

**JAMAICA SURVEY
OF
LIVING CONDITIONS
JULY, 1989**

SURVEY OF LIVING

CONDITIONS

JULY 1989 - JAMAICA

Final Report

STATISTICAL INSTITUTE OF JAMAICA

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PREFACE

The July 1989 Survey of Living Conditions is the second round in a new series of surveys conducted by the Statistical Institute of Jamaica with the cooperation of the Planning Institute of Jamaica. The first round of the survey was conducted in August 1988. The third round is scheduled to be in the field in November 1989, and the fourth in May 1991.

The Survey of Living Conditions (SLC) is designed to provide information to monitor household welfare from several perspectives--consumption, health, nutrition, and education status, the use of public services, housing, and the participation of households in governmental income support programs. The SLC sample (2000 households) is randomly drawn from the Labour Force Survey sample (6000 households), which allows for linkage of the two surveys in ways that expand the potential for policy analysis.

The Survey of Living Conditions has been instituted as a monitoring mechanism to examine the effectiveness of the Human Resources Development Programme, though its usefulness is clearly even broader. The cost of the survey is met by the Government of Jamaica under financing from the World Bank's Social Sector Development Loan.

The data from the Survey of Living Conditions belong to the Government of Jamaica, and are available to researchers at a nominal cost. Requests for the data should be directed to either the Statistical Institute of Jamaica or the Planning Institute of Jamaica.

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The World Bank provided technical assistance in the planning of the survey, and in the preliminary analysis. The Center for Agricultural and Rural Development (CARD) of Iowa State University provided substantial expertise and manpower in the preparation of this report, especially in the analytical aspects of household expenditure. Sistemas Integrales, a private Chilean consulting firm, provided considerable technical assistance for the production of questionnaires, interviewer training and data management.

STATIN and PIOJ would like to take this opportunity to thank the households who gave so generously of their time, providing the information which has made this report possible.

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EXECUTIVE SUMMARY

- i. Survey of Living Conditions. The Survey of Living Conditions (SLC) has been instituted as a monitoring mechanism to examine the effectiveness of the Human Resources Development Programme. It is designed to provide information to monitor household welfare from several perspectives--consumption, health, nutrition, and education status, the use of public services, housing, and the participation of households in governmental income support programs. The SLC sample (2000 households) is randomly drawn from the Labour Force Survey sample (6000 households), which allows for linkage of the two surveys in ways that expand the potential for policy analysis.
- ii. The data from the Survey of Living Conditions belong to the Government of Jamaica, and are available to researchers at a nominal cost. Requests for the data should be directed to either the Statistical Institute of Jamaica or the Planning Institute of Jamaica.
- iii. The purpose of this report on the July 1989 round of the ongoing survey is four-fold. First, it serves as a means to disseminate some of the basic information gathered in the survey. Second, it provides an analysis of the food stamps program and sheds light on some other issues important in the implementation of the HRDP. Third, the report serves as a starting point for those interested in obtaining the data set and conducting more sophisticated analyses. Finally, this document provides a concrete basis for discussions of refinements that should be made to the questionnaire for future rounds.
- iv. The July 1989 SLC data appear to be accurate as indicated by comparison with both consumption and non-consumption data from other sources, especially the 1982 census, 1984 household expenditure survey (HES) and national accounts. It is not advisable to compare levels of consumption from the 1984 HES with those in the July 1989 SLC, since there are several differences in survey design, but one may make comparisons in the distribution of consumption for the two surveys with some confidence.
- v. Consumption and Distribution. Mean per capita consumption as measured by the July 1989 SLC is J\$5581. The mean per capita consumption of the poorest 10% of the population is J\$1056, and that of the wealthiest 10% is J\$17,892. In Jamaica the consumption of the poorest 10% of the population amounts to about 2% of the aggregate national consumption, while the wealthiest 10% consume about 32% which is a ratio of 16 to 1. Similarly, the poorest 40% of Jamaicans account for about 15% of aggregate consumption, compared to about 49% for the wealthiest 20%.
- vi. Mean per capita consumption is higher in the Kingston Metropolitan Area, J\$7877, than in other towns, J\$5927, and rural areas, J\$4509. Calculation of Thiel coefficients, which distinguish the contribution to total inequality of differences between groups with different means and differences within the groups, shows that differences within these three geographic areas accounts for 91% of overall inequality and that the differences in mean consumption between the KMA, other towns, and rural areas accounts for only 9% of total inequality. Parsing inequality between and within parishes shows substantially the same conclusions: 90% of inequality is due to variation in consumption levels within

each parish and only 10% is due to differences in mean per capita parish consumption.

vii. Because income differences are great within each geographic area and parish, and this is the principal source of inequality, targeting merely to rural areas or poorer parishes will not be a sufficient way of reaching the poor. The HRDP should, wherever, possible, use alternate or supplemental targeting criteria.

viii. The distribution of welfare in Jamaica in July 1989 reveals several things which are worth noting. As one would expect, rural areas are poorer than urban ones. Female headed households have lower consumption levels than those headed by males, and education of the head of households is positively associated with consumption. Although households headed by self-employed workers in agriculture are among the poorest, those whose heads are engaged in nonagricultural self-employment are better off than the typical Jamaican household. Safe water and electric power are found much less often among the poor than among those who are relatively wealthy.

ix. Nutrition. In July 1989, combined moderate and severe low weight for age (WHO classification) occurred in 9.2% of children under five years of age. This is substantially lower than the 14.6% reported in the 1985 Health Status Survey by the Ministry of Health. The prevalence of malnutrition declines only slightly as consumption levels rise. Malnutrition is slightly more prevalent in rural areas than urban. Prevalence is lowest during the nursing age and highest at the weaning age. Boys are more likely to be malnourished than girls.

x. Food Stamps. The targeting and coverage of the food stamp programme was examined using both the 1988 and the 1989 SLC data. The coverage of the programme is significantly lower in the July 1989 survey than during the August 1988 survey period, and somewhat less progressive (the program was suspended for several months preceding the 1989 survey). The 1988 data show the programme to be progressive and that the maternal/child health component with eligibility determined by use of public health clinics is more progressive than the means tested component for the elderly, indigent or handicapped. Undercoverage of malnourished children is significant. Analysis of the use of public health facilities show that although malnourished children are not reached by food stamps, they are reached by public health care. Thus improvements in the registration system are called for rather than some entirely new vehicle for registration.

xi. School Feeding. The distribution of school lunches is progressive. Fifty-four percent of Nutribuns are distributed to children in the lowest 40% of the consumption distribution. Eight percent of Nutribuns go to those in the top quintile of the distribution. The traditional cooked lunch program is slightly less progressive, with 48% and 13% of benefits going to the poorest 40% and richest 20% respectively. The distribution of the voluntary contribution for Nutribuns is regressive. The distribution of lunches by area is proportionate to population for both programmes.

xii. Health. Jamaicans are reasonably healthy, and have good access to medical care and pharmaceutical supplies. Seventeen percent of the population reported an illness or injury in the four weeks preceding the survey. The patterns in self-reported illness or injury by age group are quite typical of

the life cycle patterns found in other countries. The young children and elderly are the most common, and the duration and severity of illness increases with age. Of the ill or injured, 55% sought medical care. Fifty-five percent went to private physicians, 22% to public hospitals and 21% to public health centres.

xiii. As consumption rises there is clearly increasing use of medical care, increasing use of private facilities, increasing purchase of drugs and increasing use of private sources for drugs. Thus the wealthier use more, and apparently higher quality, health care than the poor. Reform of the public provision of health care, or its financing, will affect the poor, the children under five and the elderly more than the better-off and able-bodied and should be designed to maintain or increase the access of these vulnerable groups to good quality medical services.

xiv. Education. The coverage of the Jamaican school system is high. At 70%, pre-primary coverage is high compared to international standards. It is skewed to the higher consumption groups, with lower consumption groups more likely to enter the school system directly in the first grade. At the primary level the indicators of the educational process are fairly uniform. Enrollment is virtually universal, attendance is fairly even, and repetition shows no marked patterns. School abandonment and repetition increase sharply in the secondary levels, with the poor exhibiting much higher rates of both. Attendance is at about the same level as in the primary years, but more correlated with consumption level. Consumption level and track of secondary school are strongly associated, with clear implications for the quality of schooling and career paths of the students. Textbooks are available to about 90% of students for their own use. Another five percent have access to shared books. The primary level and the tracks of secondary schools most used by the poor have the most provision of free texts, which is appropriate both for efficiency and for equity.

Chapter 1: Introduction

1. The Jamaican Survey of Living Conditions was established in 1988 to gather accurate data on the living conditions of Jamaicans, and especially to evaluate the impact of the different components of the Human Resources Development Program (HRDP) on the quality of life in Jamaica. The Survey of Living Conditions is a supplement to the Labor Force Survey conducted by the Statistical Institute of Jamaica (STATIN). It is patterned after the Living Standards Measurement Study (LSMS) surveys developed by the World Bank and implemented in several countries.¹

2. The Survey of Living Conditions is linked to STATIN's Labour Force Survey. A third of the households in the LFS are randomly drawn to form the SLC sample. The first round of the Survey of Living Conditions was administered in August, 1988, and the second round in July, 1989. Both rounds incorporated modules for consumption (including the value of home production), education, health, and anthropometric measurements. The July 1989 questionnaire incorporated several of the modifications of the 1988 questionnaire suggested in "Survey of Living Conditions 1988: Preliminary Report". The third round of the survey is scheduled for November 1989. It will concentrate on health care issues, will be accompanied by a health facility survey, and may contain an anthropometric module. In May 1990, the fourth round will concentrate on education issues, be accompanied by a school survey, and may include brief achievement tests for part of the sample. Following this the frequency of the survey and schedule of topics of special emphasis will be reconsidered. Longer range developments for the SLC may include its closer integration with the Labor Force Survey, and the development of agricultural and small household enterprise modules.

3. The raw data from the Survey of Living Conditions belong to the Government of Jamaica and are available to researchers at a nominal charge. Requests for the data should be directed to either the Statistical Institute of Jamaica or the Planning Institute of Jamaica.

¹ In its fully developed form the LSMS measures consumption, including the value of home production and imputed rent from home ownership, in considerable detail. It is designed to collect data on a variety of topics such as education, health, fertility, and agricultural production, and can be modified to collect data on other topics as desired. Household information is complemented with information on local conditions and the availability of public services (schools, health facilities, potable water, sewage disposal, public transportation, etc.) as well as local prices from a community questionnaire. Data entry and verification are performed daily, and households are visited a second time to clarify any errors or omissions. Turn around times between the interviews and completed data analysis are remarkably short, in the order of one month. The survey is conducted on a rolling sample basis throughout the year. The flexibility in incorporating or making changes in modules and the year-round implementation allow the LSMS data to serve as a basis for analysis of many sectoral issues, including relationships between sectors, and to avoid biases caused by seasonal variations in expenditures. The principal advantages of the LSMS format are: (1) the high quality of the data; (2) the quick turnaround time; (3) flexibility of questionnaire design; and (4) the relatively low cost.

4. The purpose of this report is four-fold. First, it serves as a means to disseminate some of the basic information gathered in the survey. Second, it provides an analysis of the food stamps program and sheds light on some issues important in the implementation of the HRDP. Third, the report serves as a starting point for those interested in obtaining the data set and conducting more sophisticated analyses. Finally, this document provides a concrete basis for discussions of refinements that should be made to the questionnaire for future rounds.

5. In providing a brief overview of the Survey of Living Conditions, this paper treats a number of themes, none in great detail. This does not imply that the data do not support more thorough or sophisticated analysis. Most topics included here, can be further analyzed. More detailed work will come--indeed, it is hoped that this paper will prompt analysts to begin to use the data in their work.

6. It should also be noted that while one of the great advantages of the Survey of Living Conditions is its link to the Labor Force Survey, aside from the description provided in Chapter 3, little use has been made of it here. There are two principal reasons for this. First, for issues dealing solely with employment, STATIN regularly supplies analysis in its LFS series, and it was not deemed desirable to duplicate that effort. Second, for many issues where the linkage can be quite interesting, the analysis done here is not thorough enough to take full advantage of it. In general this paper reports variations in social conditions. It does not explain the causes of the variation. For example, nutrition status is described here, but the impact on it of mother's education is left for more detailed work in the future.

7. The paper is organized as follows: Chapter 2 describes the survey in more detail, explains and presents the calculations of consumption, and compares some non-consumption and consumption results with other sources to verify the Survey of Living Condition's accuracy. Chapter 3 examines the distribution of welfare in Jamaica. Chapter 4 presents information on nutritional status and analyses of targeting of two of the principal nutrition programs. Chapter 5 deals with health--the occurrence of ill health, choices in health care, health expenditures, and some indicators of public health status. Chapter 6 addresses education, focussing principally on school enrollment, grade repetition and school attendance, and briefly examines the availability of textbooks and school costs.

Chapter 2: Household Consumption and the 1989 Survey of Living Conditions

8. This chapter discusses the data used in this report, with special emphasis on the consumption data. The consumption data are taken from the July 1989 Jamaican Survey of Living Conditions, which was carried out by the Statistical Institute of Jamaica (STATIN). Data are also taken from the July 1989 round of STATIN's Labour Force Survey. The sample of 2006 for the Survey of Living Conditions (SLC) survey was a random sub-sample of the 6000 households interviewed in July for the Labour Force Survey (LFS). Because consumption data form the basis of the measure of welfare used in this report, it is worthwhile to devote one chapter to explain how this welfare measure was constructed from the SLC data. In addition, the SLC data can be compared to that from other sources to check its quality.

A. Use of Consumption Data as an Indicator of Welfare

9. The welfare of households is to a large extent determined by the consumption of goods and services by household members. Goods and services consumed generally consist of those purchased (and thus measured by household expenditures) and those produced and consumed by the household (most often food from gardens or farms).² Of course, welfare levels can be influenced by more abstract determinants of human happiness, such as psychological states of mind, but the difficulty of measuring these in an objective manner forces one to focus on economic (material) welfare. In this report welfare is measured by household consumption levels.

10. Another approach to measuring the material welfare of households is to examine the income levels of households. There are two reasons for using consumption data rather than income data. The first is theoretical - welfare levels of households are raised by the goods and services they consume, not by the income available for consumption.³ The second reason is more practical and also more decisive - income data are more prone to errors than consumption data. This is especially true in nations like Jamaica where a substantial portion of the population is engaged in self-employment in both agricultural and nonagricultural occupations (see Chapter 2 below).

11. Thus, throughout this report household consumption data are used to measure household welfare, as well as to compare welfare levels among households. Since larger households need larger amounts of goods and services to attain a given level of welfare, household consumption is divided by household size so that per capita household consumption is used to indicate household welfare. Although there are probably some economies of scale in

² There are some expenditure items which are not consumption, such as gifts to members outside the family and insurance payments. These are not included here (except when comparing the 1989 SLC to the 1984 HES in Section D).

³ The difference between expenditures and income is savings, which will be spent at some time in the future. Savings thus represents planning for future consumption and does not directly effect a household's welfare today.

consumption for larger households, so that per capita consumption may underestimate their welfare levels; there are serious theoretical difficulties involved in adjusting for this (cf. Deaton and Muellbauer, 1986; Gronau, 1988). Given that this report is only the first of a set of analyses using the SLC data, no such adjustments are made here. Future work with these data should consider such adjustments, which involve the construction of household equivalence scales.

B. Description of the 1989 Survey of Living Conditions

12. The data reported here are from the 1989 Survey of Living Conditions (SLC) undertaken in Jamaica in July-August 1989, which is the second SLC survey, the first being the August 1988 SLC. A third SLC will go into the field in November 1989, and a fourth in May 1990. The 1989 survey is based on a self-weighted sample of 2006 households throughout Jamaica. As explained above, these households constitute a random subsample of the 6000 households interviewed in the July 1989 Labour Force Survey (LFS). Of the 2006 households, only one was dropped when calculating household consumption. Of the remaining 2005, 1911 were matched to LFS households - 20 SLC households had recently moved into the dwelling and thus replaced the households interviewed in the LFS while 74 households could not be matched due to coding errors. The tables in this report are taken from the sample of 2005 SLC households except those for which information is needed on the head of the household, in which case the joint sample of 1911 households is used (head of household is indicated in the LFS but not in the SLC).

13. The survey instrument for the Survey of Living Conditions is a household questionnaire divided into fourteen sections:

- A. Use of health services by household members.
- B. School attendance among children aged 3 to 19 years.
- C. Anthropometric measurements and immunization data on children 0 to 4 years
- D. Daily expenditures on small non-food items (past 7 days).
- E. Non-food consumption expenditures on larger items (past weeks and, in most cases, past 12 months as well). Additional data are also collected for clothing and other items received as gifts.
- F. Non-consumption expenditures, such as insurance, taxes, donations and gifts to friends/relatives (past 30 days and past 12 months).
- G. Food expenditures (past 7 days and past 30 days).
- H. Consumption of food produced at home or received as gifts (last 7 days and last 30 days for the former, last 30 days for the latter
- I. Housing conditions and expenditures on housing.
- J. An inventory of durable goods owned by the households.
- K. Miscellaneous sources of income received by the household.
- L. Receipt of food stamps and reasons for eligibility/ineligibility.
- M. Distances and travel times to public services (schools, medical facilities, etc.) from the household.
- N. Roster of household members.

14. Sections D, E, G, H and I are used to compute an annualized consumption figure for each household. Ideally, one would like to compute the use value of durable goods as well as imputed rent of owner-occupied households,

but this has been left for future work using these data. The annualized consumption figures are used in Chapter 3, along with labour force data on heads of household from the July 1989 LFS, to examine issues of inequality and poverty in Jamaica. The data from sections A, B, C and L are used to examine issues of nutrition, health and education in Chapters 4, 5 and 6, respectively.

15. The following section describes how the annualized consumption numbers were calculated from the various components of the SLC questionnaire. Readers not interested in these details may proceed to the next section.

C. Construction of an Annualized Household Consumption Data Set

16. Household consumption as measured by the SLC takes three forms: explicit expenditures on items consumed; the value of food items produced and consumed by the household; and the value of food, clothing and other items received as gifts by the household. These data are collected in sections D, E, G, H and I of the SLC questionnaire. The data from Section F (non-consumption expenditures) are not used because, although they represent household expenditures, they do not represent household consumption. The data on consumption expenditures in the various sections often cover different periods of time, as explained above. To get a total consumption figure one must annualize the consumption data in each section and sum up the different sections. However, since several sections ask about consumption expenditures for two different periods of time, one must select one of the two time periods, or perhaps take an average of the two. This choice is actually more complicated than it appears at first glance.

17. Different time periods are subject to different problems. The main problem with relatively long time periods is that accuracy of reported figures declines, due to the inexact memory of respondents. This may, for example, result in lower consumption numbers if people forget purchases made several weeks or months in the past. The main problem with shorter time periods is that some people may be questioned over a time period in which their shopping patterns have been "incomplete". For example, if one asks for expenditures on food items purchased over the past seven days, many food items may not have been purchased because they were purchased in the previous week, or because purchases are seasonal. This phenomenon tends to exaggerate inequality in consumption expenditures among households as shorter time periods are used. The general strategy for this report has been to annualize both the short and long term consumption numbers and take a simple average of the two.⁴ This tends to smooth out possible distortions by choosing a middle ground between the two time periods. In all sections of the survey where only one time period is used (i.e. Section D, certain items in Section E, consumption of food received as gifts in Section H, and household utilities in Section I) the consumption figure is

⁴ Technically, the portion of the long term expenditure that does not include the short term expenditure (e.g. the 11 months previous to the last month if the long period is one year and the short period is one month) was calculated and then annualized, and an equal-weighted average of this annualization and the short period annualization was taken.

annualized for each item by straightforward multiplication (i.e. weekly figures are multiplied by 52 and monthly figures are multiplied by 12).

18. One final note. Those consumption data collected in the 1989 SLC that extend over the past 12 months cover an unusual period in Jamaica's history, the recovery of the island after the devastation of Hurricane Gilbert in September, 1989. Thus consumption patterns may be somewhat unusual since purchases of goods were made in response to hurricane damage. At certain points in the report reference will be made to this, but overall it appears that the consumption data have not been unduly affected by the aftermath of Gilbert and remain a valuable source for analyzing living conditions in Jamaica.

D. Comparisons of the 1989 SLC Data with other Data Sources

19. Before examining the 1989 SLC data it is worthwhile to check their reliability by comparing them with data from other sources. This can be done by drawing on reports published by STATIN on the 1982 Population Census and the 1984 Household Expenditure Survey (HES).

Table 2.1

Age Profile of Population, 1982 and 1989

<u>Age Category</u>	<u>1982 Census</u>			<u>1989 SLC</u>		
	<u>Male</u>	<u>Female</u>	<u>Total</u>	<u>Male</u>	<u>Female</u>	<u>Total</u>
0-4	12.5%	11.9%	12.2%	11.8%	11.1%	11.5%
5-9	13.3	12.7	13.0	12.7	12.0	12.4
10-14	13.6	12.8	13.2	12.7	12.0	12.3
15-24	21.7	21.8	21.7	21.1	21.5	21.3
25-34	12.4	12.8	12.6	13.5	15.0	14.3
35-44	8.3	8.3	8.3	9.7	8.4	9.0
45-54	6.6	6.8	6.7	6.6	6.9	6.7
55-64	5.2	5.5	5.3	5.3	5.3	5.3
65 and over	6.4	7.4	6.9	6.7	7.7	7.2
All Ages	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Note: All Tables referring to the 1982 Census are from Population Census 1982 Volume 1, STATIN.

20. Table 2.1 compares the SLC data (both 1988 and 1989) to those from the 1987 census, examining the overall age distribution of the population. It shows the age profile of the population for males, females and total population from both data sources. There is generally a close fit, though the 1989 SLC data show somewhat smaller percentages in the younger age groups. This can be explained in terms of the aging of the population as fertility rates decline, and fertility rates have dropped dramatically in Jamaica in recent years (cf. World Bank, 1988).

21. Tables 2.2 and 2.3 compare household composition data from the 1988 and 1989 SLC's with that from the 1984 Household Expenditure Survey (HES). Table 2.2 examines the sex of the head of household; the match is fairly close, especially for Jamaica as a whole. Table 2.3 examines household size. Average household size appears to have increased slightly in 1989, except in the Kingston area. This could be related to the devastation by Hurricane Gilbert in late 1988 - some persons whose dwellings were damaged or destroyed may have moved in with others and have yet to move out.

22. Consumption figures from the 1989 SLC can be compared to national accounts estimates as well as those from the 1984 Household Expenditure Survey (HES). Turning to the HES data, one can compare not only total consumption, but also differences in consumption levels across urban and rural areas. Yet comparing consumption patterns across the HES and SLC surveys is not completely appropriate for two reasons: (i) the two surveys are done at different levels of aggregation (for example, the SLC has 5 categories of meat expenditure while the HES has over 80); and (ii) the reference periods for different expenditure categories vary between the two surveys (for example, the 1988 SLC has one week and 30 day reference periods for food expenditures while the 1984 HES takes an average of two separate one week reference periods). Because of this it may be that small differences in the composition of consumption between the two surveys reflect only small differences in survey design and not actual changes in consumption patterns in Jamaica. Since the main purpose of the comparisons made here is to verify the quality of the SLC data, only large differences in consumption merit serious concern.

Table 2.2

Sex of Head of Household: 1984 and 1989

	<u>1984 HES</u>		<u>1989 SLC</u>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
Kingston Metrop. Area	53.2%	46.8%	51.7%	48.3%
Other Towns	60.0%	40.0%	55.2%	44.8%
Rural Areas	61.8%	38.2%	64.3%	35.7%
All Jamaica	58.8%	41.2%	59.2%	40.8%

Table 2.3

Average Household Size: 1984 and 1989

	<u>1984 HES</u>				<u>1989 SLC</u>			
	<u>Total</u>	<u>Adult Male</u>	<u>Adult Female</u>	<u>Children</u>	<u>Total</u>	<u>Adult Male</u>	<u>Adult Female</u>	<u>Children</u>
K.M.A.	4.00	1.15	1.42	1.43	3.91	1.16	1.50	1.25
Towns	4.10	1.20	1.41	1.49	4.27	1.27	1.45	1.55
Rural	4.45	1.31	1.36	1.78	4.62	1.43	1.44	1.75
All Jamaica	4.25	1.24	1.39	1.62	4.37	1.33	1.46	1.58

Note: Children are defined as all those age 14 and younger.

23. Before examining the 1984 HES in detail, it is useful to check preliminary national accounts estimates for 1988 from Economic and Social Survey of Jamaica 1988. Included in Table 1.2 of that report are per capita figures on private consumption at current prices. These are reproduced for the years 1984 through 1988 in Table 2.4. If one assumes an inflation rate of 15% from 1988 to August-September 1989 (which is consistent with price data collected by STATIN up to July, 1989) and a small change (say 1%) in real per capita private consumption, one would expect a national accounts figure for per capita private consumption in 1989 of J\$ 5642.5. From the 1989 SLC data we obtain a figure of J\$ 5581. This matches within 1% the likely national accounts figures. Of course, one should not assume that the SLC figures should be exactly the same as those given by national accounts, since there are undoubtedly small differences in the definitions of private consumption used. Yet, the overall conclusion is that the aggregate consumption numbers from the 1989 SLC match very well with those given by national accounts estimates, so that one can be fairly confident of the accuracy of the SLC data.

24. Turning to the 1984 HES data, table 2.5 compares the aggregate numbers for food and non-food consumption from the 1984 HES and 1989 SLC surveys by regions. Looking across regions for total consumption, one sees that the position of Kingston has increased somewhat relative to other towns and rural areas while the position of other towns has declined somewhat. Although differences in survey design preclude exact comparisons of consumption levels over time, a rough approximation can be made to check that the 1989 levels do not fall outside the realm of plausibility. For Jamaica as a whole, nominal per capita consumption as measured by the two surveys show an increase of 92.1% from 1984 to 1989. Inflation from the last four months of 1984 (when the 1984 HES was in the field) to July 1989 (the latest available) was about 75%, which implies an increase in real per capita consumption of about 10% over the four

5 The exchange rate was J\$5.50 = US\$1.00 in July-August 1989.

year time period (1.921 divided by 1.75 = 1.10). This seems somewhat high given the real per capita private consumption as reported in national accounts estimates (cf. Table 2.4) was about 3% lower in 1988 (the last year for which figures are available) than in 1984. Because of differences in survey design one should probably not compare the HES and SLC surveys to see whether welfare has changed since 1984, but it may be reasonable to compare the relative positions of the three regions across the different surveys.

25. The figures in Table 2.6 reveal that food and non-food consumption patterns are similar for the two surveys, though some differences are evident. Food consumption is a slightly smaller percentage of total consumption (47.1%) in the 1988 SLC than in the 1984 HES (50.5%).⁶ This apparent decrease is too small for drawing inferences, especially in light of the caveats outlined above. Within the food category, there are some changes: (i) meat consumption is down; (ii) consumption of dairy items is up (this may reflect increased milk subsidies, as well as the introduction of food stamps for powdered milk); and (iii) expenditures on purchased meals have increased. Turning to the non-food items, fuel expenditures are a larger proportion of total consumption in 1988,

Table 2.4

Per Capita Private Consumption National Accounts Estimates
(Jamaican dollars per capita per year)

	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>
Nominal Values	2752	3374	3619	4161	4857
Real Values (base=1984)	2752	2699	2451	2531	2674

Source: Economic and Social Survey Jamaica 1987, PIOJ.

⁶ The figure of 47.1% is lower than that in Table 2.5 because some non-consumption expenditures were included from the 1989 SLC to make it more comparable to the HES for non-food items.

Table 2.5

Total Consumption by Region 1984 HES and 1989 SLC
(Jamaican \$ per capita per year)

	<u>All Jamaica</u>	<u>K.M.A</u>	<u>Other Towns</u>	<u>Rural</u>
<u>1984 HES</u>				
Per Capita Cons.	2905	3863	3293	271
(Regional Index)	100.0	133.0	113.4	78.2
Of Which: Food	1468	1750	1616	1273
Nonfood	1437	2113	1677	988
Fraction of Total Devoted to Food	50.5%	45.3%	49.1%	56.0%
<u>1989 SLC</u>				
Per Capita Cons.	5581	7877	5927	4509
(Regional Index)	100.0	141.1	106.2	80.8
Of Which: Food	2786	3829	2783	2358
Nonfood	2795	4048	3144	2151
Fraction of Total Devoted to Food	49.9%	48.6%	47.0%	52.3%

as are clothing expenditures, while spending on transportation is down. It is possible that the higher expenditure on clothing reflects the aftereffects of Hurricane Gilbert. In fact, the impact of the hurricane is likely to effect almost all types of non-food expenditures. Nevertheless, it is still true that the general patterns seen in the 1989 SLC data are similar to those found in the 1984 HES.

E. Conclusions

26. The overall conclusion of this chapter is that the 1989 SLC data appear to be reasonably accurate as indicated by comparisons with both consumption and non-consumption data from other sources. Yet it may not be

Table 2.6

Consumption Patterns in 1984 and 1989

<u>Consumption Category</u>	<u>1984 HES</u>	<u>1989 SLC</u>
Food	50.5% (100.0%)	47.1% (100.0%)
Of Which: Meat/Poultry/Fish	14.6 (28.9)	10.6 (22.5)
Dairy	4.3 (8.4)	5.4 (11.4)
Oils and Fats	1.8 (3.5)	1.1 (2.4)
Cereals and Breakfast		
Drinks	7.4 (14.6)	5.4 (11.4)
Starchy Roots/Tubers	4.1 (8.2)	3.0 (6.4)
Vegetables	4.5 (8.9)	2.3 (5.0)
Fruits	1.3 (2.5)	1.2 (2.5)
Sugar/Sweets	1.9 (3.8)	1.1 (2.4)
Miscellaneous	2.2 (4.3)	4.1 (8.8)
Beverages	1.3 (2.5)	1.9 (4.1)
Purchased Meals	7.2 (14.3)	10.9 (23.1)
Fuel and Household Supplies	6.6	8.4
Housing and Household Operations	10.9	8.8
Household Durable Goods	3.9	2.9
Personal Care	5.8	3.1
Health Care	1.6	2.3
Clothing and Footwear	5.0	10.9
Transportation	7.8	5.9
Recreation	5.0	4.8
Miscellaneous	2.9	5.7
Total	100.0%	100.0%

advisable to compare levels of consumption from the 1984 HES with those in the 1989 SLC, since there are several differences in survey design. Still, one could place more confidence in comparisons of the distribution of consumption for those two surveys. The remaining chapters of this report will analyze the distribution of welfare in Jamaica as found in the 1989 SLC and discuss the implications of these findings for the design of the Human Resources Development Programme.

Chapter 3: The Distribution of Welfare in Jamaica in 1989

27. The previous chapter explained how consumption data can be used as an indicator of household welfare and verified that the data from the 1989 Survey of Living Conditions (SLC) are of good quality. In this chapter the consumption data from the SLC are used to examine the distribution of welfare in Jamaica in 1989. Tables from the survey data are presented on the overall distribution of consumption (Section A), the characteristics of households by consumption quintiles (Section B), housing (Section C), and decomposition analyses of overall inequality (Section D). Later chapters will examine more specific issues: nutrition (Chapter 4), health (Chapter 5) and education (Chapter 6).

A. Overall Distribution of Consumption by Consumption Deciles

28. Perhaps the first question that arises when one addresses distributional issues is how national consumption is divided among rich and poor households. This can be assessed by looking at the share of total consumption going to population groups classified by welfare levels. This is done in Table 3.1, which breaks the total population of Jamaica into the poorest 10% (of people, not of households), the next poorest 10%, etc., up to the wealthiest 10%. The population is ranked by per capita consumption.

29. The distribution of consumption in Table 3.1 is in the middle range of the distribution found in other developing countries. Similar surveys in Cote d'Ivoire and Peru uncovered decile distributions which are very close to that shown here for Jamaica (cf. Glewwe 1987, 1988). In Jamaica the consumption of the poorest 10% of the population amounts to about 2% of aggregate national consumption, while the wealthiest 10% consume about 32%, which is a ratio of about 16 to 1. Similarly, the poorest 40% of Jamaicans accounts for about 15% of aggregate consumption, compared to 49% for the wealthiest 20%. Of course, the data in Table 3.1 reveal little about the reasons for differences in consumption levels among households. Although this report will not try to explain these differences in a rigorous manner, much can be learned by examining the characteristics of households at different consumption levels. This will be done in the next section of this chapter.

B. Household Characteristics by Consumption Quintiles

30. Table 3.2 divides the Jamaican population into consumption quintiles, where the first quintile contains the poorest 20% of Jamaicans, the second quintile contains the next poorest 20%, etc. Within each quintile the population is divided according to various characteristics which give a better picture of the differences between the poorer and the better off groups in Jamaica. Table 3.3 takes a similar approach except that the population is not divided by quintiles but by location of residence (Kingston metropolitan area, other towns and rural areas), which is useful for discussing some of the patterns found in Table 3.2.

31. Location of Residence. When one divides the SLC data into rural and urban areas, about 22% of the population live in the Kingston metropolitan area, 21% live in other towns and 57% live in rural areas. However, if one looks at

Table 3.1

Distribution of Consumption by Per Capita Consumption Deciles
July 1989 SLC

<u>Decile</u>	Share of National <u>Consumption</u> %	Mean Per Capita <u>Consumption</u> (J\$)
1	1.89	1,056
2	3.22	1,786
3	4.21	2,359
4	5.35	2,976
5	6.43	3,615
6	7.86	4,348
7	9.64	5,397
8	12.29	6,855
9	17.11	9,535
10	32.00	17,892
Jamaica	100.00	5,581

Table 3.2

Characteristics of Households by Consumption Quintiles
July 1989 SLC

<u>Characteristic</u>	<u>All Jamaica</u>	<u>Quintiles</u>					Mean Per Capita Expenditure (J\$)
		<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	
<u>Urbanization</u>							
Kingston Metrop.	22.2	3.6	12.8	22.3	33.6	39.5	7,876
Other Towns	21.3	21.8	20.4	21.7	19.8	22.8	5,894
Rural	56.5	74.6	66.8	56.1	46.6	37.8	4,480
<u>Sex of Head</u>							
Male	58.8	55.4	56.8	56.0	59.4	66.5	5,929
Female	41.2	44.6	43.2	44.0	40.6	33.5	4,975
<u>Employer of Head</u>							
Government	8.8	4.8	6.4	6.6	11.1	15.2	7,291
Private Sector	25.1	15.3	25.9	24.4	26.7	33.5	6,689
Self-Employed	38.6	53.6	38.2	37.8	31.9	31.1	4,847
Head is Employer	0.7	0.0	0.0	1.1	0.4	2.3	12,577
Unemployed	7.8	8.5	7.6	7.7	11.1	3.9	4,655
Not in Labor Force:							
Retired	4.2	3.0	6.2	5.0	3.1	3.7	4,989
Other	13.5	13.9	14.6	15.0	15.1	8.8	4,535
Other/Unknown	1.3	0.9	1.2	2.4	0.7	1.4	5,152
<u>Occupation of Head</u>							
Prof./Tech./Admin.	3.9	0.8	1.7	1.3	2.3	13.5	12,584
Clerical/Sales	5.9	0.6	1.8	5.7	7.8	13.7	10,031
Self-Employed Agric.	23.6	37.8	28.0	22.7	16.9	12.0	3,970
Self-Employed Other	12.7	13.4	9.0	14.2	12.5	14.7	5,955
Service Occupation	10.8	9.7	13.1	8.0	13.1	9.9	5,470
Prod./Mfg./Craft	2.0	0.7	3.3	2.0	1.8	2.0	5,290
Construction/Repair	5.9	3.0	6.0	5.2	6.6	8.9	6,293
Transport/Communic.	2.8	1.1	1.7	4.6	3.5	3.3	6,581
Other Manual Labor	6.4	6.8	6.5	7.6	6.0	5.2	4,719
Unemployed	7.8	8.5	7.6	7.7	11.1	3.9	4,655
Not in Labor Force:							
Retired	4.2	3.0	6.2	5.0	3.1	3.7	4,989
Other	13.5	13.9	14.6	15.0	15.1	8.8	4,535
Unknown	0.6	0.9	0.7	1.0	0.2	0.2	4,461

Table 3.2 cont'd.

Characteristics of Households by Consumption Quintiles
July 1989 SLC

<u>Characteristic</u>	All <u>Jamaica</u>	<u>Quintiles</u>					Mean Per Capita <u>Expenditure</u> (J\$)
		<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	
<u>Industry of Head</u>							
Agriculture	27.6	43.8	32.2	26.7	19.9	15.0	3,982
Mining	0.5	0.0	0.5	0.5	0.1	1.3	12,883
Manufacture	8.2	3.5	5.3	8.5	10.7	12.9	7,017
Construction	5.2	3.4	7.5	5.2	4.4	5.4	5,645
Transp./Commun.	3.8	0.7	2.3	4.4	3.9	7.8	9,196
Commerce	10.2	9.0	6.9	11.1	10.5	13.4	6,688
Public Admin.	6.5	4.5	4.6	4.1	8.1	11.0	7,018
Other Services	11.6	8.7	11.2	10.8	11.6	15.8	6,735
Unemployed	7.8	8.5	7.6	7.7	11.1	3.9	4,655
Not in Labor Force:							
Retired	4.2	3.0	6.2	5.0	3.1	3.7	4,989
Other	13.5	13.9	14.6	15.0	15.1	8.8	4,535
Unknown	1.2	1.1	1.3	1.0	1.5	1.1	5,962
<u>Education of Head</u>							
None	1.1	2.6	1.5	0.1	0.9	0.2	2,708
Primary	74.9	86.4	78.5	77.0	74.1	58.2	4,885
Secondary - No Exam	14.9	8.0	15.9	16.4	15.6	18.9	6,159
Secondary - O Level	2.7	0.3	1.7	0.9	3.4	7.1	10,390
Secondary - A Level	0.8	0.0	0.0	0.0	1.0	3.0	14,861
Post-Secondary	0.7	0.0	0.0	0.3	0.7	2.4	12,752
Other/Unknown	5.0	2.7	2.5	5.3	4.4	10.3	9,023
Mean Per Capita Exp.	5,581	1,425	2,669	3,983	6,127	13,614	

Note: Each quintile contains 20% of the population, not 20% of households.

Table 3.3

Characteristics of Households by Location, July 1989 SLC

<u>Characteristics</u>	<u>All Jamaica</u>	<u>Kingston Metropo.</u>	<u>Other Towns</u>	<u>Rural</u>
<u>Sex of Head</u>				
Male	58.8	50.3	53.3	64.2
Female	41.2	49.7	46.7	35.8
<u>Employer of Head</u>				
Government	8.8	15.3	10.4	5.6
Private Sector	25.1	34.6	29.3	19.9
Self-Employed	38.6	23.1	31.3	47.4
Head is Employer	0.7	0.8	0.7	0.8
Unemployed	7.8	8.8	7.2	7.6
Not in Labor Force				
Retired	4.2	3.6	4.0	4.5
Other	13.5	13.6	15.8	12.6
Other/Unknown	1.3	0.2	1.3	1.8
<u>Occupation of Head</u>				
Prof./Tech./Admin.	3.9	6.0	4.9	2.7
Clerical/Sales	5.9	13.1	5.6	3.2
Self-Employed Agric.	23.6	1.0	16.5	35.1
Self-Employed Other	12.7	19.0	12.1	10.5
Service Occupation	10.8	14.8	16.9	6.9
Prod./Mfg./Craft	2.0	3.3	1.0	1.8
Construction/Repair	5.9	7.8	7.4	4.6
Transport/Communic.	2.8	3.4	3.4	2.4
Other Manual Labor	6.4	5.7	4.8	7.3
Unemployed	7.8	8.8	7.2	7.6
Not in Labor Force				
Retired	4.2	3.6	4.0	4.5
Other	13.5	13.6	15.8	12.6
Unknown	0.6	0.0	0.4	0.9

Table 3.3 cont'd.

Characteristics of Households by Location, July 1989 SLC

<u>Characteristics</u>	<u>All Jamaica</u>	<u>Kingston Metropo.</u>	<u>Other Towns</u>	<u>Rural</u>
<u>Industry of Head</u>				
Agriculture	27.6	1.6	18.3	41.4
Mining	0.5	0.0	1.6	0.2
Manufacturing	8.2	13.4	6.2	6.9
Construction	5.2	6.4	6.9	4.0
Transp./Commun.	3.8	7.9	4.0	2.1
Commerce	10.2	18.5	7.9	7.7
Public Admin.	6.5	9.3	9.7	4.2
Other Services	11.6	16.2	17.6	7.5
Unemployed	7.8	8.8	7.2	7.6
Not in Labor Force				
Retired	4.2	3.6	4.0	4.5
Other	13.5	13.6	15.8	12.6
Unknown	1.2	0.9	1.0	1.4
<u>Education of Head</u>				
None	1.1	0.0	0.7	1.6
Primary	74.9	58.2	72.9	82.2
Secondary - No Exam	14.9	24.8	18.2	9.8
Secondary - O Level	2.7	6.9	2.5	1.0
Secondary - A Level	0.8	2.6	0.3	0.2
Post-Secondary	0.7	0.7	0.8	0.6
Other/Unknown	5.0	6.9	4.4	4.5

Note: Each quintile contains 20% of the population, not 20% of households.

the poorest 20% of the population, three fourths (74.6%) live in rural areas while less than 4% live in the Kingston area. Similarly, if one looks at the wealthiest 20% of the population, 40% live in the Kingston area, 12% live in other towns and about 38% live in rural areas. The population in other towns is very evenly divided across the different welfare quintiles. This general pattern across rural and urban areas is not surprising - it simply indicates that urban areas are, on average, better off than rural areas. This is also apparent in the per capita consumption figures shown in Table 3.2 -- in Kingston annual per capita consumption is J\$ 7876, compared to J\$ 5894 for small towns and J\$ 4480 for rural areas.⁷ This disparity between urban and rural areas is

7 The very small differences with the same figures given in Chapter 2 comes from a slightly smaller sample due to linking with the Labour Force Survey.

typical for developing countries. Although the causes are not rigorously examined in this paper, at least some of it is almost certainly due to lower levels of education in rural areas, which are associated with lower levels of income, as will be seen below.

32. Sex of Head. The distribution of population within welfare quintiles by sex of head of household is also shown in Table 3.2. About 41% of Jamaicans live in female-headed households, but among the poorest 60% this figure is slightly higher (44%). For the next quintile the figure is roughly the national average, about 41%, and within the wealthiest quintile the figure drops to 34%. The per capita figures also reinforce the general conclusion - Jamaicans who live in female-headed households have lower consumption levels, and hence a lower level of welfare, than those who live in households headed by males. Note that female headed households are more common in Kingston (cf. Table 3.3) relative to other towns and rural areas. It is also worthwhile to point out that female-headed households in Jamaica are not always those where no male is present - in fact 20% of female heads in the SLC sample have a male spouse or partner as a fellow household member. Future research on female headship in Jamaica should distinguish between those households where no adult male is present and those where a male is present but a woman is considered to be the head.

33. Employer of Head. In order to get some understanding of why some households are better off than others, one must look at the employment characteristics of Jamaicans, especially the employment of the heads of households. Table 3.2 classifies heads of household both according to their employer and according to broad occupation categories. Households headed by government workers are most often found among the better off consumption groups, as are households whose heads work for the private sector. Both of these findings are typical of developing countries, since government workers and private sector workers tend to be more skilled and thus better paid than other types of workers. In contrast, households in which the head is self-employed are more likely to be found in the lower quintiles, which is again typical of less-developed countries. It is also worth noting that about 14% of the population live in households where the head is not in the labour force (not counting retired heads) and 8% live in households where the head is unemployed (defined as available for work and willing to accept a job "if one were available"). The fact that nearly a quarter of the population lives in households where the head is not employed indicates that the head is not always the income earner for the household; the employment status of other household members should be examined in future work with the SLC data.

34. Occupation and Industry of Head. There are several occupations which show strong relationships to household welfare levels. First, households headed by professional, technical or administrative workers are much better off than the typical Jamaican household (cf. mean per capita expenditure figures), and the same is true, though to a lesser extent, of households whose head is found in a clerical or sales occupation. In contrast, households in which the head is a self-employed agricultural worker are clearly much poorer than average, which is a common finding in developing countries. However it is worth noting the non-agricultural self-employment is more lucrative - households in which the head is engaged in such work are somewhat better off than the typical Jamaican household.

35. The data on industry of heads of households also demonstrate that mining and manufacturing employment is quite lucrative, though only 0.5% of the population belong to households headed by workers in mining. High welfare levels are also found for households headed by transport and communication workers and by public administration employees. Houses headed by persons in agricultural activities, which include over one fourth of the population (based on the head's occupation), are clearly the poorest. As can be seen in Table 3.3 these households are mostly found in rural areas, and it is these households that most stand in need of the anti-poverty efforts put forth by the HRDP. Whether specific HRDP interventions actually reach the poorest groups in Jamaica is discussed elsewhere in this report, but more detailed analytical work is greatly needed.

36. Education of Head. Tables 3.2 and 3.3 also present figures based on the education of the head of household. This is important because the literature on human capital stresses that higher levels of education bring about higher earnings, and hence higher household welfare levels. Over three fourths of Jamaicans live in households headed by a person with a primary education or less (only 1.1% had no education at all). Another 15% live in households where the head has some secondary education but has not passed any "O-Level" or "A-level" examinations. About 4% of the population live in households with more educated heads.

37. It is quite clear from the figures at the bottom of Table 3.2 that education of the head of household is positively correlated with welfare levels. Almost 90% of the poorest 20% of the population live in households where the head had a primary education or less, while the corresponding figure for the wealthiest 20% is 58%. Similarly, only 4% of the poorest 20% live in households where the head had an O-Level, A-Level or post-secondary education, which compares to a figure of 13% for the wealthiest 20% of the population. In Table 3.3 one sees that levels of education among household heads are lowest in the rural areas and highest in the Kingston Metropolitan Area. This suggests, though convincing evidence requires more detailed analytical work, that at least some of the difference between welfare levels among urban and rural areas is due to the relatively low level of education in rural areas. The general implication is that improving educational attainment in rural areas should be an important component of any programme designed to aid the poor, although it should be recognized that the benefits of such efforts arrive mostly in the medium to long term. It also has to be recognized that there is rural to urban migration which has a negative effect on education levels in the rural areas, since the better educated leave for the urban centres in search of employment. The question of the provision of more economic activity in the rural areas therefore also needs to be addressed.

C. Housing by Consumption Quintiles

38. While per capita consumption figures provide insights into the distribution of welfare across the population, it is also instructive to examine more specific indicators of the quality of life. In this section, housing conditions will be examined by per capita consumption groups and by urban/rural location.

39. Table 3.4 examines housing quality as indicated by wall materials of the dwelling, source of drinking water, and the availability of electric power by consumption quintile. Table 3.5 does the same by Kingston metropolitan area, other towns and rural areas. One sees that most dwellings in Jamaica have wood, concrete nog or block and steel walls. Wooden and concrete nog walls are most common among the poorer consumption groups, while block and steel walls are more prevalent among wealthier households. Breakdowns by location in Table 3.5 show no striking patterns other than block and steel walls are somewhat more common in urban areas.

Table 3.4

Housing Conditions and Household Amenities
by Consumption Quintiles, July 1989 SLC

<u>Characteristic</u>	<u>All Jamaica</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
<u>Wall Materials</u>						
Wood	25.6	44.4	30.2	27.2	15.9	10.1
Stone	0.8	0.8	1.0	1.8	0.3	0.2
Brick	2.3	0.2	2.1	3.3	1.5	4.2
Concrete Nog	17.5	22.4	17.3	15.8	18.8	13.3
Block and Steel	52.1	29.9	48.7	50.7	61.6	69.6
Wattle/Adobe	0.4	0.8	0.2	0.7	0.0	0.5
Other/Unknown	1.3	1.5	0.5	0.5	1.8	2.2
<u>Source of Drinking Water</u>						
Indoor Faucet	33.9	8.0	20.7	28.7	49.8	62.4
Outside Faucet	22.7	20.4	26.4	31.6	20.1	15.0
Public Standpipe	17.0	28.9	21.8	18.7	8.2	7.5
Water Vendor	0.2	0.3	0.0	0.5	0.0	0.0
Well with Pump	0.2	0.3	0.5	0.0	0.0	0.0
Well without Pump	0.3	0.2	1.0	0.3	0.1	0.0
River, Lake or Spring	8.0	14.1	9.0	7.3	6.3	2.5
Rain Water	15.0	22.6	15.7	10.6	13.8	12.2
Other	2.7	5.1	4.9	1.5	1.3	0.7
<u>Percent with Electricity</u>	63.4	29.4	54.9	68.8	77.0	80.8

40. About one third of Jamaicans obtain their drinking water from indoor faucets, while about 40% get it from outside faucets or public standpipes and most of the remaining households use either rainwater or natural sources. Water from indoor faucets is strongly and positively associated with consumption levels while that from rainwater, natural sources (river, lake or stream) and public standpipes are negatively correlated with consumption levels. From the viewpoint of the health of household members, water from natural sources is probably the least desirable, while piped water is the best. Thus it is clear that the poorer groups have significantly less access to "safe" water in Jamaica, which should have a negative impact on the health status of these

households. It is clear from Table 3.5 that this problem is particularly prevalent in rural areas.

41. About 63% of Jamaicans live in dwellings which have electricity, yet this is true for only about 29% of the poorest 20% while over 87% of the wealthiest 20% have electrified dwellings. As one would expect, electrification is lowest in rural areas, reaching slightly more than half of the population. Yet even in the Kingston metropolitan areas, 17% of the population live in dwellings without electricity.

D. Inequality Decompositions by Location

42. When one observes different population groups at substantially different levels of consumption, one naturally expects that overall inequality is in part due to these differences. Formally speaking, when the total population is divided into different mutually exclusive groups, aggregate inequality is due to: (i) the unequal distribution of consumption within each group; and (ii) differences in consumption levels between groups, as seen by mean consumption levels for each group. There are several indices of inequality

Table 3.5

Housing Conditions and Household Amenities by Location, July 1989 SLC

<u>Characteristic</u>	<u>All Jamaica</u>	<u>K.M.A.</u>	<u>Other Towns</u>	<u>Rural</u>
<u>Wall Materials</u>				
Wood	25.6	12.0	32.2	28.7
Stone	0.8	0.1	0.8	1.1
Brick	2.3	3.8	0.4	2.3
Concrete Nog	17.5	13.4	20.6	18.0
Block and Steel	52.1	67.4	45.0	48.5
Wattle/Adobe	0.4	0.5	0.0	0.6
Other	1.3	2.9	1.0	0.8
<u>Source of Drinking Water</u>				
Indoor Faucet	33.9	70.8	33.0	19.1
Outside Faucet	22.7	24.8	29.3	19.4
Public Standpipe	17.0	3.3	14.6	23.6
Water Vendor	0.2	0.0	0.4	0.2
Well with Pump	0.2	0.0	0.0	0.3
Well without Pump	0.3	0.0	0.0	0.6
River/Lake/Spring	8.0	0.0	0.3	14.1
Rain Water	15.0	0.1	17.2	20.3
Other/Missing	2.7	1.0	5.3	2.4
<u>Percent with Electricity</u>	63.4	83.4	67.6	53.6

which allow one to account for the relative contribution of these two sources of inequality in an additive manner. They allow one to answer the question: What fraction of overall inequality is due to inequality within the different groups and what fraction is accounted for by differences in mean income levels of the different groups?

43. In Table 3.6 the total population of Jamaica is divided into those living in the Kingston metropolitan area, those living in other rural areas, and those living in urban areas. Two indices of inequality which are "group-decomposable" in the sense explained in the previous paragraph, the Theil T index and the Theil L index (cf. Theil, 1967), are used to break total inequality into the amount resulting from inequality within those three areas (the "within-group" component) and the amount due to differences in mean income across those three groups (the "between-group" component). Very simply, about 91% of overall inequality in Jamaica is due to inequality within geographic areas--the Kingston metropolitan area, other towns and rural areas. In other words, only 9% is due to differences in mean consumption levels across these three geographic areas. The fact that most of the inequality takes place within these three areas is demonstrated by the high inequality numbers for the Kingston metropolitan area. Thus even if one could equalize mean consumption levels across urban and rural areas in Jamaica, inequality would only be reduced by 9% as long as the distribution of consumption within these areas remained unchanged. From a policy perspective, this implies that targeting interventions on the basis of these three broad categories will have a limited effect on equalizing differences in consumption levels in Jamaica. Thus interventions need to concentrate on targeting benefits to the poor within both urban and rural areas.

44. The administrative structure of many programmes in the HRDP is based upon parishes, so that an administratively simple and low cost method of targeting assistance to the poor would be to target by parish (e.g. the Nutribun programme is being expanded by parish, for upgrading of schools and health centers priorities could be set by parish). If there were large differences in mean consumption across Jamaica's 14 parishes this could do a good job of reaching the poor. The test of the effectiveness of targeting by parish is whether a high proportion of total inequality stems from between-group inequality, i.e. differences in parishes' mean consumption levels, or within-group inequality, i.e. the inequality within each of the parishes. The relevant information is given in Table 3.7. Inequality within the 14 parishes accounts for most of the inequality in per capita consumption levels found in Jamaica, about 89%. Only 11% of inequality is accounted for by differences in parishes' mean consumption levels. This indicates that targeting benefits of the HRDP on the basis of parish of residence alone, while administratively simple, is not a reliable way to reach the poor, so that where possible it should be supplemented with other targeting criteria.

45. Given the wide disparities in welfare levels when households are grouped according to the educational level of their heads, one might imagine targeting benefits based on this characteristic. Table 3.8 decomposes overall inequality in Jamaica by these education groups. Somewhat surprisingly, only 9-11% of overall inequality is due to differences in mean expenditure levels across education groups. Technically speaking, the reason for this is that three fourths of the population belong to the same group, those people living in households headed by someone with only a primary level of education.

Table 3.6

Per Capita Consumption Inequality Decomposition by Location,
July 1989 SLC

	<u>% of Population</u>	<u>Mean Per Capita Consump.</u>	<u>Theil L</u>	<u>Theil T</u>
K.M.A.	22.2	7,877	0.2280	0.2157
Other Town	21.3	5,927	0.3673	0.3637
Rural	56.5	4,509	0.3158	0.3044
All Jamaica	100.0	5,581	0.3274	0.3239
Between-Group Contrib. (% of Total Inequality)			0.0288 (8.8%)	0.0277 (8.6%)
Within-Group Contribution (% of Total Inequality)			0.2986 (91.2%)	0.2962 (91.4%)

Table 3.7

Per Capita Consumption Inequality Decomposition
by Parishes, July 1989 SLC

	<u>Theil T</u>	<u>Theil L</u>
All Jamaica	0.3274	0.3239
Between Group Contribution (% of Total Inequality)	0.0344 (10.5%)	0.0352 (10.9%)
Within-Group Inequality (% of Total Inequality)	0.2930 (89.5%)	0.2887 (89.1%)

Unless some distinctions are made within this group it does not appear very useful to target benefits strictly on the basis of the level of education of the head of household.

Table 3.8

Per Capita Consumption Inequality Decomposition
by Education of Head, July 1989 SLC

	<u>% of Population</u>	<u>Mean Per Capita Consump.</u>	<u>Theil L</u>	<u>Theil T</u>
None	1.1%	2,708	0.2712	0.2581
Primary	74.9	4,885	0.2999	0.2974
Secondary - No Exam	14.9	6,159	0.2674	0.2608
Secondary - O Level	2.7	10,390	0.2470	0.2694
Secondary - A Level	0.8	14,861	0.1413	0.1401
Post-Secondary	0.7	12,752	0.1387	0.1362
Other	5.0	9,023	0.3267	0.3224
All Jamaica	100.0	5,581	0.3274	0.3239
Between-Group Contrib. (% of Total Inequality)			0.0361 (11.0%)	0.0309 (9.0%)
Within-Group Contribution (% of Total Inequality)			0.2913 (89.0%)	0.2930 (91.0%)

E. Conclusion

46. The distribution of welfare in Jamaica in 1989 reveals several things which are worth noting. As one would expect, rural areas are poorer than urban ones. Female headed households have lower consumption levels than those headed by males, and education of the head of households is positively associated with consumption. Although households headed by self-employed workers in agriculture are among the poorest, those whose heads are engaged in nonagricultural self-employment are better off than the typical Jamaican household. Safe water and electric power are found much less often among the poor than among those who are relatively wealthy. Finally, the distribution of consumption within urban and rural areas, within parishes, and within education levels of heads of households accounts for most of the inequality found in Jamaica.

Chapter 4: Nutrition

47. Anthropometric data, particularly the height and weight of young children, are an important part of the measurement of living standards because they are easily measured nutrition-related variables which respond to changes in the availability of food, access to health care, sanitation, clean water, and disposable income. Since changes in nutrition status can occur quite rapidly, anthropometric measurements are more sensitive to changes in welfare than other social indicators, such as literacy or mortality. Furthermore, adequate nutrition is an end in its own right, and is also a principal contributor to human capital.

A. Data

48. The SLC measured the height and weight of children under age five in all households in the sample. STATIN interviewers, trained by Ministry of Health personnel performed the weighing and measuring. Of 918 children under five in the SLC sample, usable records were obtained for 861.8. This sample size is considered too small to generate results with a high degree of reliability when disaggregated, hence it is deemed necessary to consider with caution some of the findings presented here. Data on household composition, expenditure levels, use of health services and participation in food programmes are also utilized in this chapter to better understand the state of child nutrition in Jamaica and the targeting of the principal nutrition programmes.⁹

B. Nutrition Status

49. Nutrition status can be calculated from height and weight data in three ways: low weight for height (wasting) measures acute malnutrition at the time the child is measured; low height for age (stunting) measures chronic malnutrition, i.e. the cumulative effect of periods of malnutrition since birth; and low weight for age measures both of these aspects simultaneously. Only one case (0.1% of children) of severe wasting was found. Moderate wasting occurred in 1.3% of children. Stunting was found in 4.9% of the children (0.4% were severely stunted, 4.5% moderately stunted). Low weight for age was found in

8 Thirty-eight children were not measured. Fourteen had only some of the measurement information, and five had height or weight measures so abnormal that a recording error was assumed and the record deleted from the analysis.

9 Only food stamps and school feeding are considered. Information on the rate of subsidy for the principal subsidized foodstuffs was not available to the analysts in time to perform an analysis of the distribution of benefits similar to that done in the 1988 SLC preliminary report, nor to evaluate how a change in the subsidies has affected the living standards of the poor. The July 1989 data, however, would support such analysis.

9.2% of children. Severely low weight for age was found in 0.7% of the children and moderately low weights in 8.5%¹⁰ (see Table 4.1).

50. Earlier anthropometric surveys done in 1978 and 1985 by the Ministry of Health (MOH) are broadly comparable in purpose and method to the anthropometric module of the SLC. However, there are significant differences in sampling procedures and measurement techniques which weaken the basis for comparability of their results. For example, the two stage sampling procedure in the 1978 and 1985 Ministry of Health anthropometric surveys was somewhat different from that of the SLC. Perhaps more important, these surveys took place during the school year and they made a single household visit. Thus 3-4 year olds in pre-primary schools were often not measured. Notably, this would be less likely to happen in relation to the 1985 survey where interviews were conducted up to 7:00 p.m. and on week-ends. Nonetheless, to the extent that malnourished children are less likely to be in schools, the 1978 and 1985 surveys may have over-estimated the degree of malnutrition present in Jamaica (indeed, in Chapter 6 of this report it will be seen that children from poorer households are less likely to be in pre-primary schools).

51. From Table 4.1, it is seen that these surveys found about 15% and 14.6% respectively, of children under five to have severely or moderately low weights for age, which compares to the 1989 Survey of Living Conditions figure of 9.2% (see Table 4.1). For stunting the 1978 and 1985 surveys show 4.9%. For wasting the 1978 and 1985 surveys both show 5.1%. The 1989 SLC shows 1.4%. These data indicate a decline in malnutrition between 1985 and 1989, although such a conclusion must be tempered by the lack of strict comparability between the later and earlier surveys and the question of the degree of reliability of the former. Appendix 4.A reports how the age breakdowns for weight for age measures can be used to crudely calculate the possible over-estimation of malnutrition in the 1985 survey. Assuming that for the 1985 sample the distribution of malnutrition by age is the same as that found in the 1989 SLC, the correction for the biased sampling of three and four year olds would reduce the 1985 rate from the 14.6% reported to 14.0%. Thus the evidence that malnutrition has declined in Jamaica since 1985 is robust to this difference in sampling methods between the two surveys.

52. The first Survey of Living Conditions undertaken in Jamaica, the 1988 SLC, weighed and measured children in half its sample. Unfortunately the

¹⁰ World Health Organizations Standards based on the measurement of American children were used. Severe wasting is defined as a weight for height of less than 70% of the median, while moderate wasting is a weight for height from 70% of median to 80% of median. Normal children have a weight for height of 80% of median or above. Severe stunting is defined as height for age less than 85% of the median. Moderate stunting is a height for age from 85% of median to 90% of median. Normal children have a height for age of 90% of the median or above. For weight for age, severe malnourishment is a weight for age of less than 60% of the median. Moderate malnourishment is a weight for age from 60-80% of median. Normal children have weights for age of 80% of the median or greater. U.S. National Center for Health Statistics age and sex specific medians were used. Deviations from the median and z scores were calculated using CASP, a public domain software program distributed by the U.S. National Center for Disease Control.

Table 4.1

Prevalence of Malnutrition, Several Surveys
(% of children malnourished)

<u>Survey</u>	<u>Wasting</u>			<u>Stunting</u>			<u>Low Weight for Age</u>		
	<u>mod.</u>	<u>sev.</u>	<u>tot.</u>	<u>mod.</u>	<u>sev.</u>	<u>tot.</u>	<u>mod.</u>	<u>sev.</u>	<u>tot.</u>
89 SLC	1.3	0.1	1.4	4.5	0.4	4.9	8.5	0.7	9.2
85 MOH	3.8	1.3	5.1	4.8	2.3	7.1	13.6	1.0	14.6
78 MOH			5.1			5.0			15.0
88 SLC later	1.9	0.0	1.9	1.9	0.5	2.4	7.1	0.0	7.1
88 SLC prelim.	1.4	0.0	1.4	1.9	0.3	2.2	7.0	5.5	12.5

quality of the data was low because some of the measurements were recorded in pounds and ounces and others in kilograms. Sometimes the numbers were correctly converted into kilograms at the data entry stage, mostly they were not. At the time of writing the preliminary report, a great deal of time was spent on cleaning the data, including locating and re-examining every questionnaire. This procedure resulted in the figures reported in the "88 SLC-preliminary" line of Table 4.1, i.e. 7.0% moderately low weight for age, and 5.5% severely low weight for age, for a combined rate of 12.5%. Stunting and wasting were very low by comparison at 2.2% and 1.4% combined moderate and severe. Because of this apparent internal inconsistency, the data were further examined after the preliminary report.

53. In the second round of cleaning, performed quickly during the writing of this report but without the benefit of the questionnaires in hand, six records were discarded as having completely abnormal values. Twenty-seven were detected that had normal heights (from about 90-105% of median) but very low weights for age and for heights (from about 40-52% of median). It was decided that these twenty-seven observations had been improperly converted from pounds to kilograms, so their weights were multiplied by 2.2. This produces the results on the "88 SLC- later" line of Table 4.1. No severely low weight for age is detected. Moderately low weight for age is found in 7.1% of children. This overall figure is more in line with the low prevalence of stunting and wasting detected. It must be admitted, however, that the procedure for recleaning the data could not distinguish between a true case of severely low weight for age and one induced by having incorrectly converted from pounds to kilograms, except by the analysts' judgment of the ranges involved. The likely range for the true rate of low weight for age in the 1988 SLC is probably between 7.1% and 12.5%. In both the 1989 SLC and 1985 MOH surveys the severe category was about 8% of the moderate category. If that is assumed to be true

for the 1988 SLC, then the overall rate for 1988 is probably best estimated to be about 7.7%.

54. Given the problems with the 1988 anthropometric data and the availability and high quality of the 1989 anthropometric data, until further work is done with the 1988 data (correcting only the cases in parishes where the recording problem was worst, examining the variance by anthropometrist, etc.) it is advisable to omit the 1988 anthropometric data from any consideration of a time series of malnutrition in Jamaica. In this report the 1988 malnutrition data are used only for some of the discussion on the coverage of the malnourished by food stamps, which is made difficult for the 1989 data because of the suspension of benefits in the six months prior to the survey (see section D).

C. Correlates with Malnutrition

55. Because the frequency of stunting and wasting found in the July 1989 SLC is low, most cross-tabulations using them have very few or no observations in several categories of interest. Correlates with malnutrition are therefore examined principally for weight for age. Several patterns in the incidence of malnutrition are worth noting.

56. Consumption. The prevalence of malnutrition declines slightly with per capita consumption levels. Table 4.2 shows, this holds for all three measures of malnutrition. It is perhaps surprising that the trend is not stronger. This may be partly explained by the way in which malnutrition is defined. Those who are less than a specified percentage of the median on the NCHS tables are considered malnourished, although natural variation in a healthy population would lead one to expect some children to be below even the specified level. For example, low weight for age is considered to be a weight less than 80% of the standard. If a standard normal distribution is assumed, then roughly 5% of children from a healthy population will fall below this cut-off. These children are not malnourished, i.e. their development has not been hindered, they are just small. In addition, however, while the size of the sample used enabled the analysis of gross prevalence of malnutrition, further analysis is not reliable because of the small numbers when the sample is disaggregated. It is within this framework that the findings in this section must be considered.

57. Region. The incidence of malnutrition in rural areas, at 10.3% (combined moderate and severe low weight for age), is slightly greater than the national average of 9.2%. The Kingston Metropolitan Area and Other Towns fare slightly better than average with 7.2%, and 7.9% malnourished, respectively (see Table 4.3). Stunting and wasting are also lowest in the Kingston Metropolitan Area. This may reflect the improved access to health care and higher welfare levels of the capital.

58. Age. Table 4.4 displays the distribution of low weight for age by age groupings. It shows the standard pattern with low occurrence in the under six months groups when breast-feeding is most common, with sharply higher rates from 6-36 months when supplemental feeding and weaning occur, and intermediate rates for three and four year olds. The weaning age is a critical time because adequate feeding habits on the part of both the mother and child must be

established, and the susceptibility to disease, specially water-borne diseases, increases.

59. Sex. Table 4.5 shows the distribution of low weight for age by sex. Fifty of the 79 malnourished children are boys. The total rate for malnutrition among boys is 11.7% as opposed to 6.7% for girls. This suggests that, unlike some countries, there is no discrimination against girls when food, health care and other resources are allocated among family members. The reasons for a higher rate of malnutrition among boys than among girls are not clear and should be examined in future research using this data. For example there needs to be an examination of the age group data by sex in order to determine if more boys than girls fall below the "vulnerable" age and would therefore account for the marked difference in malnutrition levels.

D. The Distribution of Food Stamp Benefits

60. The Food Stamp Programme was introduced in May 1984 as part of the Government's Food Security Program. The main objective was to establish a compensatory mechanism to protect vulnerable groups following the removal of general food subsidies in 1984. The programme was targeted to two main categories of people considered to be at nutritional risk: (i) pregnant and lactating women and children under 5 years of age--any individual in this category is eligible and can enroll at government health clinics; and (ii) the poor, elderly or handicapped, whose eligibility is determined by means testing--all recipients of Poor Relief and Public Assistance automatically receive food stamps, and indigent households with incomes of less than J\$2600 per year are also eligible.¹¹ Administrative ceilings of 400,000 individuals, half in each of the two categories, have been set. Because eligibility is on an individual basis, households may have more than one recipient. For example, a poor household may qualify by the means test and because it has a pregnant woman and a child under five. It could then receive three allotments of food stamps. All recipients receive J\$20 per month worth of stamps, issued bimonthly (the value was raised to J\$15/month¹² from J\$10/month on July 1, 1988 and to J\$20/month on October 1, 1988). Stamps may be used in the purchase of rice, cornmeal and powdered skimmed milk at any retail outlet.

61. A survey instrument such as the SLC is well suited to analyzing the Food Stamp Programme because it integrates information on nutritional status, use of public health care, expenditure levels, food expenditures and family composition. This report will look at the basics of the distribution of benefits, leakage, undercoverage, and the interaction of malnutrition, use of public health care and receipt of benefits.

¹¹ Before March 1989 all indigent families (i.e. with incomes of less than J\$2600 per year) were eligible for food stamps. Since then the criteria has been changes so that indigent families with an able-bodies head are not eligible.

¹² Food stamps are printed in only twenty dollar denominations. Distribution is bimonthly. To achieve an allotment of J\$15/month, on July 1, J\$40 payments were made, and J\$20 on September 1, achieving an average of J\$15/month over the four month period. Starting October 1, J\$40 are distributed bimonthly.