. 1999. *A Summary Report on physical activity levels among the Jamaican population presented to the Ministry of Health.* Caribbean Food and Nutrition Institute, Kingston, Jamaica.

Chambers, C.M. and CFNI. 1993. *The dietary intake and nutritional status of rural school children in Jamaica in 1987*. Caribbean Food and Nutrition Institute, Kingston, Jamaica.

EIU. 2000. *Jamaica Belize Organisation of Eastern Caribbean States (Windward and Leeward Islands) Country Report. 1st quarter 2000.* The Economist Intelligence Unit. United Kingdom.

ESSJ. 2001. *Economic and Social Survey Jamaica 2000.* Planning Institute of Jamaica, Kingston, Jamaica.

FAOSTAT. 1999. *FAO Web page*. Statistics database . FAO, Rome

FAO/WFS (World Food Summit). 2002. *Mapping Undernutrition – five years later-*. Poster for the World Food Summit 10-13 June 2002. FAO, Rome

Forrester T., Wilks R., Bennet F., Mc Farlane-Anderson N., Mc Gee D., Cooper R. and Fraser H., 1996. *Obesity in the Caribbean. The origins and consequences of obesity*. Wiley Chichester (Ciba Foundation Symposium 201) p.17 - 31.

Fox K. & UNICEF. 1995. *Prevalence of Clinical Vitamin A Deficiency in Jamaica, 1995.*

MOH/TMRU(UWI). *1987. Report on Iron nutritional status and nutritional anaemia in Jamaica, 1987.*

MOH (Ministry of Health). *Nutrition and Dietetics Division. 1978 and 1985 Surveys; mentioned in the Nutrition Country Profile for Jamaica of 1988.*

PIOJ (Planning Institute of Jamaica).1989. *Survey of Living Conditions (SLC), 1989.* Planning Institute of Jamaica, Kingston, Jamaica.

PIOJ.1992a. *Survey of Living Conditions (SLC), 1989.* Planning Institute of Jamaica, Kingston, Jamaica.

PIOJ.1992b. *Survey of Living Conditions (SLC), 1990.* Planning Institute of Jamaica, Kingston, Jamaica. Note: The data of Table 4a were recalculated into Z-scores by the CFNI.

PIOJ.1992c. *Survey of Living Conditions (SLC), 1991.* Planning Institute of Jamaica, Kingston, Jamaica. Note: The data of Table 4a were recalculated into Z-scores by the CFNI.

PIOJ.1994. *Survey of Living Conditions (SLC), 1992.* Planning Institute of Jamaica, Kingston, Jamaica. Note: The data of Table 4a were recalculated into Z-scores by the CFNI.

PIOJ.1995. *Survey of Living Conditions (SLC), 1993.* Planning Institute of Jamaica, Kingston, Jamaica. Note: The data of Table 4a were recalculated into Z-scores by the CFNI.

PIOJ.1996. *Survey of Living Conditions (SLC), 1994.* Planning Institute of Jamaica, Kingston, Jamaica.

PIOJ.1997. *Survey of Living Conditions (SLC), 1995.* Planning Institute of Jamaica, Kingston, Jamaica. Note: The data of Table 4a were recalculated into Z-scores by the CFNI.

PIOJ. 1990. *Economic and Social Survey Jamaica 1989.* Planning Institute of Jamaica, Kingston, Jamaica.

PIOJ. 1996a. *Economic and Social Survey Jamaica 1995.* Planning Institute of Jamaica, Kingston, Jamaica.

PIOJ. 1996b. *Social Indicators Monitoring System Annual Report of 1994*. Policy Development Unit, Planning Institute of Jamaica, Kingston, Jamaica.

PIOJ. 1997a. *Economic and Social Survey Jamaica 1996.* Planning Institute of Jamaica, Kingston, Jamaica.

PIOJ. 2000. *Survey of Living Conditions (SLC), 1999.* Planning Institute of Jamaica, Kingston, Jamaica.

PIOJ. 2001. *Survey of Living Conditions (SLC), 2000.* Planning Institute of Jamaica, Kingston, Jamaica.

Powell, D. & UNICEF. 1988. *Women's work, social support resources and infant feeding practices in Jamaica, 1988*.

Simeon D.T., Patterson A.W. and CFNI. 1994. *Energy and protein accessibility at the household level in Jamaica: results from a national survey, 1989*.

Strachan O.M. 1996, *An assessment of food security in Jamaica - national country paper for the WFS* - Ministry of Agriculture.

Tabatabai, H. 1996. *Statistics on poverty and income distribution. An ILO Compendium of data.* International Labour Office, Geneva.

UNDP (United Nations Development Programme). 1997. *Human Development Report.* Oxford University Press. New York.

UNDP (United Nations Development Programme). 2002. *Human Development Report.* Oxford University Press. New York.

UN. 2001. *World Population Prospects Database 1950-2050. The 2000 Revision.* United Nations Population Division. New York.

UN. 1998. *World Urbanisation Prospects. 1996 Revision.* United Nations Population Division. New York.

UN. 2002. *World Urbanisation Prospects. 2001 Revision.* United Nations Population Division. New York.

UNICEF. 1995. *Situation Analysis of Children and Women in Jamaica 1995*, UNICEF, Kingston, Jamaica.

UNICEF. 2002. *The State of the World's Children 2002.* United Nations Children's Fund. Oxford University Press. New York.

Walker S.P., Grantham-Mc Gregor S., Himes J.H., Williams S., *Anthropometry in adolescent girls in Kingston, Jamaica. 1991* . Annals of Human Biology 1996, Vol. 23, no. 1, 23-29.

Wilks R., Bennett F., Forrester T., McFarlane-Anderson N., Anderson S. G., Kaufman J.S., Rotimi C., Cooper R. S. and Cruickshank J. K. 1999. *Diabetes in the Caribbean: results of a population survey from Spanish Town, Jamaica.* British Diabetic Association. Diabetic Medicine, 16, 875-883.

Wilks R., Bennett F., Forrester T., McFarlane-Anderson N., Anderson S. G., Kaufman J.S., Rotimi C., Cooper R. S. and Cruickshank J. K. 1998. *Chronic disease: the new epidemic.* West Indian Medical Journal. 47 (suppl.4): 40.

WB (World Bank). 1990. *Jamaica: Living Standard and Measurement Survey, 1989. Kingston - Jamaica.* World Bank.

WB. 1994a. *Jamaica: A Strategy for Growth and Poverty Reduction. Country Economic Memorandum.* Report No. 127-JM. World Bank.

WB. 1994b. *Jamaica Health Sector Review: Present Status and Future Options.* Report No. 13407-JM. World Bank.

WB. 1995. *Social Indicators of Development 1995*. World Bank.

WB. 2000. *Jamaica At A Glance. World Bank Group Regions: Latin America and the Caribbean.* World Bank, Washington, D.C.

WB. 2002. *The World Development Indicators 2002 CD-ROM. Win*STARS System Version 4.0.* World Bank, Washington, D.C.

WHO. 1995. *Physical status: the use and interpretation of anthropometry*. Report of a WHO Expert Committee. World Health Organization, Geneva (WHO Technical Report Series no 854).

WHO.*2001.* *The World Health Report 2000. Health Systems: Improving Performance. World Health Organization, Geneva.*

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

Source:	*Indicator:*
FAOSTAT. 1999/2002	*A.1-2, B, C.10-11, E.1-3, F, G*
UN. 2000/2001 rev.	*C.1-9, D.5*
World Bank. 2002.	*D.1, D.3*
UNDP. 2002.	*D.2*
UNICEF. 2002.	*D.6*
FAO/WFS. 2002.	*H*

NCP of JAMAICA
MAPS

- General map of Jamaica.

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

- Map 2**:**
Prevalence of underweight in children under five years of age by parish.

- Map 3**:**
Prevalence of stunting in children under five years of age by parish.

- Map 4**:**
Prevalence of wasting in children under five years of age by parish.

- Map 5**:**
Prevalence of overweight in children under five years of age by parish.

- Map 6**:**
Prevalence of anaemia among pregnant women by parish.

General map of Jamaica

Scale 1:1 150 000 (approx.)
Geographic Projection (Lat/Long)

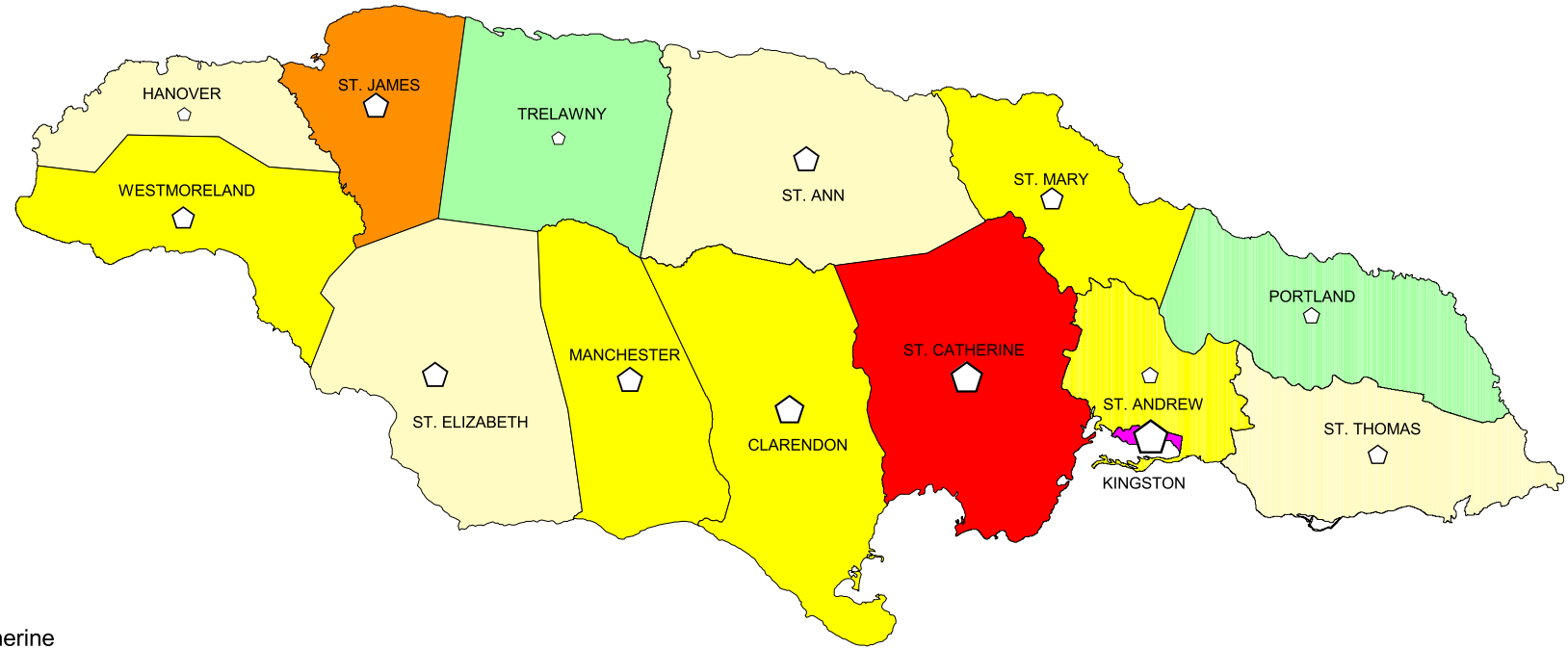
The designations employed and the presentation of the material in the maps do not imply the expression of any opinion whatsoever on the part of FAO concerning the legal or constitutional status of any country, territory or sea area, or concerning the delimitation of frontiers.

FAO - GIS/ESNA, December 1997

Jamaica

Map 1: Population density by parish

Source: Population Census of 1991



Persons / Km ²

- < 100
- 100 - 150
- 150 - 200
- 200 - 300
- 322 St. Catherine
- 25784 Kingston

Population

- Kingston (562 100)
- Hanover (66 400)

N
W E
S

Scale 1:1 150 000 (approx.)
Geographic Projection (Lat/Long)

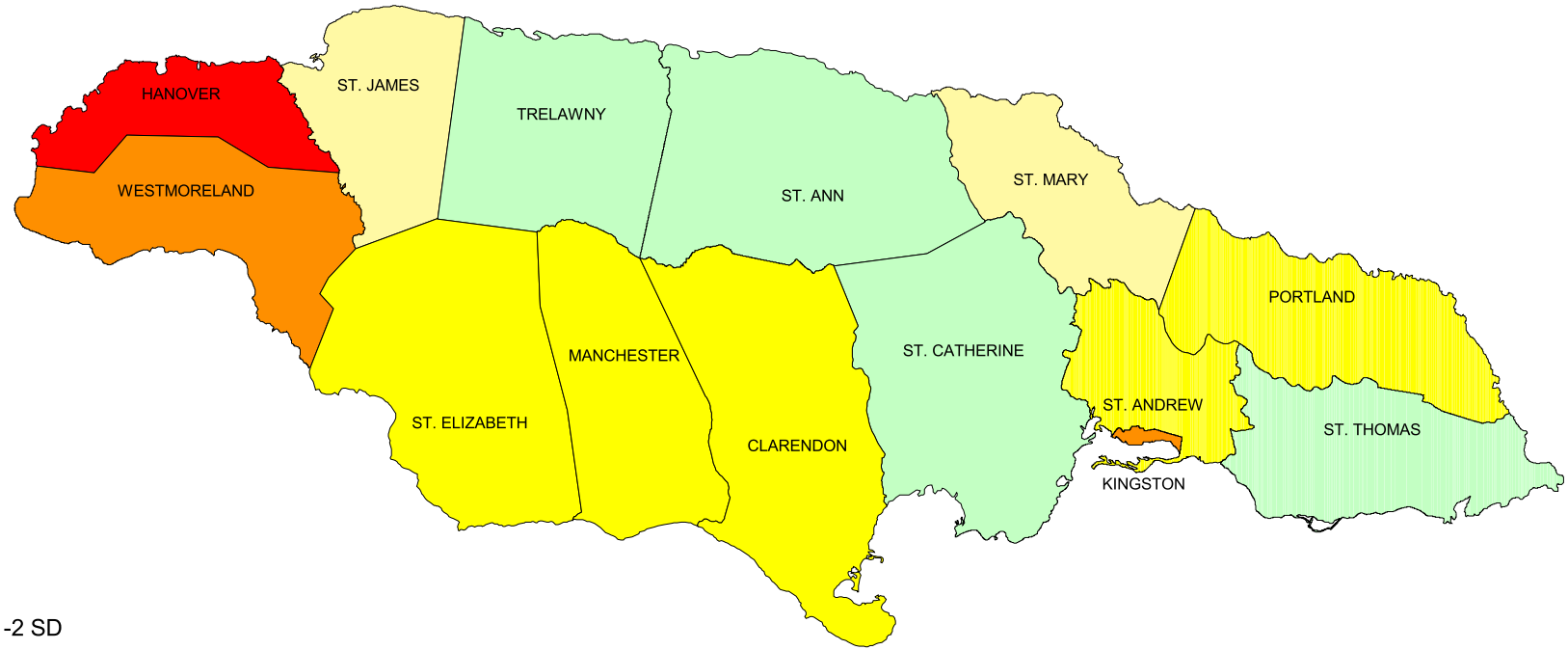
The designations employed and the presentation of the material in the maps do not imply the expression of any opinion whatsoever on the part of FAO concerning the legal or constitutional status of any country, territory or sea area, or concerning the delimitation of frontiers.

FAO - GIS/ESNA, December 1997

Jamaica

Map 2: Prevalence of underweight in children under five years of age by parish

Source: Planning Institute, 1994 - Survey of Living Conditions, 1992



% weight-for-age < -2 SD

- < 5.0
- 5.0 - 7.4
- 7.5 - 9.9
- 10.0 - 14.9
- 15.0 - 19.9

Scale 1:1 150 000 (approx.)
Geographic Projection (Lat/Long)

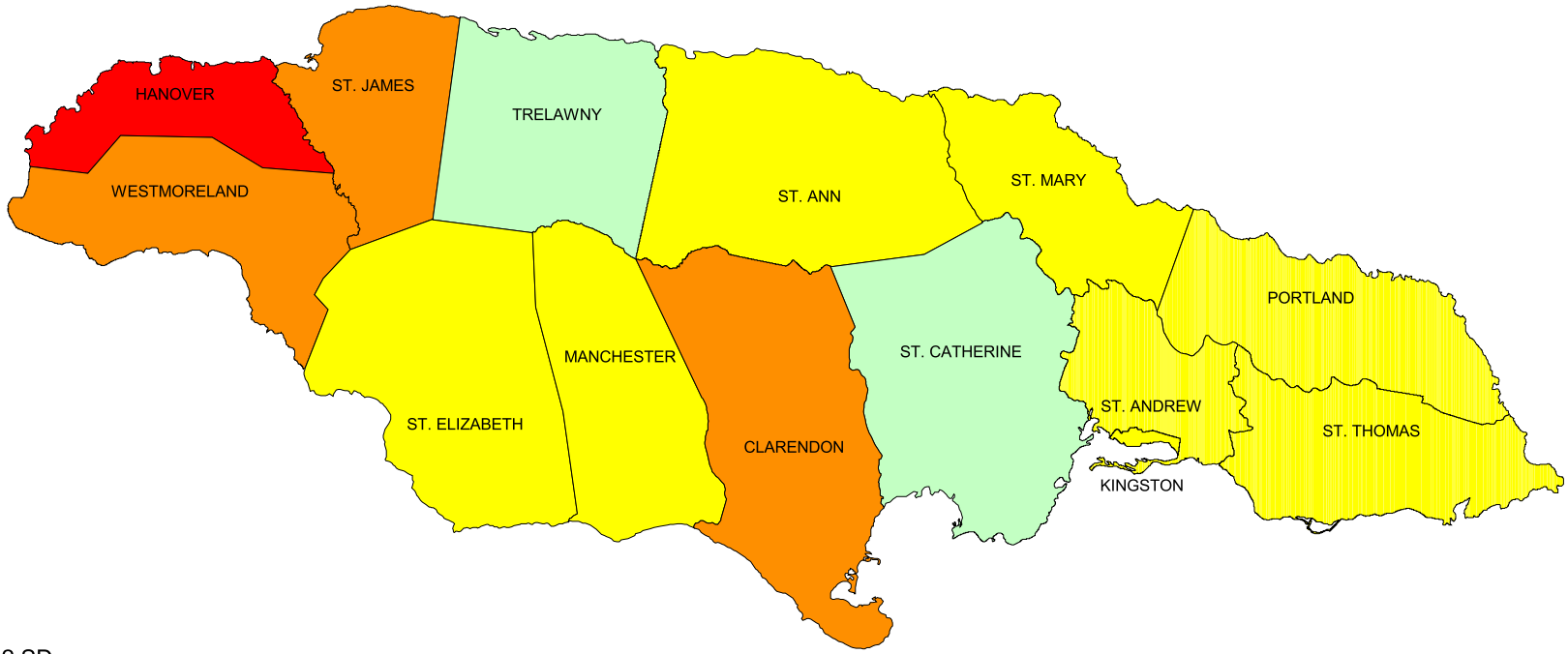
The designations employed and the presentation of the material in the maps do not imply the expression of any opinion whatsoever on the part of FAO concerning the legal or constitutional status of any country, territory or sea area, or concerning the delimitation of frontiers.

FAO - GIS/ESNA, December 1997

Jamaica

Map 3: Prevalence of stunting in children under five years of age by parish

Source: Planning Institute, 1994 - Survey of Living Conditions, 1992



% height-for-age < -2 SD

- < 5.0
- 5.0 - 9.9
- 10.0 - 19.9
- 20.0 - 29.9

Scale 1:1 150 000 (approx.)
Geographic Projection (Lat/Long)

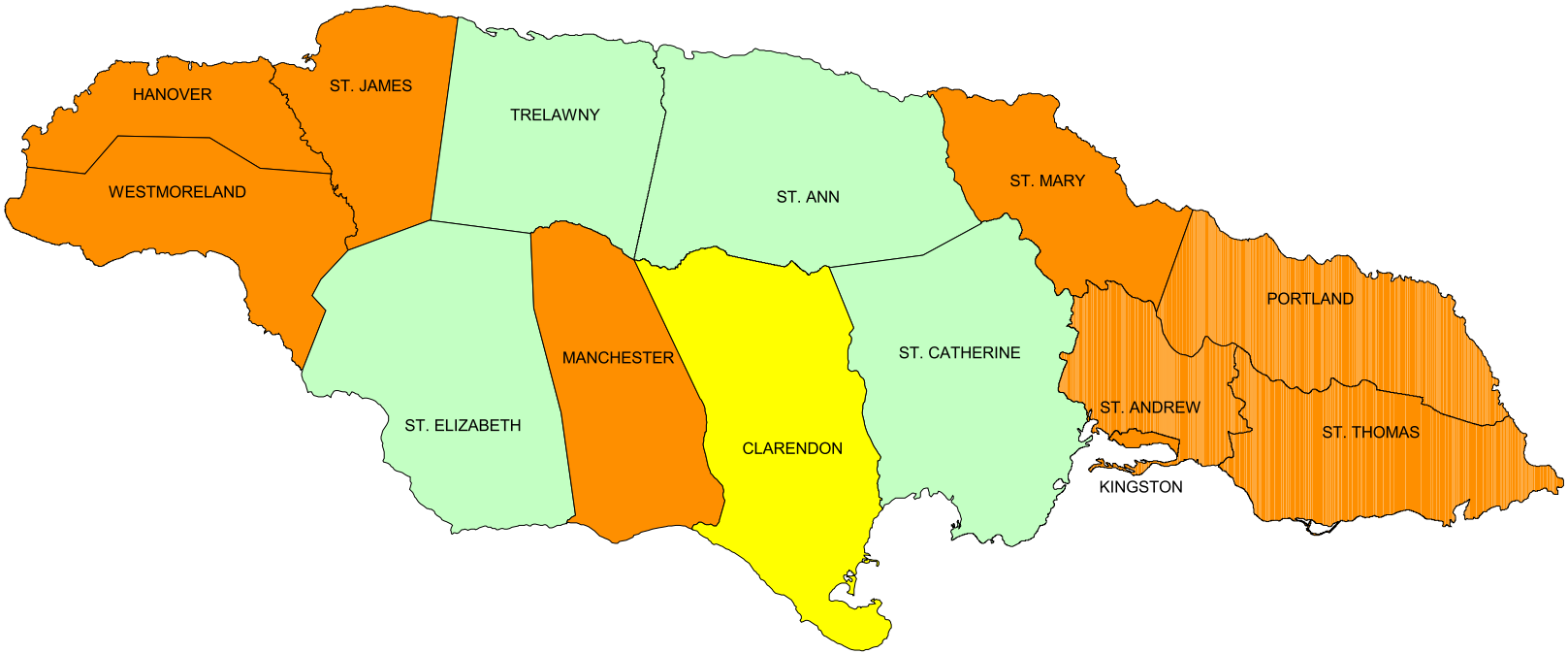
The designations employed and the presentation of the material in the maps do not imply the expression of any opinion whatsoever on the part of FAO concerning the legal or constitutional status of any country, territory or sea area, or concerning the delimitation of frontiers.

FAO - GIS/ESNA, December 1997

Jamaica

Map 4: Prevalence of wasting in children under five years of age by parish

Source: Planning Institute, 1994 - Survey of Living Conditions, 1992



% weight-for-height < -2 SD

- < 1.0
- 1.0 - 1.9
- 2.0- 4.9

Scale 1:1 150 000 (approx.)
Geographic Projection (Lat/Long)

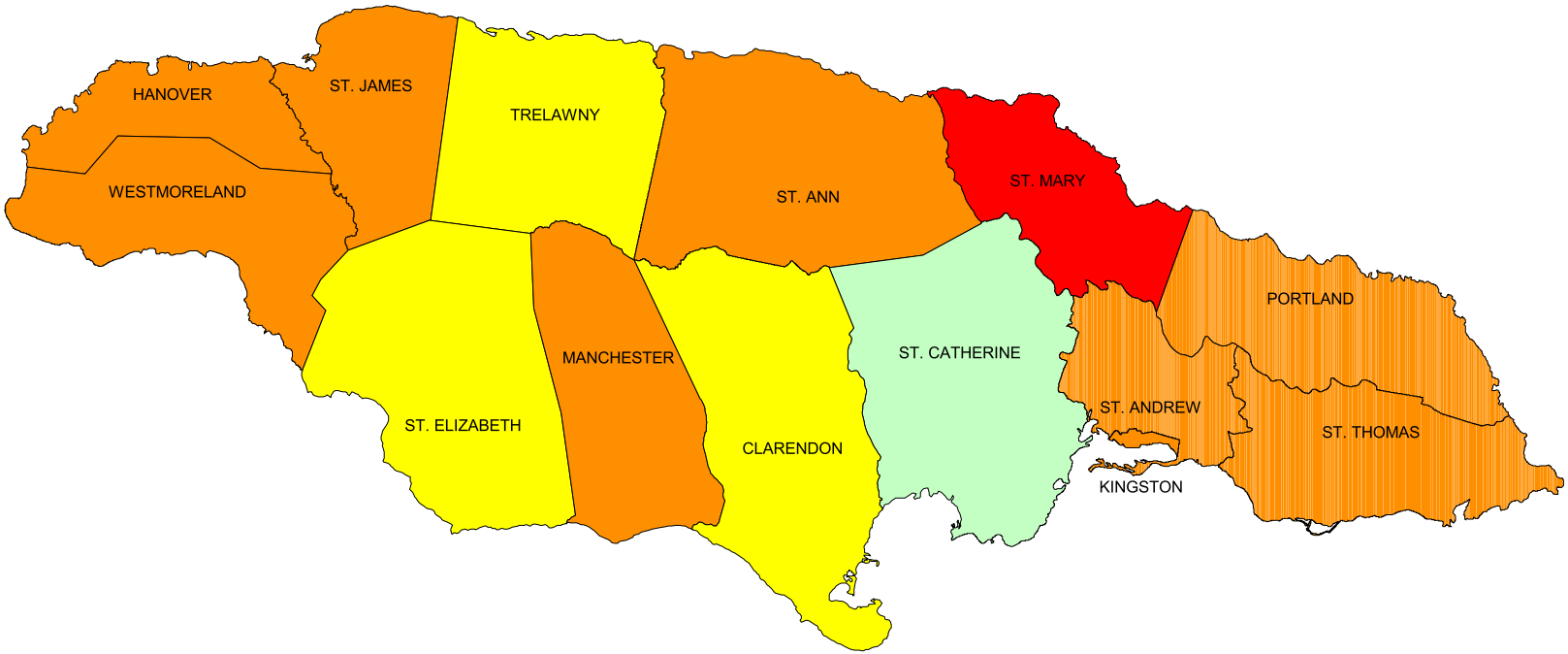
The designations employed and the presentation of the material in the maps do not imply the expression of any opinion whatsoever on the part of FAO concerning the legal or constitutional status of any country, territory or sea area, or concerning the delimitation of frontiers.

FAO - GIS/ESNA, December 1997

Jamaica

Map 5: Prevalence of overweight in children under five years of age by parish

Source: Planning Institute, 1994 - Survey of Living Conditions, 1992



% weight-for-height > +2 SD

- < 1.0
- 1.0 - 1.9
- 2.0 - 3.9
- 4.0 - 5.9

Scale 1:1 150 000 (approx.)
Geographic Projection (Lat/Long)

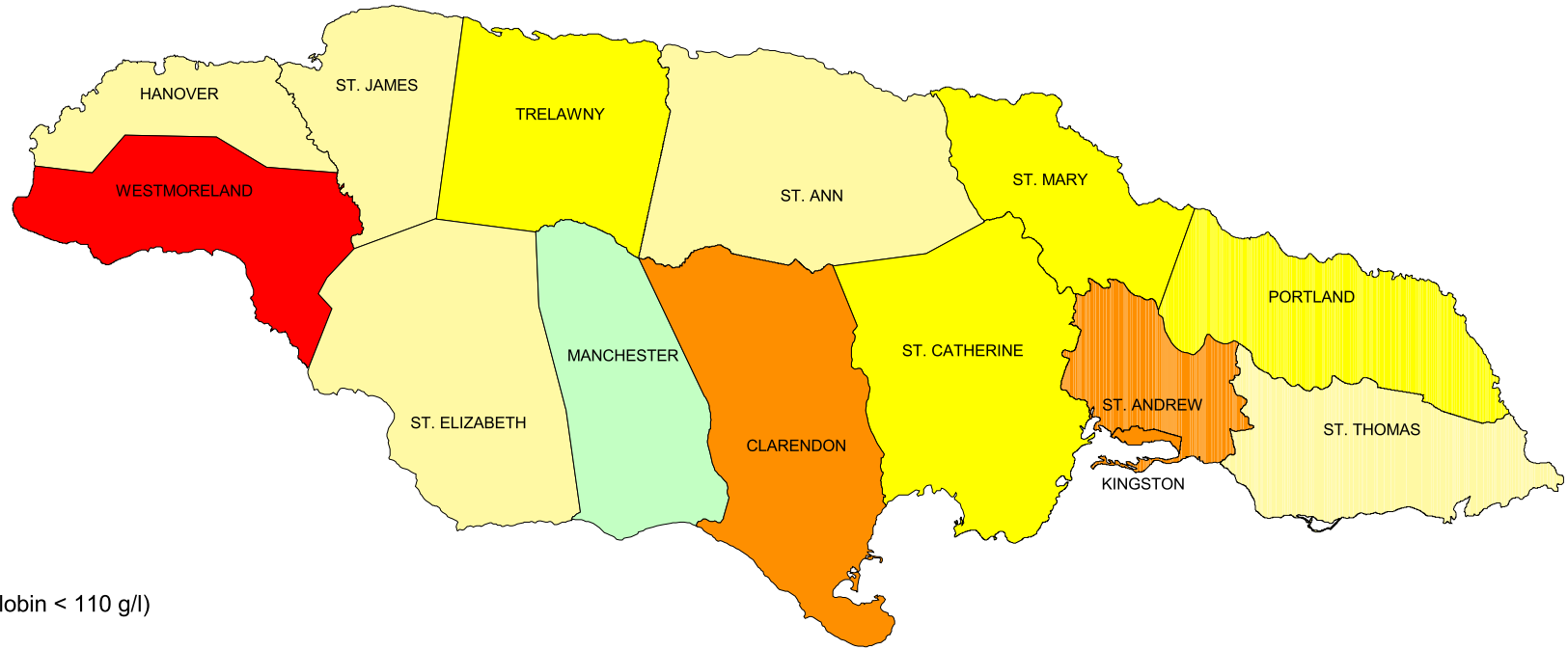
The designations employed and the presentation of the material in the maps do not imply the expression of any opinion whatsoever on the part of FAO concerning the legal or constitutional status of any country, territory or sea area, or concerning the delimitation of frontiers.

FAO - GIS/ESNA, December 1997

Jamaica

Map 6: Prevalence of anaemia among pregnant women by parish

*Source: Ministry of Health, 1996 **



% anaemia (Hemoglobin < 110 g/l)

- < 10.0
- 10.0 - 14.9
- 15.0 - 19.9
- 20.0 - 24.9
- 25.0 - 29.9

* Data were collected in health clinics.
Coverage of antenatal cares is estimated to be 71%.

Scale 1:1 150 000 (approx.)
Geographic Projection (Lat/Long)

The designations employed and the presentation of the material in the maps do not imply the expression of any opinion whatsoever on the part of FAO concerning the legal or constitutional status of any country, territory or sea area, or concerning the delimitation of frontiers.

FAO - GIS/ESNA, December 1997

Jamaica

job number: bc689e