Royal Government of Bhutan
Planning Commission
Central Statistical Organization

HOUSEHOLD INCOME AND EXPENDITURE SURVEY 2000

[PHASE 1]

REPORT

ON
INCOME,
EXPENDITURE,
POVERTY MEASUREMENT
AND SOCIOECONOMIC PROFILE
OF THE HOUSEHOLDS

Thimphu, December 2000

Foreword

The Household Income and Expenditure Survey (HIES) 2000 is the first nation-wide survey of this type conducted by the Central Statistical Office (CSO) of the Planning Commission, based on international standards and methods. The survey was an initiative to strengthen the national statistical information system. Its primary objectives were to provide data required for upgrading and rebasing the consumer price index (CPI) and the national accounts series.

The HIES data have also been used in a first attempt to determine poverty thresholds for the nation. Poverty lines have been established in accordance with internationally recommended methodologies, and several poverty measures are presented in this report. Special attention has been paid to documenting the methodology used for measuring poverty. Due to limitations in the data, in particular the fact that seasonality in consumption could not be properly taken into account, the establishment of these poverty lines and measures must be considered as a pilot study and should be treated as preliminary. A more comprehensive profile and assessment of poverty will be provided by CSO and the Planning Commission in 2003, after implementation of a Living Standard Survey with the assistance of the Asian Development Bank (ADB). This future survey will provide data for designing effective poverty alleviation policies and projects, as well as official baseline statistics for monitoring the reduction of poverty.

Government agencies, private sector, international agencies and individual users will find this report informative and useful. In their continuous efforts to provide reliable and relevant information to users, CSO Officials would highly value comments and suggestions from the readers and users of this pilot survey report.

The HIES 2000 has been successfully completed with the cooperation and support of a large number of people and agencies at various stages. Although it is not possible to individually acknowledge everyone involved in the survey, several persons and organizations deserve special mention. We wish to place in record the efforts made by every individual in their capacity as administrators (Dzongdags, Gups, Chhimis, Chupens and Tshokpas) and the respondents who were very instrumental during the field operation. The services rendered by the officials of the CSO in bringing out the report have been commendable.

This very important and timely initiative would not have been possible without the unstinting support of the ADB for which, we sincerely thank and appreciate.

Secretary
Planning Commission Secretariat

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Executive Summary

Warning

The results of the HIES 2000 survey should be treated as preliminary and the survey as a pilot study. Although the survey was planned for two rounds covering six months of the year in order to capture the seasonal effects on income and expenditure, the second round could not be implemented. A multiple-round living standards measurement survey is planned for years 29002 and 2003. More comprehensive and reliable data will be provided after completion of this survey.

Objectives

The household income and expenditure Survey (HIES) 2000 is the second nationwide household survey undertaken by the Central Statistical Office (CSO), Planning Commission. The first survey was conducted in 1992.

The main objectives of the HIES 2000 survey were:

- to provide useful inputs for the compilation of national accounts of the household sector as well as statistics of distribution of household income and expenditure;
- to provide benchmark information to update weights required in the construction of consumer price indices (CPI).

Although this was not one of its explicit objectives, the HIES 2000 survey was also used to establish, for the first time and on a pilot basis, poverty lines for Bhutan. The objective was not to provide a comprehensive poverty profile. The main goal was to initiate discussion on the quantitative measurement of poverty, in view of the implementation of a more comprehensive living standards survey by the CSO in 2002. A detailed poverty assessment is expected to be produced and released in 2003. Due to limitations in the HIES 2000 data, users are invited to consider the poverty indicators presented in this report with care.

Scope and Coverage

The survey collected data on household income and expenditure, as well as limited information on households characteristics (demographics, education and employment). Collected data include, among others, in cash and in kind income by source, and expenditure by item. In view of the need to update the reference consumption basket (weighting coefficients) used for computing the consumers' price index (CPI), expenditure

data were collected at a very detailed level (with commodities identified at the 5-digit level).

The geographical coverage extended over the entire area of Bhutan with the exception of a few satellite towns that are neither recognized as urban areas nor under the administrative control of Chupen in the rural areas.

The population coverage included all households in the country except the following:

- Households of expatriates;
- Residents of hotels, boarding and lodging houses, monasteries including nunneries, school hostels, orphanages, rescue homes, vagrant houses, and under-trail in jails and indoor patients of the hospitals, nursing homes etc.; and
- Barracks of military and paramilitary forces including the police.

A sample of 4,000 households was selected (out of which 3,854 were successfully interviewed). This sample represents a total extrapolated population of about 582,420 people. It is important to note that this figure is an estimate based on the sample frame, and does not cover the whole population of the Kingdom.

Table 0.1: Estimated Survey Population by Area (Thousands)

Urban	84.02
Rural	498.40
Bhutan	**582.42**

Weaknesses and Strengths

Weaknesses

As is the case in most income and expenditure surveys, the information recorded on the households' income appeared not satisfactory. A comparison of households' monthly income with the monthly expenditure showed that income in most cases were significantly lower than expenditure.

Due to the relatively small sample size, results may not be presented at a very disaggregated geographic level. Most results are presented at the national and urban/rural levels. In the future, CSO will make all possible efforts to provide users with more disaggregated data, if possible at the dzongkhag (district) level.

The survey collected data in the months of April to June 2000. This means that seasonnality of expenditure was not properly taken into consideration. The next CSO survey (living standard measurement survey 2002) will be conducted in two rounds, covering both the summer and the winter periods. This will provide a better assessment of the average monthly or annual expenditure, and a more reliable measurement of poverty.

Strengths

The strengths of the survey can be seen in its scope and coverage of respondents across the country. The data generated from this survey can be used for further investigate more specific aspects of household income and expenditure in Bhutan. This survey is the only nation wide survey which could validate the general notions of the household economics in Bhutan at the current situation.

Another strength is the particular attention that was paid to quality control and use of internationally recommended standards and methods. Not only data but also metadata is provided in this report, in order to provide users with a better understanding of the data generation process.

Key Findings on Household Expenditures

Table 0.2: Average Monthly Household and Per Capita Nominal Consumer Expenditure, and Household Size, by Area

Area	Monthly Household Consumer Expenditure (MHCE); Nu.	Average Household Size	Monthly Per Capita Consumer Expenditure (MPCE); Nu.
Urban	8,867	4.56	1,945
Rural	5,327	5.74	928
Bhutan	**5,947**	**5.53**	**1,075**

Table 0.3: Monthly Per Capita Nominal Expenditure (MPCE) Classes by Population Decile

Population Decile	Urban		Rural		Bhutan	
	MPCE Class	Average (Nu)	MPCE Class	Average (Nu)	MPCE Class	Average (Nu)
1	203-776	606	125-356	226	125-376	285
2	777-955	865	357-420	395	377-450	409
3	956-1131	1043	421-511	467	451-552	504
4	1132-1295	1214	512-559	557	553-648	602
5	1296-1487	1394	600-694	645	649-774	713
6	1488-1723	1596	695-814	758	775-920	845
7	1724-2042	1875	815-956	888	921-1120	1008
8	2043-2516	2255	957-1189	1072	1121-1433	1257
9	2517-3417	2887	1190-1660	1409	1434-2040	1673
10	3418+	5718	1661+	2821	2041+	3453
All		1946		928		1075
Median		*1487*		*694*		*774*
Dispersion Ratio	*Urban*	*9.44*	*Rural*	*10.61*	*Bhutan*	*12.29*

Table 0.4: Average Monthly Household Nominal Consumption Expenditure (MHCE) by Category and by Area, 2000

Category	Urban		Rural		Bhutan	
	MHCE (Nu)	%	MHCE (Nu)	%	MHCE (Nu)	%
Food, Beverages & Tobacco	3,160	*35.65*	2.751	*51.65*	2,823	*47.47*
Clothing & Footwear	1,432	*16.15*	612	*11.50*	756	*12.71*
Housing, Fuel & Power	2,135	*24.08*	1,317	*24.72*	1,460	*24.55*
Transport & Communication	735	*8.29*	101	*1.90*	212	*3.57*
Medical & Health Services	65	*0.73*	46	*0.86*	49	*0.82*
Education, Recreation, Entertainment & Cultural	417	*4.71*	65	*1.23*	127	*2.14*
Household Operations	175	*1.98*	60	*1.13*	80	*1.35*
Furnishing & Equipment	210	*2.37*	49	*0.92*	77	*1.29*
Personal Care & Personal Effects	342	*3.86*	118	*2.21*	157	*0.64*
Miscellaneous Expenses	195	*2.20*	208	*3.90*	206	*3.45*
All	**8,865**	***100.00***	**5,327**	***100.00***	**5,947**	***100.00***

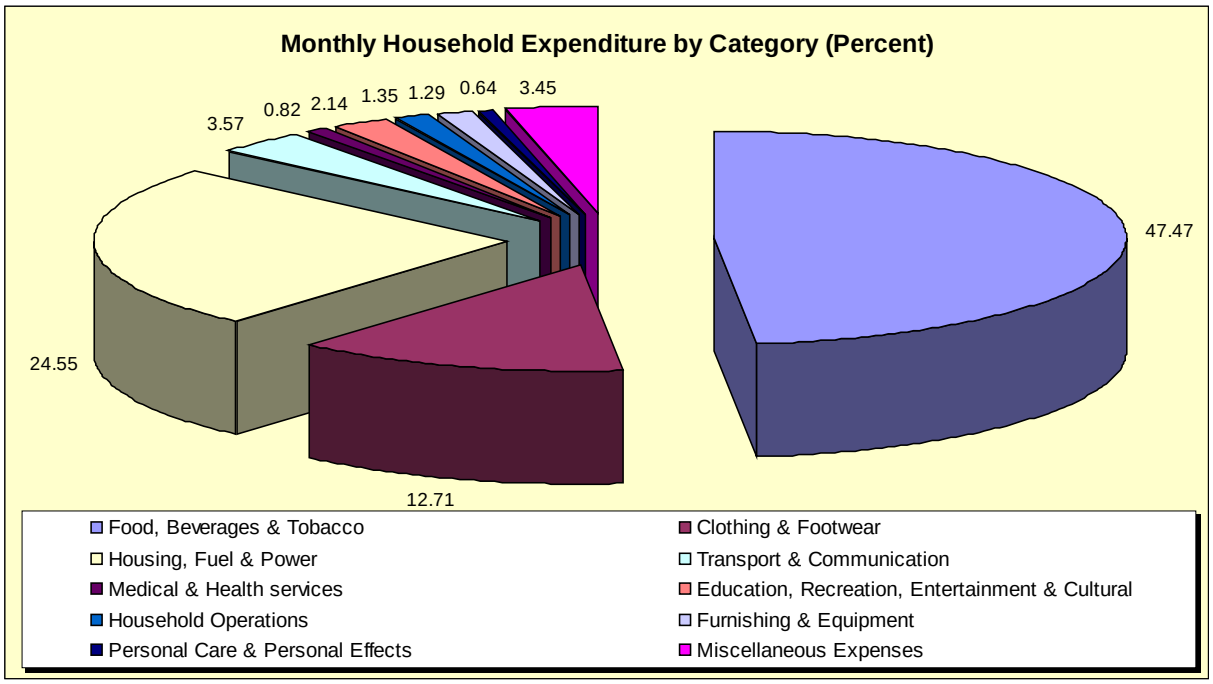
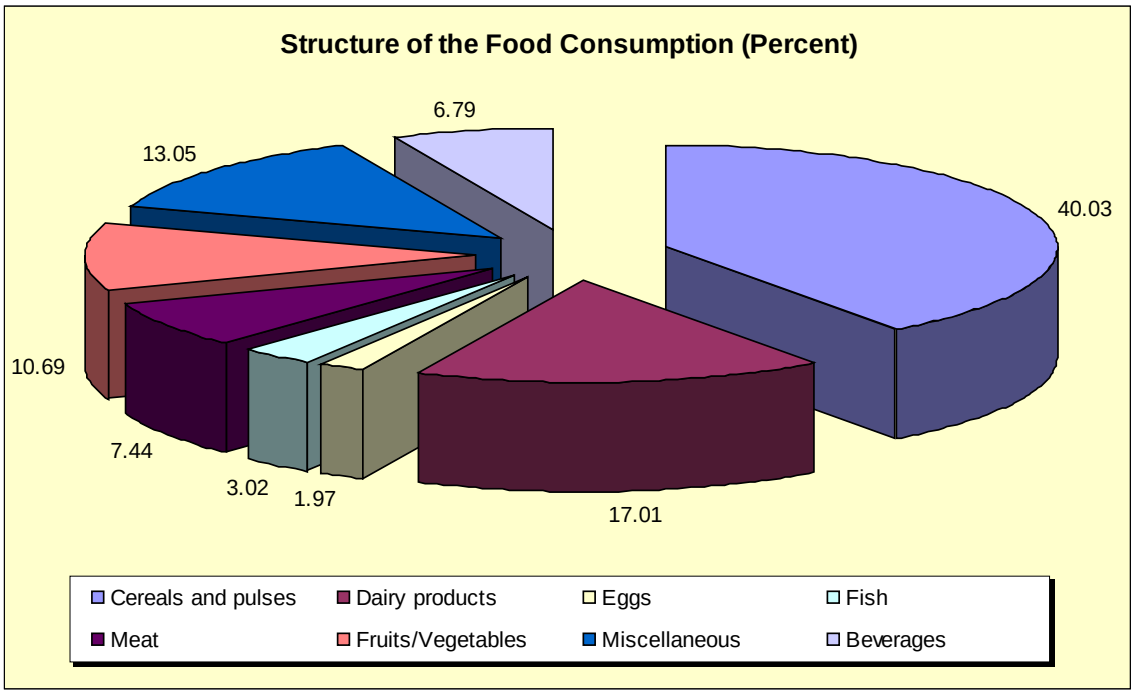


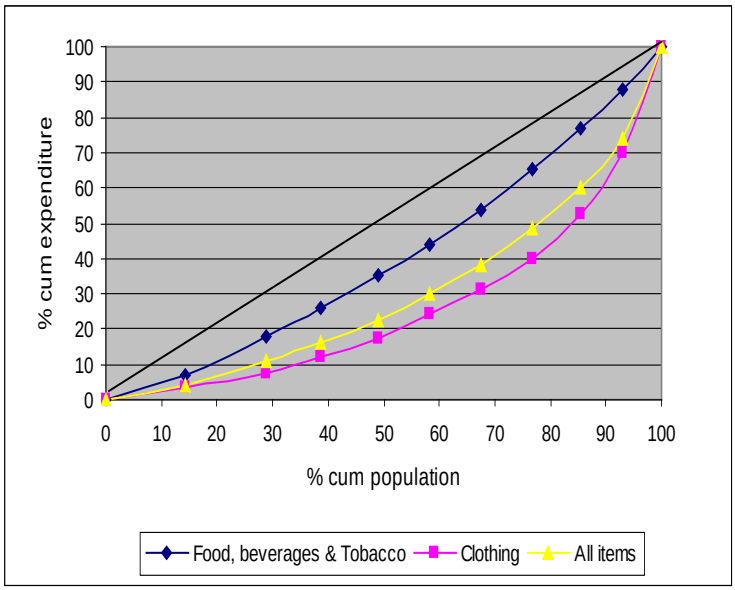
Table 0.5: Structure of the Food Consumption by Area (Percent)

Item	Urban	Rural	Bhutan
Cereals and pulses	29.50	42.57	40.03
Dairy products	20.35	16.21	17.01
Eggs	2.48	1.84	1.97
Fish	3.27	2.95	3.02
Meat	11.50	6.46	7.44
Fruits/Vegetables	13.50	10.01	10.69
Miscellaneous	13.92	12.84	13.05
Beverages	5.48	7.11	6.79
All	**100.00**	**100.00**	**100.00**



Lorenz Curve

The Lorenz curve maps the cumulative expenditure share of different categories of products on the vertical axis against the distribution of the population on the vertical axis. If each individual had the same expenditure (total equality), the income distribution curve would be the straight line in the graph. The graph below shows a relative equality in food, beverages and tobacco expenditure, and a much higher inequality in expenditure on clothing.



Gini Coefficient

The Gini coefficient is a measure of concentration of expenditure (or income). The ratio ranges from zero (completely equality) to one (complete inequality, when one person spends/owns everything).

Gini Coefficient for Total Expenditure, and Expenditure on Food & Beverages and Clothing (Nominal Expenditure)

Total Expenditure	Food and Beverages	Clothing
0.341	0.193	0.482

The Gini coefficient shows a relatively high degree of equality in Bhutan, compared to other countries: 0.34 versus 0.39 in Bangladesh, 0.38 in India, 0.37 in Nepal or 0.49 in Malaysia (source: ADB, *Key Indicators of Asian and Pacific Developing Countries 2001*).

Another measure of (in)equality is the share of nominal per-capita expenditure. Based on the HIES 2000 data, the bottom 50 percent of the population represents about 24 percent of the total national expenditure. The bottom 90 percent represents about 69 percent, and the top 10 percent (the richest 10 percent of the population) represent about 31 percent of all expenditure.

Key Findings on Poverty Measurement

An *absolute poverty line* was established to measure poverty in Bhutan, based on standard methodologies recommended by international organizations.

An absolute poverty line fixes the poverty line at a level of consumption that assures that basic consumption needs are met. Absolute poverty lines are made of two components: food and non food.

The food poverty line is the amount of money required for satisfying the basic nutrition needs of a person. It was decided to compute the food poverty line as the cost of a bundle of goods:

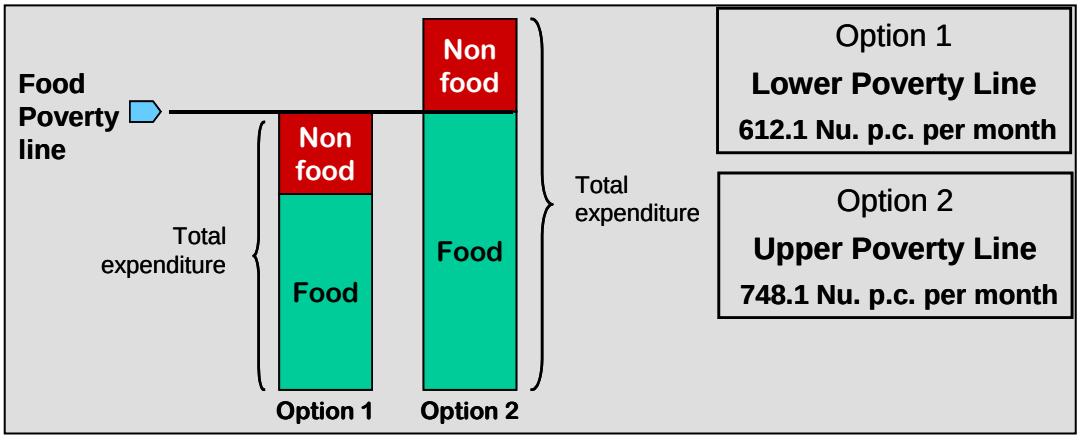
- bearing resemblance to people's actual eating habits in Bhutan;
- attaining a pre-determined minimum food energy requirement of 2124 Calories per day per person;
- estimated using the average prices in Thimphu.

Based on the HIES 2000 data, a food bundle containing 32 items was defined. Its cost estimated using the average prices in Thimphu established the food poverty line at 458.9 Nu. per month per capita.

A non-food allowance was estimated by scaling up the food poverty line. Two options have been applied, resulting in two different poverty lines:

Lower Poverty Line: defined by considering those households whose *total* expenditure is just enough to reach the food poverty line. Anything that these households spend on non-food goods can be considered a minimum allowance for basic non-food goods. The Lower Poverty Line was established at 612.1 Nu. per capita per month.

Upper Poverty Line: estimated by considering those households whose *food* expenditure is equal to the food poverty line. The Upper Poverty Line was established at 748.1 Nu. per capita per month.



Each household's real per capita consumption expenditure was compared with these poverty lines to distinguish the poor from the non-poor households. Poverty incidence and other poverty and inequality indicators were then computed.

What to do with this information?

- Poverty profile (characteristics of the poor by region, socio-economic group, etc)
- Monitoring poverty (comparison over time)
- Poverty assessment
- Establishing priority areas

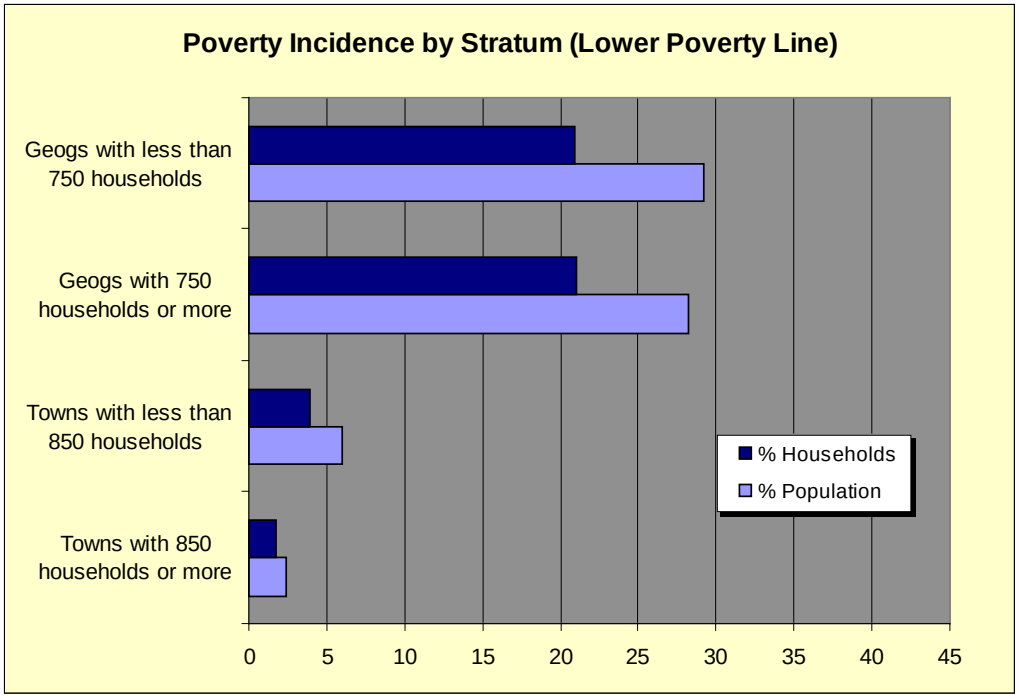
Table 0.6: Poverty Incidence by Stratum (Lower Poverty Line): Number and Percentage of Population

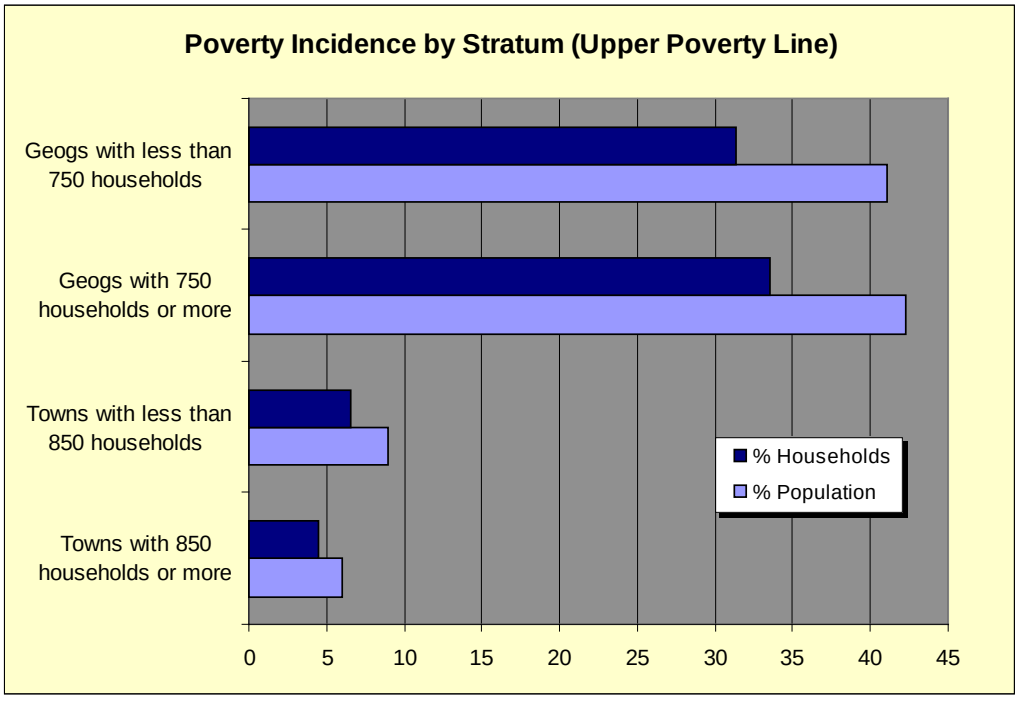
	Non-Poor			Poor		
	Count	Row %	Col. %	Count	Row %	Col. %
Urban						
Towns with 850 households or more	71,425	97.6	16.4	1,748	2.4	1.2
Towns with less than 850 households	10,191	94.0	2.3	654	6.0	0.4
Rural						
Geogs with 750 households or more	73,651	71.8	16.9	28,930	28.2	19.7
Geogs with less than 750 households	280,070	70.8	64.3	115,783	29.2	78.7
Total	**435,300**	**74.7**	**100.00**	**147,114**	**25.3**	**100.00**

Table 0.7: Poverty Incidence According to the Lower and Upper Poverty Lines (Percentage of Population and Households), by Stratum

Stratum	Lower Poverty Line				Upper Poverty Line			
	% Population		% Households		% Population		% Households	
	Non Poor	Poor	Non Poor	Poor	Non Poor	Poor	Non Poor	Poor
Urban								
Towns with 850 households or more	97.6	2.4	98.3	1.7	94.0	6.0	95.5	4.5
Towns with less than 850 households	94.0	6.0	96.1	3.9	91.0	9.0	93.5	6.5
Rural								
Geogs with 750 households or more	71.8	28.2	79.0	21.0	57.7	42.3	66.5	33.5
Geogs with less than 750 households	70.8	29.2	79.1	20.9	58.9	41.1	68.6	31.4
Total	**74.7**	**25.3**	**82.4**	**17.6**	**63.7**	**36.3**	**72.9**	**27.1**

Poverty in Bhutan clearly appears as a rural phenomenon. Severe poverty in large towns affects only 1.7 percent of households (2.4 percent of the population), compared with about 21 percent of rural households (29 percent of the population).





Part I – Presentation of the Survey

1.1 - Presentation of the HIES 2000

1.1.1 - Introduction and Objectives

The Household Income and Expenditure Survey (HIES) 2000 is the second nationwide survey of households undertaken by Central Statistical Office (CSO), Planning Commission. The first survey was conducted in 1992.

The broad objectives of the survey were:

- to provide useful inputs for the compilation of national accounts of the household sector as well as statistics of distribution of household income and expenditure;
- to provide benchmark information to update weights required in the construction of consumer prices indices (CPI); and
- to provide inputs in the estimation of poverty threshold and its incidences.

1.1.2 - Scope and Coverage

The survey collected data on household income including, among others, sources of income in cash and in kind and levels of consumption by items of expenditure. In view of the need to update weights used in the current CPI series, detailed items up to 5-digit level were incorporated for collection of consumer expenditure in the survey.

The geographical coverage extended over the entire area of Bhutan excepting a few satellite towns which are neither recognized as urban areas nor under the administrative control of chupen in the rural areas.

The population coverage included all households in the country except the following:

- Households of expatriates;
- Residents of hotels, boarding and lodging houses, monasteries including nunneries, school hostels, orphanages, rescue homes, vagrant houses, and under-trials in jails and indoor patients of hospitals, nursing homes etc.; and
- Barracks of military and para-military forces including the police.

1.1.3 - Sampling Strategy

Sampling Frame

The Sample Survey Section (SSS) of CSO maintains a list providing number of households by town and by geog (development block). Maps of towns and geogs are available with the administrative offices of dzongkhags (district). The maps together with the list of towns and geogs giving number of households provided the frame for designing the HIES 2000.

Determination of Sample Size

In determining the overall sample size it is generally advisable to start with the required level of reliability in the estimates expected. From the sample and if the field resources and/or budget is a constraint, the precision that can be achieved under the constraint is assessed to decide whether the achievable precision would meet the needs, and, if not whether the budget could be increased is examined.

HIES covers a large number of data items, some of which like expenditure on durable goods have much more variability than items of frequent occurrence such as expenditure on food. In practice, the sample size required for estimating a few major items with the requisite precision is worked out and the largest of the calculated sizes is taken as the sample for the survey. Since the results of HIES 1992 were not available, it was decided to make use of the published results from some of the countries in Asia like India, Bangladesh, Nepal, Thailand, and Philippines.

A straightforward procedure for determining the sample size is to make use of the information relating to co-efficient of variation (CV) of some key

variables. As an alternative, the sample size can also be worked out on the basis of some assumptions relating to the basic distribution of the key variables. Most of the key variables, household income and the expenditure, generally follow a log-normal distribution. A technical study published by United National Statistical Office[1] provides guidance to derive the sample size following such an assumption. It is proposed to follow this method to derive the sample size of the survey. It is easy to show that if $\log_e y$ follows a normal distribution with mean m and standard deviation s, where y is the variable under study, then CV of y is given by:

$$(CV)^2 = \text{Exponent}(s^2) - 1$$

Log-normal distribution has a property which makes derivation of CV fairly easy. The proportion of population values less than or equal to mean in case of log-normal distribution is given by P(s/2), where P(t) is the area to the left of t of a standard normal probability distribution. Therefore, if one can guess the proportion of households whose value for the variable under study is less than or equal to the average, it is possible to get an estimate of s and thus arrive at an estimate of CV.

Keeping in view the possible uses of the results of HIES, it is felt that sampling precision of 5 percent at the national level will serve the purpose. With this assumption, it is easy to derive that n, the sample size required for estimating the population mean of y with 95 percent level of confidence, is given by :

$$n = 1600\ (CV)^2$$

Based on the data published by ILO (Household Income and Expenditure Statistics No. 3, 1968-76), the UN publication presents a table giving estimate of CV of household income as also proportion of households with income less than the average income for 55 countries of the world including 16 from Asia and the Pacific. This with the assumption of log normal distribution provides estimate of CV as 1.0492 or roughly as one. Thus a sample of 1600 households selected as a sample random sample is likely to provide national estimates of key variables like income with 5 percent of precision. Since we propose to use a three/two stage design, the sample size needs to be multiplied by the design effect, which is generally taken to be 2 in most of the studies. Demographic Mortality Survey carried out in Bhutan in 1991 had also used design effect of 2 working out the sample size. Some gain in precision can also be expected on account of stratification. For this survey, immediate interest to meet the needs of national accounts and revision of base of CPI, demand to provide estimates at the national level with urban and rural breakdown and estimates for Thimphu town. Taking into account all these as also the

[1] National Household Survey Capability Programme; Household Income and Expenditure Surveys: A technical study, United Nations, 1989

available budget, it was recommended surveying a sample of 4000 households, equally distributed to urban and rural areas.

Sample Design

Based on the sample size a stratified multi-stage sampling design was used in HIES 2000. The available information relating to number of households for each town and geog was used to stratify the country into the following four strata:

- Stratum 1: Consisting of seven towns each having 850 or more households, viz. Thimphu, Phuentsholing, Gelephu, Punakha, Samdrup Jongkhar, Chhukha and Wangduephodrang.
- Stratum 2: Consisting of remaining 15 towns.
- Stratum 3: Consisting of 22 geogs each with at least 750 households.
- Stratum 4: Consisting of the remaining 180 geogs.

Selection of Sample in Urban Areas

The sample of 2,000 households for the urban areas was distributed between stratum 1 and stratum 2 in proportion to the number of households. This resulted in an allocation of 1,650 households to stratum 1 and 350 households to stratum 2. All the seven towns in stratum 1 were selected with probability one and the sample of 1,650 households was allocated to the seven towns in proportion to the number of households. This resulted in an allocation of 800 households to Thimphu, 300 to Phuentsholing, 150 to Gelephu, and 100 each to Punakha, Samdrup Jongkhar, Chhukha, and Wangduephodrang.

The 15 towns in stratum 2 were arranged in descending order of number of households and from this list a sample of seven towns was selected as a circular systematic sample. To each of the selected seven towns a sample of 50 households was allocated.

The geographic area in each of the seven towns in stratum 1 and the seven towns selected from stratum 2 was divided into enumeration areas (Eas), each of 100-125 households and a listing of all the households in each EA was undertaken. At the time of listing, for each household the name of the head of the household was noted and thereafter it was ascertained whether the head of the household was an expatriate or not. The EAs enumerated in each town were divided into three socio-economic groups—high, medium, and low, on the basis of known information about the value of real estate and/or the rent of residential accommodation. All the EAs enumerated in each town were arranged in the order starting with “high” followed by “medium” and the “low”. From such a list for each town all households **excluding those of expatriates** were given a running

serial number starting with the first household in the first EA of the “high” group to the last household in the last EA of the “low” group. From such an arranged list for each town, the requisite number of sample households was selected by circular systematic sample. Thus the sample design adopted for selection of households was uni-stage random sample in each of the seven towns of stratum 1, and two-stage random sample in case of stratum 2.

Selection of Sample in Rural Areas

The sample of 2,000 households in the rural areas was distributed between stratum 3 and stratum 4 approximately in proportion to the number of households, which resulted in an allocation of 880 households to stratum 3 and 1,120 households to stratum 4. Each of the 22 geogs in stratum 3 was selected with probability one and a sample of 40 households was allocated to each geog. For selection of households from within each of the 22 geogs in stratum 3, a CSS of four chupens (a group of three to five villages) was selected. All households in each selected chupen were listed along with the details relating to name of the head of household, the size of the household, prime means of livelihood (PML)—(self-employed in non-agriculture, rural labor, and others), description of activity of any non-agricultural enterprise operated from within the premises of the household along with a broad industry group code. The list of households so prepared for a chupen was rearranged by PML classes and by size of household within each of the three PML classes. From such an arranged list for each selected chupen in stratum 3, a circular systematic sample of 10 households was selected. Thus a two-stage random sample design was followed for selection of sample households in stratum 3.

The selection of households in stratum 4 was done in three stages. In the first stage a sample of 56 geogs was selected from amongst the 180 geogs by a circular systematic sample after arranging the 180 geogs first by dzongkhag and then within each dzongkhag in descending order of the size of the geog in terms of number of households. At the second stage, in each selected geog, two chupens were selected by a circular systematic sample after arranging the chupens in descending order of the size of the chupen in terms of number of households. From within each selected chupen a sample of 10 households was selected following the procedure indicated for selection of households within each selected chupen in stratum 3.

1.1.4 - Survey Schedules and Operations

A schedule was used for collection of data for the HIES 2000. There are several advantages of using a schedule as an instrument of data collection in situations where trained enumerators are deployed to conduct face-to-face interviews for collection of household based socio-economic data. This allows the enumerator to ask appropriate questions to elicit the requisite information. It has the advantage that having understood the objective of the question, the enumerator can study the situation and ask questions in a form that is more understandable to the respondent as also more appropriate to the situation. It has also the advantage that the enumerator can adopt a conversational approach for the interview, which is especially needed in the rural areas of developing countries. It was, therefore, decided to use a schedule as the instrument of data collection for the HIES 2000 in Bhutan. Three sets of schedules, two for listing of households (one each for the urban and rural areas), and the other for collection of data relating to household income household expenditure, demographic particulars and economic activity of the members of the hh were devised. These schedules were pre-tested in the field, both in urban and rural areas, in January 2000. In the light of the experience of pre-testing, the schedules were finalized.

Each schedule was divided into a number of homogenous sections, called Blocks, according to the subject/topic and the blocks were divided into sub-blocks, wherever necessary according to nature of the topic covered.

The listing schedules, 0.1 for the urban areas and 0.2 for the rural areas contained the following three blocks:

- Block (0): identification particulars of the EA/chupen.
- Block (1): details of the listing operation.
- Block (2): sketch map of the EA/chupen.
- Block (3): list of households.

Listing Operation

For listing the households all houses in the EA/chupen were surveyed to identify all households in that house and at that stage the purpose for which the house was being used, name of the head of the household, size of household, whether it was the household of an expatriate or not were collected, both in the urban and rural areas. In addition, for the rural households, the prime means of livelihood and whether the household operated a non-agricultural enterprise at the premises of the household or without any fixed premises were ascertained. The broad industry group of identified enterprises was also ascertained.

Household Schedule

In broad terms the household schedule comprised two sections, one dealing with household consumption and the other with household income. As background material for the collection and analysis of household income and expenditure, the schedule included provision for recording data on size, structure and composition of household, and activity particulars of members of the household.

Household expenditure includes details of common expenditure of the household for consumption as well as other purposes and personal expenditure of all individual members. Consumption includes not only consumption of items purchased but also consumption out of own production, own business stocks, items received as gifts or in exchange of goods and services, and own housing. The section on household consumption included a block dealing with sufficiency of food for household to serve as a rough indicator of poverty.

Household income includes individual incomes of all household members as well as the joint and composite income of household, both in cash and in kind. It also includes incomes from paid employment, entrepreneurial incomes, incomes from property and other sources like current transfers and benefits.

The household schedule comprised the following blocks:

Block (0): Identification and operational particulars

Block (1): Household characteristics

Block (2): Demographic and other particulars of household members

Block (3): Household consumption expenditure

- 3.1 Consumption of food, beverages and tobacco
- 3.2 Consumption of clothing, bedding and footwear
- 3.3 Housing, fuel and light
- 3.4 Transport and communication
- 3.5 Household operation
- 3.6 Education, recreation, entertainment and cultural services
- 3.7 Medical care and health services
- 3.8 Personal cares and effects
- 3.9 Furnishing and equipment
- 3.10 House maintenance and minor repairs
- 3.11 Miscellaneous expenses
  - Consumption of selected non-food items from home produced
  - Stock
- 3.12 Non-consumption expenditure
- 3.13 Disbursements other than expenditure

3.14 Production and consumption from kitchen garden and backyard
3.15 Sufficiency of food for the household

Block (4): Household income

4.1 Activity particulars of household members
4.2 Income from paid employment
4.3 Checklist for entrepreneurial activities
- 4.4.a Crop farming and gardening output
- 4.4.b Crop farming and gardening input
- 4.4.c Computation of net income from crop farming and gardening

4.5 Livestock
- 4.5a Livestock and poultry farming output
- 4.5b Livestock and poultry farming input
- 4.5c Computation of net income from livestock and poultry farming

4.6 Computation of net income from other entrepreneurial activities

Block (5): Property and other income

5.1 Rental income on real estate
5.2 Other incomes received
5.3 Other receipts

The listing and household schedules are presented in Annex IV.

Table 1.1. Geographic Distribution of the Sample Households

Region	Count	%
Chhukha	92	2.39
Chhukha - Bongo	40	1.04
Chhukha - Getana	20	0.52
Chhukha - Geling	20	0.52
Phuentsholing	295	7.65
Chhukha - Bhalujhora	20	0.52
Chhukha - Dala	40	1.04
Chhukha - Phuentsholing	39	1.01
Ha	50	1.30
Ha - Sama	20	0.52
Ha - Uesu	20	0.52
Paro	50	1.30
Paro - Doteng	20	0.52
Paro - Doga	20	0.52
Paro - Hungrel	20	0.52
Thimphu	697	18.09
Thimphu - Dagala	19	0.49
Thimphu - Kawang	18	0.47
Thimphu - Toepisa	20	0.52
Punakha	100	2.59
Punakha - Goenshari	20	0.52
Punakha - Kabjisa	20	0.52
Punakha - Toewang	19	0.49
Punakha - Dzoma	19	0.49
Gasa	49	1.27
Gasa - Goenkhame	20	0.52
Wangduephodrang	96	2.49
Wangduephodrang - Daga	20	0.52
Wangduephodrang - Gangte	20	0.52
Wangduephodrang - Nyisho	20	0.52
Wangduephodrang - Phangyu	18	0.47
Bumthang - Chhoekhar	40	1.04
Bumthang - Chhume	20	0.52
Trongsa	50	1.30
Trongsa - Dragteng	20	0.52
Zhemgang	48	1.25
Zhemgang - Nangkor	20	0.52
Zhemgang - Shingkhar	20	0.52
Zhemgang - Phangkhar	20	0.52
Lhuentse	50	1.30
Lhuentse - Khoma	20	0.52
Lhuentse - Minjay	20	0.52
Lhuentse - Tsenkhar	20	0.52
Mongar - Chaskar	19	0.49
Mongar - Drametse Tshogom	40	1.04
Mongar - Drepung	20	0.52
Mongar - Gongdue	18	0.47
Mongar - Ngatshang	20	0.52
Trashigang - Bidung	19	0.49
Trashigang - Phongme	40	1.04
Trashigang - Radi	39	1.01
Trashigang - Samkhar	40	1.04
Trashigang - Shongphu	37	0.96
Trashigang - Udzorong	40	1.04
Trashigang - Lumang	40	1.04
Trashigang - Kangpara	19	0.49
Trashigang - Thrimshing	39	1.01
Yangtse - Bumdeling	20	0.52
Yangtse - Khamdang	37	0.96
Yangtse - Toetsho	20	0.52
Yangtse - Tomizhangtshen	40	1.04
Pemagatshel - Khar	20	0.52
Pemagatshel - Shumar	40	1.04
Pemagatshel - Zobel	20	0.52
Samdrup Jongkhar	100	2.59
Samdrup Jongkhar - Gomdar	40	1.04
Samdrup Jongkhar - Orong	40	1.04
Samdrup Jongkhar - Hastinap	20	0.52
Samdrup Jongkhar - Louri	20	0.52
Samdrup Jongkhar - Martsha	40	1.04
Samdrup Jongkhar - Samran	20	0.52
Samtse - Pagli	40	1.04
Samtse - Tading	40	1.04
Samtse - Dorokha - Denchhu	20	0.52
Samtse - Dorokha	40	1.04
Samtse - Biru	40	1.04
Samtse - Sipsu	20	0.52
Samtse - Chengmari - Tendu	20	0.52
Sarpang - Sarpangtar	20	0.52
Gelephu	148	3.84
Sarpang - Lalai	20	0.52
Sarpang - Serzhong	20	0.52
Sarpang - Suray	20	0.52
Sarpang - Nichula	20	0.52
Tsirang	50	1.30
Tsirang - Kikhorthang	20	0.52
Tsirang - Phuentenchhu	20	0.52
Tsirang - Samjong	20	0.52
Tsirang - Tsirang Dangra	20	0.52
Dagana - Kalizingkha (Kana)	20	0.52
Dagana - Lajab	20	0.52
Dagana - Trashiding	20	0.52
Total	3854	100.00

1.1.5 - Reference Period

It is well known that household income and household expenditure are subject to short-term fluctuations. Thus the larger the amount of information gathered in respect of each sample household, the less would be sampling error. Therefore, from the point of view of accuracy of estimates, the longer the reference period the better it is. On the other hand, larger the reference period, the greater would be the chance of recall lapse. The "end effect" arising from the misplacement of events or transactions would be comparatively higher in case of a long reference period than in case of a short reference period.

The reference period, therefore, should be short enough but consistent with the requirements of accuracy. Empirical evidence[2] shows that the shorter the reference period, the higher the estimates of expenditure generated on that basis, and the larger the reference period, the lower the estimates, especially when the survey data are collected through interviewing.

Keeping in view of the above and also the experience of several countries including India documented as mentioned in publication of the United Nations, it was decided that for the HIES 2000, a week as well as a month be taken as the reference period for recording details relating to consumption of food, drinks, tobacco, and other items of daily requirement. For expenditures on durable items of infrequent purchases, reference period of one year was decided. It was also decided to use a reference period of one month for recording income from paid employment, while for crop farming the reference period for the first round was taken as the last winter crop season. A reference period of one month was taken for recording details relating to livestock and poultry farming. It was also decided to use last one year as the reference period for recording details pertaining to income from other entrepreneurial activities, while property and other incomes were to be recorded with one month as also one year as the reference period.

1.1.6 - Data Collection

The Central Statistical Office (CSO) recruited a group of 80 enumerators for conducting the fieldwork of the first round of the survey. Most of the enumerators were students who had written the 12th grade examination in March 2000. CSO provided the services of nine staff members to work as

[2] National Household Survey Capability Programme; Household Income and Expenditure Surveys: A Technical Study, United Nations, 1989

supervisors on full time basis during the period of the survey. Head, Sample Survey and Data Processing Section (SSDPS), CSO was entrusted with the overall responsibility of organizing and conducting the fieldwork.

Two comprehensive manuals, one for the enumerators and the other for the supervisors, were prepared. The training manual for the enumerators (TME) included basic concepts and definitions of different items of information, procedure for (i) listing of households, (ii) selection of sample households, and (iii) recording information in each of the blocks/sub-blocks of schedule 1. The training manual for supervisors (TMS) provided inter-alia detailed instructions for (i) undertaking rationalized supervision of the fieldwork, (iii) ensuring quality of data, and (iii) selection of chupens and sample households. A copy of the TME was provided to each enumerator, while each supervisor was given a copy each of TME and TMS.

Training of Field and Supervisory Staff

The nine supervisors designated for the survey underwent training for three days, 29-31 March 2000. The procedure for (i) undertaking demarcation of boundaries of EAs, (ii) preparing sketch maps of EAs, (iii) selection of chupens, (iv) listing of households, and (v) selection of households, were explained with suitable examples. The approach and procedure to be adopted for (i) enlisting cooperation of the informants, and (ii) for filling the various blocks/sub-blocks of the three schedules 0.1, 0.2, and 1 were also explained to the supervisors with suitable examples. It was decided to use third revised version of International Standard Industrial Classification (ISIC) and 1988 International Standard Classification of Occupations (ISOC). With suitable examples the supervisors were trained to use ISIC and ISOC for recording codes, and the responsibility of recording the codes in the filled-in schedules was assigned to the supervisors. The enumerators were required to write only the description of the economic activity and type of work done and the supervisors were trained to record the appropriate two-digit codes.

The enumerators underwent a well-planned and organized training program of 11 days form 3 April to 13 April 2000. All the nine supervisors were the basic trainers at the program. Each one of them had been assigned the responsibility of explaining the contents of three/five sub-blocks of the household schedule. Each one of them had prepared transparencies for the presentation. In general, each one of them had done a good job. Head, SSDPS and the ADB Consultant offered explanations and clarifications to strengthen the presentations of the trainers.

The first round of classroom lectures was completed on 6 April. Each enumerator was, thereafter, assigned the responsibility of completing the

household schedule either for his/her own household or household of anyone else whom they could approach without any problem. Each filled-in schedule was scrutinized by one of the supervisors and necessary clarifications/corrections were given to the concerned enumerator. The afternoon session on 7 April and forenoon session on 8 April were utilized in discussing and resolving the problems noted by each supervisor during the course of the scrutiny of the filled-in schedules. Thereafter, the ADB Consultant restated the important points to be kept in mind while filling different sub-blocks of household expenditure and household income blocks. Each enumerator spent Sunday, 9 April in completing schedule 1 for one more household. The filled-in schedules were scrutinized by each supervisor and problems noted were discussed and resolved during the training program on 10 April.

Three special documents were prepared by one of the supervisors to help the enumerators in collection of data on some of the items. The first document provided the age conversion from Bhutanese Calendar to English Calendar. The second document was a ready-reckonor for conversion of area under crops and production of crops from local units to standard units of acres and kilograms respectively. The third document provided the translation of names of some important items from English to different dilates of Bhutanese language. Copies of these were provided to each enumerator and each supervisor.

The enumerators were taken out for field training in the rural area of Thimphu dzongkhag on 11 April. They were accompanied by the supervisors, Head SSDPS and the ADB Consultant. The enumerators were divided into groups of eight/nine for the field training. Each enumerator filled in a household schedule independently. A field demonstration of the procedure of selection of chupen and listing of households in selected chupen was organized for the benefit of the supervisors. Each supervisor, thereafter, attempted listing operation in one of the chupens.

The schedules filled-in by the enumerators during the field training were thoroughly scrutinized by the supervisors in the morning session of 12 April and deficiencies noted were pointed out to the concerned enumerators. Thereafter, each supervisor presented the deficiencies noted in the schedules filled-in by his group of enumerators. Clarifications and explanations, wherever required, were given by Head, SSDPS and the ADB Consultant.

At the request of Ministry of Health, CSO agreed to canvass a small questionnaire to seek the opinion of households regarding user payment for health services. It was agreed to canvass a brief questionnaire seeking the above stated opinion from a sub-sample of 400 households in the urban areas and a sub-sample of about 50 households in some of the geogs known to be using hospital services in urban areas. A

representative of the Ministry of Health had trained the supervisors for about two hours during the period of training 29-31 March. The enumerators were also trained by the same representative of the Ministry of Health for about two hours on 7 April 2000. Each enumerator had also filled in the questionnaire during the field training on 11 April 2000 from the same household for which schedule 1 had been filled.

Field Work

The enumerators were divided into nine teams and one supervisor was assigned to each team. To facilitate the work of enumerators as also for effective supervision, each team was provided with a transport. All the teams started the fieldwork on 15 April 2000 and the work was completed by the teams between 4 June and 17 June 2000. On an average an enumerator took about two hours to collect the prescribed data from a household. Each supervisor accompanied each enumerator in his team at least on three occasions for listing of households and collection data from selected households.

Publicity and Appeal for Cooperation

All out efforts were made to seek the cooperation of households to provide the data planned to be collected under HIES. As a first step all the Dzongkhag (distict) officers were informed about the schedule of operation of field work under HIES and were in turn requested to issue instructions to all Geog (block) officers to extend full cooperation to the field staff as also advise the heads of selected chupens in the sample to help and assist the field staff in carrying out the field operation. Each enumerator was given a photo identity card and a letter signed by Secretary, Planning Commission introducing him/her and ensuring confidentiality of the information to be provided by the household. As the second step Head, CSO appealed to people through radio broadcast and press media.

1.1.7 - Response Rates

In spite of best efforts made by the enumerators and follow up attempts by the supervisors in most of the cases, there was non-response. As against a planned sample of 4, 000 households, the field staff were able to collect data from 3,854 households, which works out to a response rate of 96.3 per cent. Stratum 1 (large towns) accounted for about 77 per cent of non-response cases as may be seen from Table 1.2.

Table 1.2: Sample Size and Response Rate by Stratum

Stratum	Sample planned	Sample Canvassed	Rate
1 – Seven towns with more than 850 households (Thimphu, Phuentsholing, Gelephu, Punakha, Samdrup Jongkhar, Chhukha, Wangduephodrang)	1650	1538	93.2%
2 – 7 towns	350	347	99.1%
3 – Twenty-two geogs with more than 750 households	880	861	97.8%
4 – 56 geogs	1120	1108	98.9%
Total	**4000**	**3854**	**96.3%**

Reasons for Non-Response

Failure to establish contact with any adult member in the household in spite of at least three attempts was the main reason reported by the field staff for non-response and this was so both in the urban and rural areas. There were, of course, some cases of refusal to co-operate, in particular in Thimphu. In most of these cases the concerned supervisor made sincere efforts to convince the head of the household that data proposed to be collected would not only be of great help to the RGB in devising suitable development programs but also to the industrial units, trading community and the people of Bhutan. The head of the household was assured that data proposed to be collected will remain confidential and not provided to the Revenue Department or any other organization in the RGB concerned with regulating Acts for industrial or trading activities etc. A few cases of non-response were converted into willing respondents.

1.1.8 - Data Processing and Analysis

Manual Scrutiny

Each supervisor was assigned the responsibility of manual scrutiny of each and every schedule filled-in by the team of enumerators under his charge. For this purpose a "Field Scrutiny Manual" was prepared and a copy of the same was made available to each supervisor.

Data Entry

Following ADB's recommendation, CSO decided to use the software IMPS-CENTRY[3] for data entry. The application was designed with ADB's technical assistance. 13 data entry operators were selected on July 5 and

[3] *Integrated Microcomputer Processing System* (IMPS), from the US Bureau of the Census. CENTRY is the data entry module. Other modules of IMPS include DATADICT for defining the data dictionary and CONCOR for data editing.

trained on July 6 and 7. Data entry was supervised by two CSO staff members (programmers).

Data entry started on Friday, July 7. It was expected that data entry be completed in about 20 working days, i.e. by August 6. Due to some technical difficulties (use of some old DOS-based 486 PC computers) and the impossibility to organize overtime work, data entry was completed on August 15.

It was unfortunately not possible to accommodate all data entry operators in the same room. Operators were working in five different rooms, making it difficult for the two supervisors to ensure a strict control and a permanent assistance to the operators. As a consequence, it had been decided that no editing/corrections would be done by the operators. Only range checks were performed at the time of data entry.

A "processing tracking system" (MS-Excel application) was designed to monitor the data entry activities. It allowed automatic generation of reports on the progress of the work (% of data entry completed, statistics per operator, daily averages, etc.).

Data Editing

In a first stage, IMPS-CONCOR was used to edit the data. The CONCOR application produced lists of errors that could be manually corrected by the supervisors. It did not contain any automatic imputation procedures. Further editing was required (in particular for income and expenditure variables) after a detailed analytical assessment of the data was done. This further editing was done using the SPSS statistical software.

More detailed description of editing problems and solutions may be found in the report "*TA 2860 (BHU): Strengthening the Central Statistical Organization - Technical Note on Data Editing*" by Olivier Dupriez, ADB/EDSD, 11 September 2000, or by consulting the following data editing programs available at CSO:

CONCOR

- Hiesedit.cn

SPSS

- Export HIES2000 to SPSS.sps
- Label values HIES2000 - 1 of 5.sps
- Label values HIES2000 - 2 of 5.sps
- Label values HIES2000 - 3 of 5.sps
- Label values HIES2000 - 4 of 5.sps
- Label values HIES2000 - 5 of 5.sps
- Misc .checks in blocks 1 and 2.sps
- List of quantity units in b301.sps

- Quantity units recode.sps
- Remove totals from b301.sps
- (idem for b302 to b314, except b312)
- Extreme values in b301 to b315.sps
- Check duplicated codes for exp.sps
- Final editing of block 3.1.sps
- Consistency between ref. periods b302 to b315.sps
- Check rent values.sps
- Imputation of missing rental value.sps
- Consistency checks in block 4.1.sps
- Consistency checks in block 4.2.sps
- Check block 4.3 and related.sps
- Aggregations of food expenditure.sps
- Aggregations of non-food expenditure.sps
- Aggregations of all expenditure.sps
- Consistency of aggregated exp.sps
- Aggregation of income.sps

1.2 - Measurement of income or expenditure

1.2.1 - Computation of Aggregated Income and Expenditure

Income and expenditure have been aggregated at different levels. All aggregated variables represent **monthly** values. The programs' code for the derivation of the variables can be found in the following SPSS syntax programs available at CSO:

- Aggregations of food expenditure.sps
- Aggregations of non-food expenditure.sps
- Aggregations of all expenditure.sps
- Consistency of aggregated exp.sps
- Aggregation of income.sps

Since information on quantity was not available in a standard unit (and no conversion rates were available), only values have been aggregated.

Aggregated Food Expenditure

Variables on food expenditure have been constructed from data in block 3.1 (information from block 3.12 on home-produced non-food expenditure is already counted in block 3.1 and must not be added).

Two different recall periods were used to record food expenditure: week and month. When available, information on monthly expenditure was used. Otherwise, expenditure per week was divided by 7 and multiplied by 30 to obtain a monthly value.

Household monthly food expenditure was aggregated at different levels:

- 5-digit code (data file foodexp5.sav)
- 4-digit code (data file foodexp5.sav)
- 3-digit code (data file foodexp5.sav)
- 2-digit code (data file foodexp5.sav)

Data have been summarized at the household level in data files foodexp.sav and all_exp.sav (food expenditure by category, at the 2-digit level). Also, per capita and real expenditure have been computed (in data files foodexp.sav and all_exp.sav).

Aggregated Non-Food Expenditure

Non-food expenditure variables were constructed based on data in blocks 3.2 to 3.16, at different levels:

- 3-digit code (data file nfoodexp3.sav)
- 2-digit code (data file nfoodexp2.sav)
- Summary per household, by category at the 2-digit level, in data files nfoodex.sav and all_exp.sav

Non-food expenditure contains the following components:

- Clothing and footwear (block 3.2): Annual value was used when available (/12), otherwise monthly
- Housing, fuel and light (block 3.3): available only per month (computation made after imputation of missing rental values)
- Transport and communications (block 3.4): Annual value was used when available (/12), otherwise monthly
- Household operations (block 3.5): available only per month.
- Education, recreation, culture (block 3.6). Annual value was used when available (/12), otherwise monthly
- Medical care and health services (block 3.7): Annual value was used when available (/12), otherwise monthly
- Personnal care and effects (block 3.8): available only per month. Some items are durable goods purchased only once a year. For item codes 8131 to 8133 (gold, silver, jewels), monthly expenditure was divided by 12 before aggregation.
- Furnishing and equipment expenditure (block 3.9): available only per year (/12 for aggregation). Durable furniture and equipment are not purchased on a regular basis. It was assumed that they have an average lifetime of 3 years (this is a shortcut, but there was no information available for a more accurate estimate of the monthly value of the services the goods provide). The annual expenditure for item code 92 (9211 to 929) was divided by 3.

- House maintenance (block 3.10): Annual value was used when available (/12), otherwise monthly
- Miscellaneous expenditure (block 3.11): Annual value was used when available (/12), otherwise monthly

Total expenditure = food expenditure + non-food expenditure computed as described above, corresponds to the total consumption expenditure (per month).

Non-consumption monthly expenditure and disbursements other than expenditure have also been aggregated and are available in data file all_exp.sav.

Aggregated Income

The household total income is obtained by summing up the following components:

- Income from paid employment (basic wage or salary + allowances, commissions and gratuities – deductions at source + value of benefits received in kind + bonuses received in cash or in kind
- Net income from crop farming and gardening
- Net income from livestock and poultry farming
- Net income from entrepreneurial activities, i.e.:
  - Net income from fishing
  - Net income from forestry and hunting
  - Net income from mining and quarrying
  - Net income from manufacturing and repairs
  - Net income from construction
  - Net income from wholesale and retail
  - Net income from transportation, storage and communication services
  - Net income from hotels and restaurants,
  - Net income from other entrepreneurial activities
- Net rental income on real estate (if available, use annual/12, otherwise monthly)
- Other net income (if available, use annual/12, otherwise monthly)

After aggregation, it appeared clearly that reliability of data on income is not satisfactory. A comparison of households' monthly income with their monthly expenditure shows that income is in most cases significantly lower than expenditure (table 1.3). This is due to false/under declaration and weaknesses in the questionnaire design.

Table 1.3: Ratio Total Expenditure/Total Income by Stratum

	Stratum 1		Stratum 2		Stratum 3		Startum 4		National	
	Count	Col %	Count	Col %	Count	Col %	Count	Col %	Count	Col %
[0.00 to 0.25[	40	2.62	17	4.90	16	1.84	34	3.07	107	2.78
[0.25 to 0.50[	127	8.31	34	9.80	34	3.90	103	9.30	298	7.73
[0.50 to 0.75[	239	15.64	69	19.88	59	6.77	139	12.55	506	13.13
[0.75 to 1.00[	275	18.00	57	16.43	84	9.64	120	10.83	536	13.91
[1.00 to 1.25[	219	14.33	39	11.24	68	7.81	95	8.57	421	10.92
[1.25 to 1.50[	190	12.43	37	10.66	71	8.15	92	8.30	390	10.12
[1.50 to 1.75[	113	7.40	20	5.76	63	7.23	67	6.05	263	6.82
[1.75 to 2.00[	81	5.30	15	4.32	58	6.66	54	4.87	208	5.40
[2.00 and + [	244	15.97	59	17.00	418	47.99	404	36.46	1125	29.19
Total	**1528**	**100.00**	**347**	**100.00**	**871**	**100.00**	**1108**	**100.00**	**3854**	**100.00**

1.2.2 - Tabulation and Analysis

Tables were produced using SPSS. The following SPSS programs (available at CSO) produced most of tables presented in part II to IV of this report:

- Table - Sample (household and individuals).sps
- Tables on food consumption.sps
- Tabulation demographics.sps
- Tabulation expenditure.sps
- Tabulation poverty profile.sps

Poverty analysis was also done with SPSS. The following programs contain the analysis procedures:

- Computation of regional price index.sps
- Poverty analysis.sps

Detailed description of these procedures is presented in part III of the report.

Data collected from a sample of households need to be extrapolated to the overall population. This was done using weighting coefficients, based on the following methodology:

Estimation Procedure for Aggregates

Aggregates are estimated at stratum level according to the following formulae:

Let y be the characteristic (say household monthly expenditure on food) under study. The estimates of the total value y for the four strata are given by:

Estimate of total of y for stratum 1 = $\hat{Y}_1$

$$= \sum_{i=1}^{7} \frac{H_{1i}}{h_{1i}} \sum_{j=1}^{h_{1i}} y_{1ij}$$

where

- y_{1ij} = Observed value of the characteristic for j[th] sample household in the i[th] town of stratum 1;
- H_{1i} = Number of households listed in the i[th] town of stratum1;
- h_{1i} = Number of sample households canvassed in the i[th] town of stratum 1.

Estimate of total of y for stratum 2 = $\hat{Y}_2$

$$= \frac{15}{7} \sum_{i=1}^{7} \frac{H_{2i}}{h_{2i}} \sum_{j=1}^{h_{1i}} y_{2ij}$$

where

- y_{2ij} = Observed value of the characteristic for j[th] sample household in the i[th] town in stratum 2;
- H_{2i} = Number of households listed in the i[th] sample town in stratum 2;
- h_{2i} = Number of sample households canvassed in the i[th] sample town of stratum 2.

Estimate of total of y for the urban areas $\hat{Y}_u = \hat{Y}_1 + \hat{Y}_2$

Estimate of total of y for stratum 3 = $\hat{Y}_3$

$$= \sum_{i=1}^{22} \frac{C_{3i}}{4} \sum_{j=1}^{4} \frac{H_{3ij}}{10} \sum_{k=1}^{10} y_{3ijk}$$

where

- y_{3ijk} = Observed value of the characteristic for k[th] sample household in the j[th] sample chupen in the i[th] geog of stratum 3;
- C_{3i} = Number of chupens in the i[th] geog of stratum 3;
- H_{3ij} = Number of households listed in the j[th] sample chupen of i[th] geog of stratum 3.

Estimate of total of y for stratum 4 = $\hat{Y}_4$

$$= \frac{180}{56} \sum_{i=1}^{56} \frac{C_{4i}}{2} \sum_{j=1}^{2} \frac{H_{4ij}}{10} \sum_{k=1}^{10} y_{4ijk}$$

where

- y_{4ijk} = Observed value of the characteristic for k^{th} sample household in the j^{th} sample chupen in the i^{th} geog of stratum 4;
- C_{4i} = Number of chupens in the i^{th} geog of stratum 4;
- H_{4ij} = Number of households listed in the j^{th} sample chupen of i^{th} geog of stratum 4.

Estimation Procedure for Ratios

The estimation of ratio of the form $R_B = Y_B / X_B$, where Y_B and X_B are respectively the totals for the characteristic Y and X respectively for Bhutan, is obtained as $\hat{R}_B = \hat{Y}_B / \hat{X}_B$, where $\hat{Y}_B and \hat{X}_B$ are estimates of Y_B and X_B according to the procedure given above. Examples of ratio are the mean per capita expenditure, average household size, etc.

Part II – Demographics, Income and Expenditure

2.1 - Demographic Profile

2.1.1 - Population Estimate

The household population (excluding the expatriates as defined in the HIES) of urban areas, rural areas and Bhutan has been estimated by two slightly different methods. The first one, called "Survey Estimate", has been computed following the procedure for estimation of aggregates. The second one, called "Listing Estimate", is based on the listing undertaken in the listed towns and chupens in the sample and adjusted (using ratio estimate) for under-recording as also over-recording in the listing operation and changes that might have taken place in the size of the household on account of births, marriages, migration, and deaths etc., during the period between the time when listing was done and the time when data were collected in schedule 1.

The exact formulae used are as under:

Stratum 1: Towns with 850 households or more and Stratum 2: Towns with less than 850 households

Let $\hat{P}_{li}$ be the estimate of population of i[th] town in stratum *l*, then

$$\hat{P}_{1i} = P^{L}_{1i} * \frac{\sum_{j=1}^{h1i} p^{s}_{1ij}}{\sum_{j=1}^{h1i} p^{L}_{1ij}}$$

$$\hat{P}_{2i} = P^{L}_{2i} * \frac{15}{7} * \frac{\sum_{j=1}^{h2i} p^{s}_{2ij}}{\sum_{j=1}^{h2i} p^{L}_{2ij}}$$

where

- P^{L}_{li} = Total population listed in all the households of i[th] town of stratum l in the urban area, for l =1,2;
- p^{L}_{lij} = Number of persons listed in listing schedule, 0.1 for the j[th] sample household selected from i[th] town of stratum l in the urban area;

- ps_{lij} = Number of persons enumerated in the schedule 1 for the j[th] sample household selected from i[th] town of stratum l in the urban area;

$\hat{P}_u$ = Estimate of population for urban area (stratum 1 + stratum 2)

$$= \sum_{l=1}^{2} \sum_{i=1}^{7} \hat{P}_{li}$$

Stratum 3: Geogs with 750 households and more

$\hat{P}_{3i}$ = Estimate of population of i[th] geog in stratum 3.

$$= \frac{C_{3i}}{4} \sum_{j=1}^{4} P_{3ij}^{L} * \frac{\sum_{k=1}^{10} p_{3ijk}^{s}}{\sum_{k=1}^{10} p_{3ijk}^{L}}$$

where

- C_{3i} = Number of chupens in the i[th] geog of stratum 3;
- P_{3ij}^{L} = Total population listed in schedule 0.2 for all the households of j[th] sample chupen in the i[th] geog of stratum 3;
- P_{3ijk}^{L} = Number of persons listed in the schedule 0.2 for the k[th] sample household of j[th] sample chupen in the i[th] geog of stratum 3;
- p_{3ijk}^{s} = Number of persons enumerated in schedule 1 of the k[th] sample household of j[th] sample chupen in the i[th] geog of stratum 3.

Then $\hat{P}_3$ = Estimate of population of stratum 3

$$= \sum_{i=1}^{22} \hat{P}_{3i}$$

Stratum 4: Geogs with less than 750 households

Let $\hat{P}_{4i}$ = Estimate of population of the i[th] geog in stratum 4

$$= \frac{C_{4i}}{2} \sum_{i=1}^{2} P_{4ijk}^{L} * \frac{\sum_{k=1}^{10} p_{4ijk}^{s}}{\sum_{k=1}^{10} p_{4ijk}^{L}}, \text{ for i=1,2,…56}$$

where

- C_{4i} = Number of chupens in the i[th] geog of stratum 4;
- P_{4ijk}^{L} = Total population listed in schedule 0.2 for all the households of j[th] sample chupen in the i[th] geog of stratum 4;
- P_{4ijk}^{s} = Number of persons listed in the schedule 0.2 for the k[th] sample household of j[th] sample chupen in the i[th] geog of stratum 4;

p^{L}_{4ijk} = Number of persons enumerated in schedule 1 of the k[th] sample household of j[th] sample chupen in the i[th] geog of stratum 4.

Then the estimate of population of stratum 4 =

$$\hat{P}_4 = \frac{180}{56}\sum_{i=1}^{56}\hat{P}_{4i}$$

Estimates for Urban Areas, Rural Areas and Bhutan:

$$\hat{P}_U = \sum_{l=1}^{2}\sum_{j=1}^{7}\hat{P}_{li}$$

$$\hat{P}_R = \hat{P}_3 + \hat{P}_4$$

$$\hat{P}_B = \hat{P}_U + \hat{P}_R$$

Note: In addition to the above, the estimates $\hat{P}^*_U$, $\hat{P}^*_R$, and $\hat{P}^*_B$ have been generated by the usual procedure of estimation by taking the characteristic under study as the size of the household.

In case where the enumerator was unable to contact any adult member of a household at the time of listing operation, he/she was expected to record the requisite information from the available neighbor. This could result in under-count or over-count of the population. On comparing the size of selected households as recorded in schedule 1 with the corresponding figure in respect of the sample households at the listing stage, it was found that the ratio of size worked out from schedule 1 to that of the size of the sample households in the listing operation varied between 0.95 and 1.04 in urban areas, and between 0.96 and 1.23 in rural areas. This indicates that the size of the household (on the assumption that there was no change on account of migration, birth, death, marriage etc.) recorded in the listing stage was an over-count in some cases and under-count in some other cases.

Estimate of Survey Population

The two estimates, "Survey Estimate" and "Listing Estimate" for urban areas, rural areas, and Bhutan are given in Table 2.1.

Table 2.1: Estimated Population by Area

Area	Estimate ('000)	
	Survey	Listing
Urban	84.02	83.5
Rural	498.4	469.4
Bhutan	**582.24**	**552.9**

The "Survey Estimate" of the population of Bhutan is 5.3 per cent higher than the "Listing Estimate". The corresponding figures for urban areas and rural areas are 0.6 and 6.2 percent respectively. The difference between the two estimates is small in case of urban areas because the sample design adopted for stratum 1 is uni-stage and for stratum 2 it is a two-stage design. On the other hand the sample design in rural areas was two-stage for stratum 3 and three-stage for stratum 4. And this explains the difference.

It may be noted that unless otherwise stated the estimate of population and number of households will refer to "Survey Estimate". The survey covered a total sample of 3,854 households accounting to 19,466 persons.

Table 2.2: Distribution of Estimated Population by Age Group, Sex and Area (Percent)

Age group	Urban			Rural			Bhutan		
	Male	Female	All	Male	Female	All	Male	Female	All
<15	39.45	38.90	39.17	37.82	36.21	37.00	38.05	36.60	37.31
15 - 24	15.63	22.80	19.26	14.84	18.26	16.58	14.95	18.91	16.96
25 - 34	18.82	19.82	19.33	12.19	14.31	13.26	13.15	15.10	14.14
35 - 44	13.28	10.40	11.82	11.32	10.99	11.15	11.60	10.91	11.25
45 - 54	8.28	4.33	6.28	8.83	8.62	8.73	8.75	8.01	8.37
55 - 64	2.82	1.87	2.34	8.22	6.19	7.19	7.44	5.57	6.49
65+	1.71	1.87	1.79	6.79	5.42	6.10	6.06	4.91	5.47
All	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 2.2 presents the estimate of population by sex and age separately for each of the areas-urban, rural, and Bhutan. It shows that more than 14 percent of the population belong to urban areas and 85.57 percent to the rural areas. The overall sex ratio of the population worked out to 97 males per 100 females. The age specific population showed that 37.31 percent were below 15 years of age, 57.21 percent between 15 to 64 years of age group and only 5.47 percent 65 years and over, which indicated that the population is still young.

Age Dependency Ratio

The results in Table 2.2 were used to work out age dependency ratio, which gives an indication of young (less than 15 years) and old (65 years and above) being supported by the working age (15-64 years) population. The formulae used was as under:

$$\text{Age Dependency Ratio} = \frac{\text{Population (0-14 years + 65 years and over)}}{\text{Population (15-64 years)}} \times 100$$

The age dependency ratio for urban areas, rural areas, and Bhutan worked out to 69, 76, and 75 respectively. This means that in Bhutan some 75 persons were dependent on every 100 persons in the working age group for economic support.

2.1.2 - Household Characteristics

Marital Status

Table 2.3: Distribution of Population by Marital Status and Area (Percent)

Area	Sex	Marital status				
		Never Married	Married	Widowed	Divorced/ Separated	Total
Urban	All	55.56	42.16	1.55	0.73	100.00
	Male	56.23	42.40	0.85	0.52	100.00
	Female	54.90	41.94	2.22	0.94	100.00
Rural	All	52.22	41.66	4.33	1.79	100.00
	Male	54.44	40.78	3.35	1.43	100.00
	Female	50.08	42.50	5.27	2.15	100.00
Bhutan	All	52.70	41.73	3.92	1.64	100.00
	Male	54.70	41.02	2.99	1.30	100.00
	Female	50.77	42.42	4.83	1.97	100.00

A little more than half of the female population, both in urban and rural areas, belongs to “Never married” category. The corresponding figure for male is slightly higher than the female (table 2.3).

From table 2.4 it can be seen that none of the persons marry below the age of 15 years. More than 86 percent of the population remained single or never married in the 15-19 years age group. The proportion of single decreases as the age of the population progresses. The overall proportion of single people is more than 52 percent, which is largely due to the fact that approximately 37 percent of the total population are below the age of 15 years. The marriage trend for both male and female are similar to the national trend. It could be stated that the marriages are popular among 20 to 39 age group persons.

Table 2.4: Distribution of Population by Marital Status, Age Group and Sex (Percent)

Marital Status	Age Group					
	<15	15-19	20-39	40-59	60+	All
Male						
Never married	100.00	93.41	24.47	6.20	8.47	54.70
Married	…	6.55	73.63	87.34	64.58	41.02
Widowed	…	0.05	0.65	4.56	20.44	2.99
Divorced/separated	…	…	1.25	1.90	6.52	1.30
All	100.00	100.00	100.00	100.00	100.00	100.00
Female						
Never married	100.00	80.79	16.19	2.90	4.83	50.77
Married	…	18.88	78.45	83.07	57.12	42.42
Widowed	…	0.20	1.17	11.42	33.93	4.83
Divorced/separated	…	0.13	4.20	2.62	4.12	1.97
All	100.00	100.00	100.00	100.00	100.00	100.00
All						
Never married	100.00	86.44	20.00	4.60	6.83	52.70
Married	…	13.35	76.23	85.27	61.23	41.73
Widowed	…	0.13	0.93	7.88	26.50	3.92
Divorced/separated	…	0.07	2.84	2.25	5.44	1.64
All	100.00	100.00	100.00	100.00	100.00	100.00

Adult Literacy Rate

Adult literacy rate is defined as the percentage of people aged 15 and over who can read and write a simple message in at least one language.

Table 2.5: Adult Literacy Rates by Sex and Area (Percent)

Area	Sex		
	Male	Female	All
Urban	85.1	66.9	75.9
Rural	51.9	31.7	41.5
Bhutan	56.6	36.6	46.3

Household Size

Table 2.6: Distribution of Households by Household Size (Percent)

Area	Household Size						
	1	2	3	4	5	6+	All
Urban	6.18	6.47	15.93	20.87	19.84	27.67	100.00
Rural	4.30	5.91	10.57	13.77	16.72	48.72	100.00
Bhutan	4.63	6.36	11.51	15.01	17.28	45.21	100.00

Table 2.6 presents proportion of household distribution by size. The table shows that for Bhutan household size with 6 and more account for 45 %, with 28% in urban and 49% in rural areas. However, the average size of the household work out to 5.53 for Bhutan with 4.56 for urban and 5.74 for rural. Further it could be noted that in the urban areas the household sizes increases from a single member to 6 and over. Such type of pattern is not visible in rural area.

Religion of the Household

Table 2.7: Distribution of Households by Religion and Area (Percent)

Area	Religion			
	Buddhist	Hindu	Others	All
Urban	80.08	18.18	1.73	100.00
Rural	78.19	21.71	0.09	100.00
Bhutan	78.53	21.09	0.38	100.00

Table 2.7 shows that 79 percent of the households are Buddhist, 21 percent Hindu and negligible proportion in others. In the urban areas 80 percent of the households are Buddhist and only 18 percent Hindu whereas in rural area 78 percent are Buddhist and 22 percent Hindu.

Relationship to the Head of Household and Household Composition

Table 2.8: Distribution of the Population by Relationship to the Head of Household and Area (Percent)

Relation to the Head	Urban	Rural	Bhutan
Head	21.95	17.42	18.07
Spouse	18.51	12.53	13.39
Married child	1.43	7.71	6.81
Spouse of married child	0.80	3.43	3.05
Grandchild	1.63	12.84	11.23
Unmarried child	45.02	32.56	34.36
Father/mother/in-law	1.40	2.97	2.74
Brother/sister/in-law	3.63	4.54	4.41
Servants/empl./other relatives	5.63	6.00	5.94
All	100.00	100.00	100.00

Table 2.8 presents the composition of the household. It can be seen that Bhutan has an extended family system as indicated by the presence of married children and their spouses, grand children and the in-laws in the household composition, which accounts to 28 percent. The extended family is more visible in the rural accounting to 31.49 percent of the household members other than the couple and unmarried children as compared to just 9 percent in the urban. This is a clear indication that urban households are more of a nuclear type.

2.2 - Consumer Expenditure Based on Nominal Expenditure

Major Groups

Keeping in view the requirement of deriving weights for the CPI, household consumer expenditure data were collected in great detail. A list of 435 items was identified and printed in the household schedule 1 for collection of data on value and quantity, wherever applicable. Food accounted for 124 items. These items were divided into the following major groups for statistical analysis and reporting:

- Food, beverages and tobacco (FBT)
- Clothing and foot wear (CFW)
- Housing , fuel, and power (HFP)
- Transport and communication (TC)
- Medical care and health services (MH)

- Education, recreation, entertainment and cultural (EREC)
- Household operation (HO)
- Furnishing and equipment (FE)
- Personal care and personal effects (PCE)
- Miscellaneous expenses (ME)

Monthly Household Consumer Expenditure (MHCE)

The average monthly household consumer expenditure for Bhutan was estimated at Nu. 5,947 as can be seen from Table 2.9.

Table 2.9: Monthly Household Consumer Expenditure by Area (Nu)

Area	MHCE (Nu.)	Household Size	MPCE (Nu.)
Urban	8,867	4.56	1,945
Rural	5,327	5.74	928
Bhutan	5,947	5.53	1,075

MHCE: Monthly household consumer expenditure
MPCE: Monthly per capita expenditure

The MHCE for urban areas was estimated at Nu. 8,867, while for the rural areas the corresponding estimate was Nu. 5,327. Thus, on an average, a household in the urban spent 66 percent more than that of the rural households. A detailed analysis of MHCE by ten major groups of items is presented in Table 2.10

Table 2.10: Average Monthly Household Consumption Expenditure (MHCE) by Group of Items and Area

Major group of items	Urban MHCE		Rural MHCE		Bhutan MHCE	
	(Nu.)	Percent	(Nu.)	Percent	(Nu.)	Percent
Food, Beverages & Tobacco (FBT)	3,160	35.64	2,751	51.65	2823	47.47
Clothing & Footwear (CFW)	1,432	16.15	612	11.50	756	12.71
Housing, Fuel & Power (HFP)	2,135	24.08	1,317	24.72	1460	24.55
Transport & Communication (TC)	735	8.29	101	1.90	212	3.57
Medical & Health services (MH)	65	0.73	46	0.86	49	0.82
Education, Recreation, Entertainment & Cultural (EREC)	418	4.71	65	1.23	127	2.14
Household Operations (HO)	175	1.98	60	1.13	80	1.35
Furnishing & Equipment (FE)	210	2.37	49	0.92	77	1.29
Personal Care & Personal Effects (PCE)	342	3.86	118	2.21	157	2.64
Miscellaneous Expenses (ME)	195	2.20	208	3.90	206	3.45
All	**8,866**	**100.00**	**5,327**	**100.00**	**5947**	**100.00**

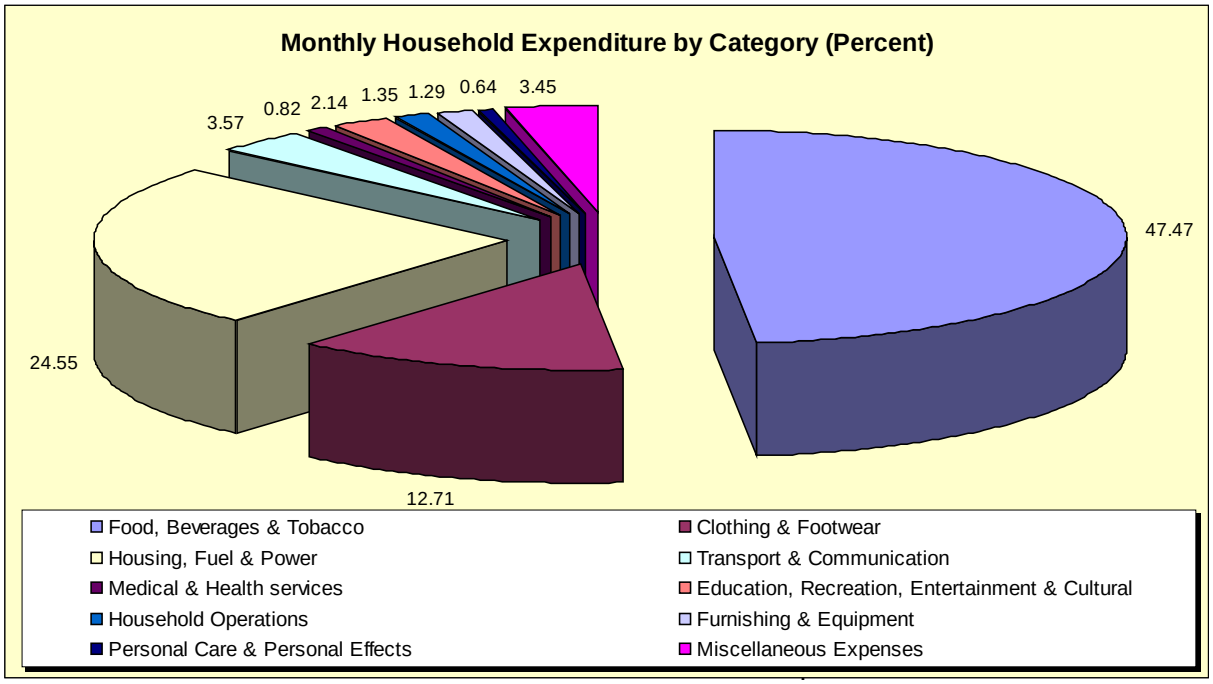


Table 2.11: Distribution and Average of Monthly Household Expenditure of Goods and Services by Household Size

			Household size									
			1		**2-4**		**5-7**		**8-10**		**11+**	
Average Household Size	5.53		1		3		6		9		13	
Food, beverages & Tobacco	2823	47.47	1272	40.56	2320.74	42.70	2934	48.56	3764	51.40	4036	54.90
Clothinf & footwear	756	12.71	358	11.43	736.18	13.54	770	12.75	885	12.08	777	10.57
Housing, Fuel & power	1460	24.55	989	31.53	1508.00	27.74	1370	22.68	1712	23.38	1690	22.99
Transport & communication	212	3.56	125	3.99	234.00	4.31	204	3.38	213	2.91	219	2.98
Monthly exp. on health	49	0.82	16	0.51	51.77	0.95	41	0.68	79	1.08	50	0.68
Education, recreation & Entertainment	127	2.14	23	0.73	112.00	2.06	128	2.12	186	2.54	158	2.15
Monthly exp. on household operation	80	1.35	47	1.50	73.88	1.36	83	1.37	95	1.30	88	1.19
Furnishing equipment	77	1.29	72	2.30	86.00	1.58	77	1.27	71	0.97	41	0.56
Monthly exp. on personnal care	157	2.64	153	4.89	150.22	2.76	161	2.67	161	2.20	155	2.11
Monthly exp. on miscellaneous	206	3.46	80	2.56	162.74	2.99	273	4.52	157	2.15	138	1.87
Total monthly consumption expenditure	5947	100.00	3137	100.00	5435.53	100.00	6041	100.00	7324	100.00	7352	100.00

The expenditure on the major group of items by size of household is presented in table 2.11. From this table, it revealed that there is a variation in expenditure by size of households. As the size of household increases the proportion of expenditure on food, beverages & tobacco are also increases.

Structure of Consumption

A common issue that arises has to do with the fact that consumption patterns can vary markedly between the rural and urban areas. Consumption expenditures can be on food and non-food. The table below shows the structure of consumption expenditures in percent distribution by area for both food and non-food.

Table 2.12: Structure of Consumption Expenditure by Area (Percent)

Consumer Items	Urban	Rural	Bhutan
Cereals and pulses	10.21	21.56	18.59
Dairy products	7.03	8.21	7.90
Eggs	0.86	0.93	0.91
Fish	1.14	1.50	1.40
Meat	4.00	3.27	3.46
Fruits/vegetables	4.66	5.08	4.97
Miscellaneous foods	4.81	6.51	6.06
Beverages	1.90	3.60	3.16
Total food	34.61	50.66	46.47
Clothing	16.15	11.50	12.71
Communication	2.52	0.14	0.76
Durable furniture/equip.	1.09	0.08	0.34
Education	2.97	1.02	1.53
Fuel and light	3.03	9.23	7.61
Medical and health services	0.73	0.86	0.82
House maintenance/minor repairs	2.70	3.09	2.99
Household operation	1.98	1.13	1.35
Housing	18.35	12.40	13.96
Miscellaneous	2.20	3.90	3.45
Non-durable furnishing	1.27	0.85	0.96
Personal care	3.86	2.21	2.64
Recreation	1.74	0.21	0.61
Tobacco	1.04	0.99	1.00
Transport	5.77	1.76	2.80
Total non-food	65.39	49.34	53.53
Total	100.00	100.00	100.00

The consumption pattern (table 2.13) shows that the rural areas spent more on cereals and pulses than the urban areas. This is true where the lower income group spent more on food. The rural households spent more than twice on food than the urban households on the contrary, the urban households spent more on clothing and housing than the rural households. This is again true that the higher income group spent more on luxury goods such as clothing than the lower income groups.

Table 2.13: Structure of Food Consumption by Area (Percent)

Item	Urban	Rural	Bhutan
Cereals and pulses	29.50	42.57	40.03
Dairy products	20.35	16.21	17.01
Eggs	2.48	1.84	1.97
Fish	3.27	2.95	3.02
Meat	11.50	6.46	7.44
Fruits and vegetables	13.50	10.01	10.69
Miscellaneous food	13.92	12.84	13.05
Beverages	5.48	7.11	6.79
All	100.00	100.00	100.00

Table 2.14: Structure of Food Consumption by Area (Percent)

Items	Urban	Rural	Bhutan
Rice	19.75	28.53	26.82
Wheat grain	0.02	0.52	0.42
Cereal preparations	8.07	12.05	11.28
Pulses	1.63	1.37	1.42
Other cereal preparations	0.02	0.10	0.08
Milk	8.85	4.85	5.62
Cheese and butter	11.50	11.36	11.39
Other diary products	0.00	0.00	0.00
Local eggs	0.46	1.42	1.24
Imported eggs	2.02	0.42	0.73
Fresh fish	1.88	0.54	0.80
Dried fish	1.32	2.37	2.16
Canned fish	0.07	0.04	0.05
Other fish	0.00	0.00	0.00
Fresh meat	10.41	5.46	6.42
Dry meat	1.09	1.01	1.02
Fruits	3.39	0.52	1.08
Vegetables	10.11	9.50	9.62
Tea	1.96	1.69	1.75
Coffee	0.28	0.04	0.08
Cooking oil	5.37	4.32	4.53
Spices and seasonings	3.61	4.67	4.47
Salt	0.34	0.50	0.47
Sugar	1.73	1.55	1.58
Jams	0.28	0.01	0.06
Pickels	0.34	0.06	0.11
Alcoholic beverages	3.08	6.72	6.02
Non-alcoholic beverages	2.40	0.39	0.78
Total	100.00	100.00	100.00

Monthly Per Capita Expenditure (MPCE)

In the analysis of household consumer expenditure it is normal to present the various estimates for a number of classes of the population formed on the basis of the MPCE. For this purpose 10 MPCE classes were derived, separately for urban and rural areas, and presented below in table 2.15 along with the estimate of average monthly per capita expenditure for each class.

Table 2.15: Average Monthly Per-Capita Consumption Expenditure by Area and Population Decile (in Ngultrum)

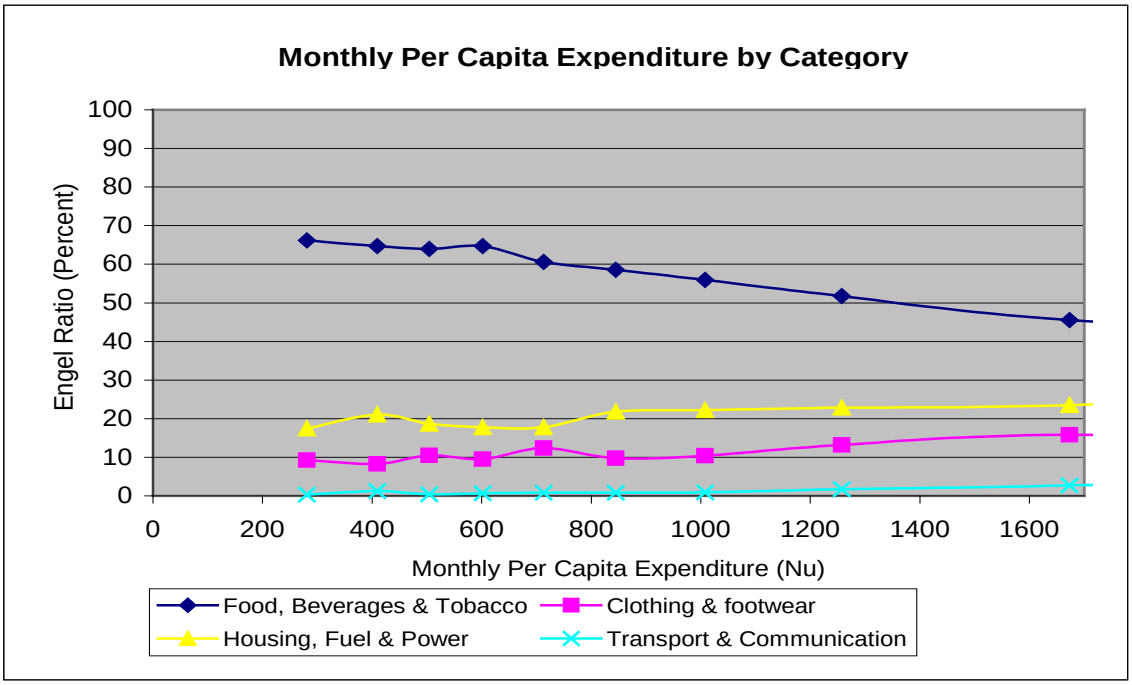
Population Decile	Urban		Rural		Bhutan	
	MPCE Class	Average (Nu)	MPCE Class	Average (Nu)	MPCE Class	Average (Nu)
1	203-776	606	125-356	226	125-376	285
2	777-955	865	357-420	395	377-450	409
3	956-1131	1043	421-511	467	451-552	504
4	1132-1295	1214	512-559	557	553-648	602
5	1296-1487	1394	600-694	645	649-774	713
6	1488-1723	1596	695-814	758	775-920	845
7	1724-2042	1875	815-956	888	921-1120	1008
8	2043-2516	2255	957-1189	1072	1121-1433	1257
9	2517-3417	2887	1190-1660	1409	1434-2040	1673
10	3418+	5718	1661+	2821	2041+	3453
All		1946		928		1075
Median		*1487*		*694*		*774*
Dispersion Ratio	*Urban 9.44*		*Rural 10.61*		*Bhutan 12.29*	

The results from table 2.15 confirm the general belief that the cost of living in the urban areas is higher. The average MPCE for the urban areas is more than double of the rural areas. The above statement is true when the average MPCE, for rural and urban areas are compared by population decile. The average MPCE over different decile groups for the urban areas and rural areas confirm vast difference between the two areas when the comparison is made sequentially from lowest ten percent class to the highest ten percent class. The median of the distribution of MPCE for nation is calculated as Nu.774, which implies that half of the population on an average spends Nu.774 per month. Similarly for the urban areas is Nu.1,487 and rural areas is Nu.694 respectively.

Table 2.16: Distribution of Monthly Per Capita Expenditure by Major Group of Items and Population Decile (Nu. and Percent)

			Population Decile																	
Major group of items	Total		1		2		3		4		5		6		7		8		9		10	
Food, beverages & Tobacco	510	47.47	186	66.20	265	64.67	322	63.96	389	64.70	433	60.62	494	58.55	564	55.94	650	51.76	762	45.54	1036	30.00
Cothing & Footwear	137	12.71	26	9.25	34	8.26	53	10.52	57	9.52	88	12.36	82	9.73	105	10.37	166	13.17	264	15.80	491	14.21
Housing, fuel & Power	264	24.57	49	17.41	86	21.02	94	18.68	107	17.80	127	17.80	184	21.79	224	22.21	287	22.84	393	23.50	1087	31.47
Transport & Communication	38	3.54	1	0.36	5	1.22	2	0.40	4	0.67	6	0.84	7	0.83	9	0.89	22	1.75	45	2.69	282	8.17
Medical and Health services	9	0.84	1	0.34	2	0.49	3	0.66	4	0.62	2	0.31	5	0.57	11	1.11	10	0.82	15	0.93	35	1.00
Education, recreation & entertainment	23	2.14	4	1.42	2	0.49	6	1.19	5	0.83	9	1.26	8	0.95	12	1.19	19	1.51	40	2.39	125	3.62
Household operation	14	1.35	3	1.21	5	1.23	6	1.17	7	1.24	10	1.44	11	1.35	13	1.30	17	1.35	23	1.39	48	1.39
Furnishing equipment	14	1.30	2	0.71	2	0.49	3	0.60	5	0.83	6	0.84	8	0.95	11	1.09	14	1.11	23	1.38	65	1.88
Personal care	28	2.64	6	2.18	6	1.40	9	1.79	10	1.74	18	2.46	19	2.26	31	3.03	32	2.57	50	2.97	103	2.98
Miscellaneous	37	3.45	3	0.93	3	0.74	5	1.04	12	2.06	15	2.07	26	3.03	29	2.86	39	3.12	57	3.42	182	5.27
Total per capita monthly consumption expenditure	1075	100.00	281	100.00	409	100.00	503	100.00	601	100.00	713	100.00	844	100.00	1009	100.00	1257	100.00	1673	100.00	3454	100.00

The figure on monthly per capita expenditure and Engel ratio percent could be used to describe consumption pattern of households at different levels and describe changes in consumption pattern with improvement in living standard of households. This figure shows that for households in Bhutan the relative importance of food as a major item group of consumption declines while that of other item groups increases with increasing incomes/total expenditure levels.



2.3 - Measurement of Income

2.3.1 - Household Income and Household Activities

Household Income

Household income is the total income accrued to usual members of the household through participation in any economic activity including receipts from other sources by household members. Income from employment includes (i) salaries and wages including allowances from paid employment; (ii) net receipts/profits derived from the operation of household enterprise/activities; and (iii) net receipts from trade or profession. Receipt from other sources include receipts, gifts and assistance received, dividends and interest from investments, imputed rental value of owner-occupied houses, pensions, rentals including landowner's share of agricultural products from leased out land. Household income also includes income from family sustenance activities, which are not considered as family-operated enterprise. Income received from begging, prostitution, smuggling is not considered as income for the HIES**.**

Household Facilities

The facilities a household avail may indicate the level of income and the state of well being besides the availability and access to the facilities. The accessibility and affordability of the facilities by the household could indirectly locate the household's position of wealth also. Facilities like land ownership. Sources of energy used for cooking and lighting are shown in the following tables.

Table 2.17: Average Land per Household by Ownership and Area

Area	Average land owned per household (acres)			
	Land Owned	Land Leased In	Neither Owned Nor Leased In	Leased Out
Urban	0.344	0.019	0.007	0.126
Rural	3.479	0.221	0.024	0.157
Bhutan	2.930	0.185	0.021	0.151

The average land holding for Bhutan is 2.93 acres, 3.48 acres in rural and 0.344 in urban areas.

Table 2.18: Distribution of Households by Primary Source of Energy for Cooking and Area

	Urban		Rural		Bhutan	
Primary Source of Energy	H'hold	Percent	H'hold	Percent	H'hold	Percent
Firewood and Chips	700	3.78	77000	89.43	77700	74.28
LPG	14600	78.92	5500	6.39	20000	19.12
Kerosene	2100	11.35	2700	3.14	5000	4.78
Electricity	800	4.32	200	0.23	1000	0.96
Others	300	1.62	700	0.81	900	0.86
Total	18500	100.00	86100	100.00	104600	100.00

Table 2.19: Distribution of Households by Primary Source of Energy for Lighting and Area

	Urban		Rural		Bhutan	
Primary Source of Energy	H'hold	Percent	H'hold	Percent	H'hold	Percent
Kerosene	300	1.63	63300	72.93	63600	60.40
Electricity	17800	96.74	15000	17.28	32800	31.15
Solar	100	0.54	500	0.58	600	0.57
Pine Trees (Mepchey)	…	…	6700	7.72	6700	6.36
Others	200	1.09	1300	1.50	1600	1.52
Total	18400	100.00	86800	100.00	105300	100.00

Household Type

The household type under HIES was determined on the basis of means of livelihood of the sample households. Income accrued to the sample household during the last 365 days from different sources was ascertained and the source which fetched the maximum income to the household was taken as the type of the household. The household type classification comprised as under:

Urban Areas: Self-employment—1; Regular wage/salary earnings—2; Casual labour—3; Others—9

Rural Areas: Self-employment in non-agriclture—1; Agriculture labour—2; Other labour—3; Self-employment in agriculture—4; Others—9

Table 2.20: Distribution of Households by Type and Area (Percent)

	Household type					
Area	1	2	3	4	9	All
Urban	25.62	70.07	1.66	N.A.	2.65	100.00
Rural	11.97	7.34	0.46	76.86	3.37	100.00

Table 2.20 presents proportion of household type based on the major source of income. It could be seen that in the urban area a high of 70 percent of the households depend on regular wages/salary, 26 percent on self-employment and others. In the rural area, as expected the picture is different showing a high of 77 percent of the households depending on self-employment in agriculture, only 12 percent on self-employment in non-agriculture and the rest in others which include agricultural labour.

Household Industry and Sources of Income

Industry or kind of economic activity refers to the nature of work done by the institution or the work place or enterprise where the person works. One or more members of the household may be pursuing economic activities either in the same industry or different industries. The household entrepreneurial activities indicate various type of productive activities performed by different members of the household to earn their livelihood. Tables 2.21 and 2.22 present various economic activities a household could participate and the sources of household income.

Note: The tables do not indicate primary source of income.

Table 2.21: Percentage of Household Entrepreneurial Activities by Area

Entrepreneurial activity	Urban			Rural			Bhutan		
	Yes	No	Total	Yes	No	Total	Yes	No	Total
Crop farming and Gardening	4.89	95.11	100	87.63	12.37	100	73.13	26.87	100
Livestock and Poultry raising	2.06	97.94	100	57.42	42.58	100	47.72	52.28	100
Mining and Quarrying	0.05	99.95	100	0.11	99.89	100	0.1	99.9	100
Fishing	0.03	99.97	100	0.37	99.63	100	0.31	99.69	100
Forestry and Hunting	0.05	99.95	100	0.02	99.98	100	0.03	99.97	100
Manufacturing and Repairs	5.45	94.55	100	5.54	94.46	100	5.53	94.47	100
Construction	1.30	98.7	100	0.34	99.66	100	0.51	99.49	100
Wholesale and retail	12.18	87.82	100	3.83	96.17	100	5.29	94.71	100
Transportation, Storage and communication	2.36	97.64	100	0.92	99.08	100	1.17	98.83	100
Hotels, guest house and Restaurants	2.57	97.43	100	0.37	99.63	100	0.76	99.24	100
Community, social recreation and personal services	0.26	99.74	100	0.08	99.92	100	0.11	99.89	100
Activities not elsewhere classified	2.02	97.98	100	1.65	98.35	100	1.72	98.28	100

Warning: Due to relatively small sample size, this table must be analyzed with care.

Table 2.22: Percentage of Households by Source of Income by Area

Source of income	Urban			Rural			Bhutan		
	Yes	No	Total	Yes	No	Total	Yes	No	Total
Crop farming and Gardening	9.10	90.90	100.00	86.37	13.63	100.00	72.83	27.17	100.00
Livestock and Poultry raising	2.65	97.35	100.00	58.43	41.57	100.00	48.65	51.35	100.00
Fishing	0.07	99.93	100.00	0.22	99.78	100.00	0.19	99.81	100.00
Forestry and Hunting	0.07	99.93	100.00	0.22	99.78	100.00	0.19	99.81	100.00
Wage/salary employment	0.32	99.68	100.00	0.41	99.59	100.00	0.39	99.61	100.00
Non-agricultural enterprise	79.83	20.17	100.00	11.68	88.32	100.00	23.62	76.38	100.00
Pension	23.08	76.92	100.00	5.11	94.89	100.00	8.26	91.74	100.00
Rent	0.97	99.03	100.00	1.10	98.90	100.00	1.08	98.92	100.00
Remittances	6.37	93.63	100.00	2.42	97.58	100.00	3.11	96.89	100.00
Interests and Dividends	5.67	94.33	100.00	21.06	78.94	100.00	18.36	81.64	100.00
Others	11.38	88.62	100.00	2.11	97.89	100.00	3.73	96.27	100.00

Warning: Due to relatively small sample size, this table must be analyzed with care.

2.3.2 - Employment

Economic Activity

Any activity resulting in production of goods and/or services that add value to the national product is considered as an economic activity. Such activities include production of all goods and services for market i.e., production for pay or profit and the production of primary commodities for own consumption and own account of fixed assets, among the non-market activities. The entire spectrum of human activity falls into two categories viz., economic and non-economic. The whole spectrum of economic activities as defined in the UN System of National Accounts 1993 were not covered under 'economic activity' for the HIES. In this survey, the term economic activity includes: (a) all market activities performed for pay or profit; (b) of all the non market activities, (i) all the activities relating to agricultural sector which result in production (including gathering of uncultivated crops, forestry, collection of firewood, hunting, fishing etc.) of agricultural produce for own consumption, and (ii) the activities relating to own account production of fixed assets. Begging, prostitution, smuggling were not considered as an economic activity for purpose of this survey.

Worker

For purpose of classifying a person a worker or not under the HIES, a reference period of 365 days is used. If during the period of 365 days a person was usually economically active (for major part of the reference

period), he/she will be considered as a worker. If a person worked for pay, profit, or family gain at least for one hour in a day then he/she will be considered as having worked for the day.

Tables 2.23 and 2.24 below indicate that the total work force participation rate from the survey is 79 percent with 56 percent in urban and 82 percent in the rural areas. In table 2.25, 2.26 and 2.27 it can be seen that the population above 14 years of age have been categorized into three broad groups based on the type of income they received during the last 365 days. Income earned through any type of productive work has been categorized as the source of income from an economic activity. Other sources of income include income received from pension, remittances, rents etc. No income group was classified for a population, who do not earn any income but are purely dependent on the earning members of the household. If a person earns through two sources the maximum income earned was treated as main source of income. Although a person who could not work but received income have been included under other sources of income. From table 2.27 it can be seen that 77 percent of the population earn from economic activities as defined, 3 percent from other sources and 20 percent of the population do not earn anything. Similarly, in the urban area 55 percent earn from economic activities, more than 2 percent from “other” sources and 43 percent do not earn anything. In the rural area a high of 80 percent earn their livelihood from economic activities, 3 percent from other sources and only 16 percent are pure dependents. The high percent of dependency in the urban population may be attributed due to housewives who are not economically active as per the definition.

Table 2.23: Distribution by Age Group, Sex and Area of Persons Aged 14 and Above by Status of Work During 365 Days Prior to Survey

Age Group	Worker						Not Worker					
	Male		Female		Total		Male		Female		Total	
National	148400	100.00	139000	100.00	287400	100.00	29200	100.00	48700	100.00	77900	100.00
15 – 24	31000	20.89	40900	29.42	71900	25.02	11900	40.75	15100	31.01	27000	34.66
25 – 34	36600	24.66	36400	26.19	73000	25.40	1100	3.77	8400	17.25	9500	12.20
35 – 44	32800	22.10	27900	20.07	60700	21.12	400	1.37	4300	8.83	4700	6.03
45 – 54	24100	16.24	20300	14.60	44400	15.45	1000	3.42	3500	7.19	4500	5.78
55 – 64	17500	11.79	9700	6.98	27200	9.46	3800	13.01	6700	13.76	10500	13.48
65 Plus	6400	4.31	3800	2.73	10200	3.55	11000	37.67	10700	21.97	21700	27.86
Urban	19700	13.27	9000	6.47	28700	9.99	5500	18.84	17200	35.32	22700	29.14
15 – 24	2300	1.55	2300	1.65	4600	1.60	4200	14.38	7500	15.40	11700	15.02
25 – 34	7400	4.99	3500	2.52	10900	3.79	400	1.37	5000	10.27	5400	6.93
35 – 44	5400	3.64	2000	1.44	7400	2.57	100	0.34	2400	4.93	2500	3.21
45 – 54	3300	2.22	900	0.65	4200	1.46	200	0.68	1000	2.05	1200	1.54
55 – 64	900	0.61	200	0.14	1100	0.38	300	1.03	600	1.23	900	1.16
65 Plus	400	0.27	100	0.07	500	0.17	300	1.03	700	1.44	1000	1.28
Rural	128700	86.73	130000	93.53	258700	90.01	23700	81.16	31500	64.68	55200	70.86
15 – 24	28700	19.34	38600	27.77	67300	23.42	7700	26.37	7600	15.61	15300	19.64
25 – 34	29200	19.68	32900	23.67	62100	21.61	700	2.40	3400	6.98	4100	5.26
35 – 44	27400	18.46	25900	18.63	53300	18.55	300	1.03	1900	3.90	2200	2.82
45 – 54	20800	14.02	19400	13.96	40200	13.99	800	2.74	2500	5.13	3300	4.24
55 – 64	16600	11.19	9500	6.83	26100	9.08	3500	11.99	6100	12.53	9600	12.32
65 Plus	6000	4.04	3700	2.66	9700	3.38	10700	36.64	10000	20.53	20700	26.57

Warning: Due to relatively small sample size, this table must be analyzed with care.

Table 2.24: Distribution by Age Group, Sex and Area of Persons Aged 14 Years and Above by Status of Work During 365 Days Prior to Survey

Age	Worker			Not Worker		
Group	Male	Female	Total	Male	Female	Total
National	51.64	48.36	100.00	37.48	62.52	100.00
15 – 24	43.12	56.88	100.00	44.07	55.93	100.00
25 – 34	50.14	49.86	100.00	11.58	88.42	100.00
35 – 44	54.04	45.96	100.00	8.51	91.49	100.00
45 – 54	54.28	45.72	100.00	22.22	77.78	100.00
55 – 64	64.34	35.66	100.00	36.19	63.81	100.00
65 Plus	62.75	37.25	100.00	50.69	49.31	100.00
Urban	68.64	31.36	100.00	24.23	75.77	100.00
15 – 24	50.00	50.00	100.00	35.90	64.10	100.00
25 – 34	67.89	32.11	100.00	7.41	92.59	100.00
35 – 44	72.97	27.03	100.00	4.00	96.00	100.00
45 – 54	78.57	21.43	100.00	16.67	83.33	100.00
55 – 64	81.82	18.18	100.00	33.33	66.67	100.00
65 Plus	80.00	20.00	100.00	30.00	70.00	100.00
Rural	49.75	50.25	100.00	42.93	57.07	100.00
15 – 24	42.64	57.36	100.00	50.33	49.67	100.00
25 – 34	47.02	52.98	100.00	17.07	82.93	100.00
35 – 44	51.41	48.59	100.00	13.64	86.36	100.00
45 – 54	51.74	48.26	100.00	24.24	75.76	100.00
55 – 64	63.60	36.40	100.00	36.46	63.54	100.00
65 Plus	61.86	38.14	100.00	51.69	48.31	100.00

Warning: Due to relatively small sample size, this table must be analyzed with care.

Table 2.25: Distribution by Age Group, Sex and Area of Persons Aged 14 Years and Above by Type of Income Received During 365 Days Prior to Survey

Age Group	Type of Income Received and Sex											
	Economic Activity				Other Sources				No Income			
	Male		Female		Male		Female		Male		Female	
National	145000	100.00	136100	100.00	4200	100.00	6600	100.00	28500	100.00	44700	100.00
15 - 24	30600	21.10	40300	29.61	800	19.05	900	13.64	11500	40.35	14700	32.89
25 - 34	35900	24.76	35500	26.08	700	16.67	1800	27.27	1100	3.86	7400	16.55
35 - 44	32400	22.34	27400	20.13	500	11.90	900	13.64	400	1.40	4000	8.95
45 - 54	23700	16.34	19900	14.62	500	11.90	700	10.61	1000	3.51	2900	6.49
55 - 64	16400	11.31	9200	6.76	1200	28.57	1300	19.70	3800	13.33	5900	13.20
65 Plus	6000	4.14	3800	2.79	500	11.90	1000	15.15	10700	37.54	9800	21.92
Urban	19300	100.00	8800	100.00	400	100.00	800	100.00	5400	100.00	16400	100.00
15 - 24	2200	11.40	2200	25.00	200	50.00	200	25.00	4100	75.93	7300	44.51
25 - 34	7300	37.82	3400	38.64	100	25.00	300	37.50	400	7.41	4800	29.27
35 - 44	5400	27.98	2000	22.73	…	…	200	25.00	100	1.85	2200	13.41
45 - 54	3200	16.58	900	10.23	100	25.00	…	…	200	3.70	900	5.49
55 - 64	900	4.66	200	2.27	…	…	100	12.50	300	5.56	500	3.05
65 Plus	300	1.55	100	1.14	…	…	…	…	300	5.56	700	4.27
Rural	125700	100.00	127300	100.00	3800	100.00	5800	100.00	23100	100.00	28300	100.00
15 - 24	28400	22.59	38100	29.93	600	15.79	700	12.07	7400	32.03	7400	26.15
25 - 34	28600	22.75	32100	25.22	600	15.79	1500	25.86	700	3.03	2600	9.19
35 - 44	27000	21.48	25400	19.95	500	13.16	700	12.07	300	1.30	1800	6.36
45 - 54	20500	16.31	19000	14.93	400	10.53	700	12.07	800	3.46	2000	7.07
55 - 64	15500	12.33	9000	7.07	1200	31.58	1200	20.69	3500	15.15	5400	19.08
65 Plus	5700	4.53	3700	2.91	500	13.16	1000	17.24	10400	45.02	9100	32.16

Warning: Due to relatively small sample size, this table must be analyzed with care.

Table 2.26: Distribution by Age Group and Area of Persons Aged 14 Years and Above by Type of Income Received During 365 Days Prior to Survey

Age Group	Type of Income Received							
	Economic Activity		Other Sources		No Income		Total	
	Person	%	Person	%	Person	%	Person	%
National	281100	100.00	10900	100.00	73200	100.00	365200	100.00
15 - 24	70900	25.22	1700	15.60	26200	35.79	98800	27.05
25 - 34	71400	25.40	2500	22.94	8500	11.61	82400	22.56
35 - 44	59800	21.27	1400	12.84	4400	6.01	65600	17.96
45 - 54	43600	15.51	1200	11.01	3900	5.33	48700	13.34
55 - 64	25600	9.11	2500	22.94	9700	13.25	37800	10.35
65 Plus	9800	3.49	1600	14.68	20500	28.01	31900	8.73
Urban	28100	100.00	1300	100.00	21800	100.00	51200	100.00
15 - 24	4400	15.66	400	30.77	11400	52.29	16200	31.64
25 - 34	10700	38.08	400	30.77	5200	23.85	16300	31.84
35 - 44	7400	26.33	200	15.38	2300	10.55	9900	19.34
45 - 54	4100	14.59	100	7.69	1100	5.05	5300	10.35
55 - 64	1100	3.91	100	7.69	800	3.67	2000	3.91
65 Plus	400	1.42	100	7.69	1000	4.59	1500	2.93
Rural	253000	100.00	9600	100.00	51400	100.00	314000	100.00
15 - 24	66500	26.28	1300	13.54	14800	28.79	82600	26.31
25 - 34	60700	23.99	2100	21.87	3300	6.42	66100	21.05
35 - 44	52400	20.71	1200	12.50	2100	4.09	55700	17.74
45 - 54	39500	15.61	1100	11.46	2800	5.45	43400	13.82
55 - 64	24500	9.68	2400	25.00	8900	17.32	35800	11.40
65 Plus	9400	3.72	1500	15.63	19500	37.94	30400	9.68

Warning: Due to relatively small sample size, this table must be analyzed with care.

Table 2.27: Distribution by Age Group and Area of Persons Aged 14 Years and Above by Type of Income Received During 365 Days Prior to Survey (Percent)

Age Group	Type of Income Received			
	Economic Activity	Other Sources	No Income	Total
National	76.97	2.98	20.04	100.00
15 - 24	71.76	1.72	26.52	100.00
25 - 34	86.65	3.03	10.32	100.00
35 - 44	91.16	2.13	6.71	100.00
45 - 54	89.53	2.46	8.01	100.00
55 - 64	67.72	6.61	25.66	100.00
65 Plus	30.72	5.02	64.26	100.00
Urban	54.88	2.54	42.58	100.00
15 - 24	27.16	2.47	70.37	100.00
25 - 34	65.64	2.45	31.90	100.00
35 - 44	74.75	2.02	23.23	100.00
45 - 54	77.36	1.89	20.75	100.00
55 - 64	55.00	5.00	40.00	100.00
65 Plus	26.67	6.67	66.67	100.00
Rural	80.57	3.06	16.37	100.00
15 - 24	80.51	1.57	17.92	100.00
25 - 34	91.83	3.18	4.99	100.00
35 - 44	94.08	2.15	3.77	100.00
45 - 54	91.01	2.53	6.45	100.00
55 - 64	68.44	6.70	24.86	100.00
65 Plus	30.92	4.93	64.14	100.00

Warning: Due to relatively small sample size, this table must be analyzed with care.

Usual Economic Activity Status

The three categories of economic activity status are- (i) employed (or at work); (ii) not employed but available for work; and (iii) neither employed nor available for work. The activity status of a person can change day to day. The number of days a person was engaged in any of the three categories above during the last 365 days is ascertained and the largest number of days amongst these three categories is termed as the usual economic activity status of the person.

Based on the definition it can be stated that the total employment rate for the survey population is 95.56 percent and unemployment rate as 4.44 percent, not considering not available for employment. The corresponding rates for urban and rural areas are 96.54 percent and 95.45 percent respectively.

Table 2.28: Distribution by Age Group, Sex and Area of Persons Aged 14 Years and Above by Usual Economic Activity Status During 365 Days Prior to Survey

Age Group	Employed				Available for Employment				Not Available for Employment			
	Male		Female		Male		Female		Male		Female	
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
National	137000	100.00	126300	100.00	5600	100.00	6600	100.00	5900	100.00	6000	100.00
15 - 24	27500	20.07	36400	28.82	1200	21.43	1700	25.76	2300	38.98	2800	46.66
25 - 34	34700	25.33	33400	26.44	1200	21.43	1700	25.76	800	13.56	1300	21.67
35 - 44	31200	22.77	26000	20.59	1100	19.64	1200	18.18	500	8.47	700	11.67
45 - 54	22100	16.13	18300	14.49	1100	19.64	1200	18.18	1000	16.95	600	10.00
55 - 64	16200	11.82	9000	7.13	800	14.29	300	4.55	500	8.47	400	6.67
65 plus	5300	3.87	3200	2.53	200	3.57	500	7.58	800	13.56	200	3.33
Urban	19000	13.87	7800	6.18	300	5.36	500	7.58	200	3.39	600	10.00
15 - 24	2000	1.46	1800	1.43	100	1.79	200	3.03	200	3.39	300	5.00
25 - 34	7300	5.33	3100	2.45	100	1.79	200	3.03	…	…	200	3.34
35 - 44	5400	3.94	1800	1.43	...	0.00	100	1.52	...	...	100	1.67
45 - 54	3200	2.34	800	0.63	100	1.79	...	...	...	...	...	...
55 - 64	800	0.58	200	0.16	...	...	...	...	...	...	...	...
65 plus	300	0.22	100	0.08	...	...	...	...	...	...	...	...
Rural	118000	86.13	118500	93.82	5300	94.64	6100	92.42	5700	96.61	5400	90.00
15 - 24	25500	18.61	34600	27.40	1100	19.64	1500	22.73	2100	35.59	2500	41.66
25 - 34	27400	20.00	30300	23.99	1100	19.64	1500	22.73	800	13.56	1100	18.33
35 - 44	25800	18.83	24200	19.16	1100	19.64	1100	16.67	500	8.47	600	10.00
45 - 54	18900	13.80	17500	13.86	1000	17.86	1200	18.18	1000	16.95	600	10.00
55 - 64	15400	11.24	8800	6.97	800	14.29	300	4.55	500	8.47	400	6.67
65 plus	5000	3.65	3100	2.45	200	3.57	500	7.58	800	13.56	200	3.33

Warning: Due to relatively small sample size, this table must be analyzed with care.

2.3.3 - Income or Expenditure Inequality

Table 2.29: Mean Monthly Per-Capita and Share of Consumption Expenditure by Population Decile and Area (in Ngultrum)

Population Decile	Urban		Rural		Bhutan	
	Mean	Percent	Mean	Percent	Mean	Percent
Lowest 10 percent	605.75	3.11	266.21	2.87	280.64	2.63
Next 10 percent	864.98	4.46	394.52	4.27	409.31	3.78
Next 10 percent	1042.95	5.34	466.91	5.00	503.59	4.70
Next 10 percent	1214.20	6.23	557.31	6.03	602.04	5.58
Next 10 percent	1394.45	7.22	645.46	6.99	713.41	6.67
Next 10 percent	1595.99	8.14	757.87	8.13	844.68	7.81
Next 10 percent	1874.62	9.62	888.11	9.53	1008.11	9.42
Next 10 percent	2255.06	11.61	1072.09	11.64	1257.26	11.66
Next 10 percent	2887.15	14.85	1407.08	15.12	1672.88	15.59
Highest10 percent	5718.48	29.42	2820.90	30.42	3452.81	32.16
All	**1945.99**	**100.00**	**927.75**	**100.00**	**1074.64**	**100.00**
Dispersion ratio	9.44		10.61		12.29	

The decile dispersion ratio sets the average income of the richest 10 percent of the population in relation to the average income of the bottom 10 percent.

2.3.4 - Lorenz Curve and Gini Coefficient

The Lorenz curve maps the cumulative expenditure share on the vertical axis against the distribution of the population on the vertical axis. If each individual had the same income, or total equality, the income distribution curve would be the straight line in the graph.

The variables plotted are always Cumulative Percentages, so the scale is always 0 to 100. The data need to be ordered from “lowest concentration” to “highest concentration”. The further the curve from the Line of Equality (the diagonal), the greater the concentration of the variable (or the greater inequality). The closer the curve to the diagonal, the more evenly spread the variable is.

Fig. 1.2: Lorenz curve (per capita expenditure)

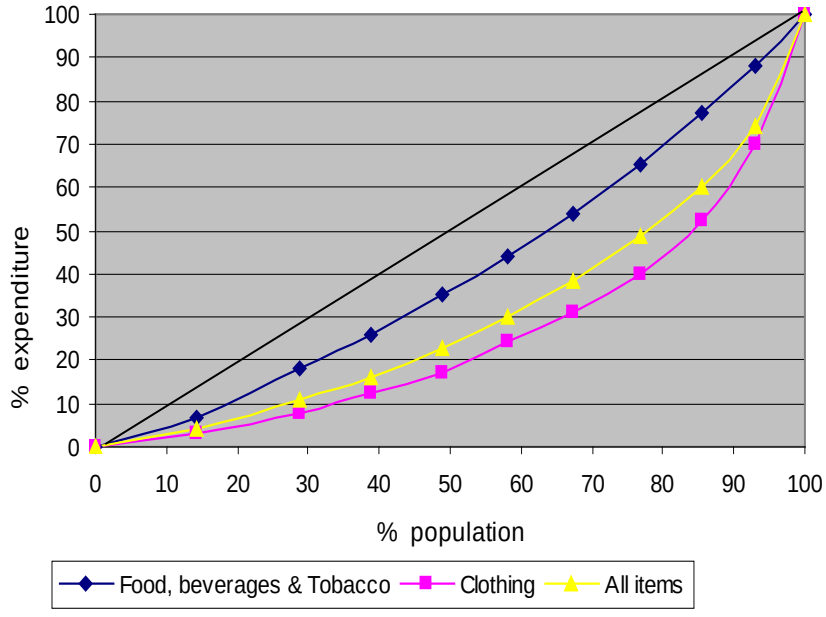


Figure 1.2 shows that inequality (or concentration) is relatively low for the food and beverages expenditures, compared with expenditures on clothing.

We can also measure the (in)equality with the Gini coefficient.[4] If income is distributed completely equally, then, the Gini coefficient is zero; if only one individual owns all income, it is one. The Gini coefficient of inequality varies between 0, (or complete equality) of income to 1, (or complete inequality, one person has all the income, all others have none).

Using the expenditure as proxy for income it can be stated that the income inequality as measured through Gini coefficient is 0.341 for the nation.

Also from table 2.30 it can be stated that 58.21% of persons had per capita expenditure below Nu.775 and the share of all such persons in aggregate per capita expenditure was 29.98%. Similarly, one can also find the shares of ordinal group like the bottom 50 per cent or the top 10 per cent in aggregate per capita expenditure by interpolation using the columns P, Q_1, Q_2 and Q in table 2.30.

Share of bottom 50 percent =

$$22.79 + \frac{50 - 48.88}{58.21 - 48.21} x(29.88 - 22.79) \quad = \textbf{23.58\%}$$

Share of bottom 90 percent =

$$60.35 + \frac{90 - 85.44}{93.09 - 85.44} x(74.20 - 60.35) \quad = \textbf{68.61\%}$$

Share of top 10 percent = 100 - 68.61 = **31.39%**

It is evident from this calculation that there is an inequality in the income distribution for Bhutan indicating that about 31 percent of the aggregated income is enjoyed by the top 10 percent of population as compared to 24 percent for bottom 50 percent of population.

Table 2.31: Gini Coefficient for Total Nominal Expenditure, Food and Beverages, and Clothing

Total	Food & Beverages	Clothing
0.341	0.193	0.482

[4] More technical information on the Gini coefficient is available in paragraph 3.5.4. Please note that the Gini coefficient presented in this chapter is based on nominal expenditures. The Gini coefficient presented in paragraph 3.5.4 is based on real expenditures, which explains the difference among the figures.

Table 2.30: Computation of Lorenz and Concentration Curves Based on 2000 HIES

Total Per Capita Monthly Expenditure in Nu.	% of Persons	Cum.% of Persons	Average Per-Capita Monthly Expenditure (Nu.)			% Share in Aggregate Consumption			Cumulative % Shares in Aggregate Consumption			$Q+Q_{-1}$		
			Food and Beverage $\bar{y}_1$	Clothing $\bar{y}_2$	All Items $\bar{x}$	Food and Beverage q_1	Clothing q_2	All Items q	Food and Beverage Q_1	Clothing Q_2	All Items Q	Food and Beverage	Clothing	All Items
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
125 - 376	14.19	14.19	90.54	26.05	280.64	6.89	3.25	4.31	6.89	3.25	4.31	6.89	3.25	4.31
377 - 450	14.59	28.77	143.12	33.81	409.31	11.19	4.34	6.46	18.08	7.59	10.77	24.97	10.84	15.08
451 - 552	10.00	38.78	146.10	52.90	503.59	7.83	4.65	5.44	25.92	12.24	16.21	44.00	19.83	26.98
553 - 647	10.11	48.88	168.61	57.24	602.04	9.14	5.09	6.58	35.05	17.33	22.79	60.97	29.57	39.00
648 - 774	9.32	58.21	177.71	88.17	713.41	8.88	7.22	7.19	43.93	24.55	29.98	78.98	41.88	52.77
775 - 920	9.20	67.41	201.96	82.18	844.68	9.96	6.65	8.40	53.89	31.20	38.38	97.82	55.75	68.36
921 - 1120	9.44	76.84	227.55	104.60	1008.11	11.51	8.68	10.29	65.41	39.88	48.67	119.30	71.08	87.05
1121 - 1433	8.59	85.44	255.22	165.51	1257.26	11.75	12.50	11.68	77.16	52.38	60.35	142.57	92.26	109.02
1434 - 2040	7.66	93.09	266.378	264.26	1672.88	10.94	17.80	13.85	88.10	70.18	74.20	165.26	122.56	134.55
2041 +	6.91	100.00	321.42	490.91	3452.81	11.91	29.82	25.80	100.00	100.00	100.00	188.10	170.18	174.20
All	100.00	-	186.55	113.74	924.90	100.00	100.00	100.00	-	-	-	-	-	-

Gini Coefficient for Food and Beverages Expenditure = $1-\frac{\sum Col.(2)xCol.(13)}{10{,}000} = 1-\frac{8071.06}{10{,}000} =$ **0.193**

Gini Coefficient for Expenditure on Clothing = $1-\frac{\sum Col.(2)xCol.(14)}{10{,}000} = 1-\frac{5183.01}{10{,}000} =$ **0.482**

Gini Coefficient for Total Expenditure = $1-\frac{\sum Col.(2)xCol.(15)}{10{,}000} = 1-\frac{6058.60}{10{,}000} =$ **0.341**

Part III – Measuring Poverty and Inequality

3.1 - Measurement of Poverty

3.1.1 - Different Approaches

Four groups of measures are commonly used:

Income/Expenditure Indicators

One considers that an individual has a higher living standard if his/her income or expenditure is higher. This approach is referred to as the money-metric measurement of poverty.

The HIES 2000 data provide the relevant information for implementing the money-metric approach of poverty.

Composite Indicators

Poverty is measured based on a range of social and economic statistics such as income and expenditure, literacy, health, nutritional status, housing and sanitation, water supply, etc. These indicators are not for use within a country. They are used for international comparison. One example is the Human Development Index from UNDP.

The human development index (HDI) measures the average achievement of a country in basic human capabilities. The HDI indicates whether people lead a long and healthy life, are educated and knowledgeable and enjoy a decent standard of living. The HDI examines the average condition of all people in a country: distributional inequalities for various groups of society have to be calculated separately.

The HDI is a composite of three basic components of human development: longevity, knowledge and standard of living. Longevity is measured by life expectancy. Knowledge is measured by a combination of adult literacy (two-thirds weight) and mean years of schooling (one-third weight). Standard of living is measured by purchasing power, based on real GDP per capita adjusted for the local cost of living (purchasing power parity, or PPP).

The breakthrough for the HDI was to find a common measuring rod for the socioeconomic distance traveled. The HDI sets a minimum and a maximum for each dimension and then shows where each country stands in relation to these scales—expressed as a value between 0

and 1. Since the minimum adult literacy rate is 0% and the maximum is 100%, the literacy component of knowledge for a country where the literacy rate is 75% would be 0.75. Similarly, the minimum for life expectancy is 25 years and the maximum 85 years, so the longevity component for a country where life expectancy is 55 years would be 0.5. For income the minimum is $100 (PPP) and the maximum is $40,000 (PPP). Income above the average world income is adjusted using a progressively higher discount rate. The scores for the three dimensions are then averaged in an overall index.

(UNDP web site: http://www.undp.org/hdro)

Based on the HDI, Bhutan is classified by the UN among the least developed countries in the World, ranking 142th out of 174 countries (1998). However, the quality of life in Bhutan seems higher than might be inferred from this HDI ranking. This ranking is based on the UN estimate of Bhutan's population (over 1.8 million) rather than the Government's official estimate of 650,000. Indeed, after allowing for these data adjustments, the United Nations Development Program (UNDP) office in Thimphu concluded that the HDI index for 1996 would have ranked Bhutan 130th out of 175 countries instead of 155th in the official *Human Development Report*. Reflecting official data and using the UN's HDI classification methodology, Bhutan's Planning Commission Secretariat calculated that the HDI increased from 0.325 in 1984 to 0.521 in 1994, which, if accurate, would be a significant achievement. *(ADB, Country Assistance Plan (2001-2003))*

Social Participation Indicators

Poverty is defined as the incapacity to fulfill a commonly accepted set of social functions such as meal sharing, gift giving, celebration of social events, etc. This measurement is based on complex sociological studies (World Bank-EDI, 1997).

Table 3.1. Human Development Index, Bhutan, 1995 and 1998

1995	Bhutan	All developing countries	Least developed countries	Industrial countries	World
Rank (out of 174 countries)	155				
Life expectancy at birth (years)	52	62.2	51.16	74.17	63.62
Adult literacy rate (%)	42.2	70.44	49.2	98.63	77.58
Combined first-, second- and third-level gross enrolment ratio (%)	31	57.49	36.42	82.81	61.59
Real GDP per capita (PPP$)	1382	3068	1008	16337	5990
Adjusted real GDP per capita (PPP$)	1382.24	3068	1008	6194	5990
Life expectancy index	0.4493	0.62	0.436	0.8195	0.6437
Education index	0.3845	0.6612	0.4494	0.9336	0.7225
GDP index	0.206	0.4778	0.1462	0.9811	0.9482
Human development index (HDI) value	0.347	0.5864	0.3439	0.9114	0.7715
Real GDP per capita (PPP$) rank minus HDI rank	-13				

1998	Bhutan	All developing countries	Least developed countries	OECD	World
Rank (out of 174 countries)	142				
Life expectancy at birth (years)	61.2	64.7	51.9	76.4	66.9
Adult literacy rate (%)	42.0	72.3	50.7	97.4	78.8
Combined first-, second- and third-level gross enrolment ratio (%)	33	60	37	86	64
Real GDP per capita (PPP$)	1536	3270	1064	20357	6526
Life expectancy index	0.60	0.66	0.45	0.86	0.70
Education index	0.39	0.68	0.46	0.94	0.74
GDP index	0.46	0.58	0.39	0.89	0.70
Human development index (HDI) value	0.483	0.642	0.435	0.893	0.712
Real GDP per capita (PPP$) rank minus HDI rank	-4				

(Source: UNDP web site: http://www.undp.org/hdro)

Subjective Indicators

People are asked to assess their own status, based on their own definition of poverty.

One example of this approach is the "*rapid assessment of poverty based on perceptions*" that was conducted in Bhutan in June 2000.

Data were collected characterizing the present "development landscape" including many material and non-material living standard dimensions in order to be able to establish benchmarks at low geographical levels, that is at Dzongkhag and Geog level.

A proper household survey would have been an obvious but expensive and time-consuming way to obtain this information. In order to reduce the cost of the survey, two groups of respondents have been selected:

the Dzongkhags and the Ministries. First, the survey questionnaire was handed over to all 20 Dasho Dzongdas, They were asked to provide their cooperation, assistance, support and guidance to implement filling out the questionnaire about existing facilities and perceptions of the living standards in the towns and Geogs in their respective Dzongkhags. Secondly, relevant sector extracts of the complete questionnaire were made and handed over to the PPD heads of the Ministries of Health and Education, Agriculture, Communication, and Trade and Industry. They were requested to use their knowledge and perceptions based on existing data available in the Ministries by filling out their sector forms for all 202 Geogs in the country.

This approach of course has limitations. A rapid assessment like this where mainly qualitative data are obtained can cover a wide range of living standard characteristics of the population in all the Geogs, but the data are second-hand and not obtained from the households themselves. The quality of the data depends on perceptions of the local administrations and that of the Ministries.

(Planning Commission, Poverty Assessment and Analysis 2000, draft)

3.1.2 - Reasons for Setting Poverty Lines and Establishing Poverty Profiles

Poverty alleviation efforts are best founded on a sound diagnosis of the underlying causes and dimensions of poverty. Across different countries, regions, communities or even families, the identity of the poor, the degree of their poverty, and its causes, will differ. In order to develop realistic policies for poverty alleviation in a given setting, it is essential to understand the nature of poverty in that specific setting.

A common component in virtually all approaches to poverty analysis is the setting of a poverty line. The most obvious purpose of a poverty line is to distinguish the poor from the non-poor. This function as a threshold also has other applications. (J.O.Lanjouw, UNDP, ?)

3.1.2.1 - Monitoring Poverty

A common reason for constructing a poverty line is to allow the calculation of poverty rates (for example, the proportion of the population that is poor or some other more complex poverty measure). These poverty rates can then be used to make comparisons across groups and to monitor changes in poverty over time in order to inform policymaking. For example, comparisons of poverty rates for different regions within a country might

help in the targeting of transfers or to determine the best locations for development expenditures. In addition, the success of poverty alleviation efforts could be judged by tracking changes in poverty rates over time. The effect of other policies on the poor, such as liberalization or stabilization efforts, could also be assessed by looking at changes in poverty rates before and after implementation. For these comparisons to be meaningful, the poverty lines used in each setting being compared must represent the same welfare level. (J.O.Lanjouw, UNDP, ?)

3.1.2.2 - Developing a Poverty Profile

Although useful for making comparisons, calculating poverty rates does not, by itself, bring one much closer to answering the more fundamental questions regarding the determinants of poverty. However, a poverty line can also be used to identify the poor as a group so that they can be focused on in greater detail. A poverty profile can be drawn up which describes the characteristics of those in poverty. This can then be used to investigate the causes of poverty. More immediately, the profile identifies correlates of poverty (such as location, ethnicity, occupational status and so on), which can be used by policy makers to reach the poor when detailed household-level information on income or expenditure is not available. (J.O.Lanjouw, UNDP, ?)

3.1.2.3 - Poverty Assessment

The poverty profile, in conjunction with other inputs, can be used to formulate a poverty assessment (the foundation for developing or modifying national poverty reduction strategies). It covers all major analyses required for a poverty assessment: the national policy framework (including macroeconomic policy reviews, public expenditure reviews, etc.); the institutional framework and service delivery systems; opportunities for empowering the poor; and external causes of poverty.

Although many existing poverty profiles cover a broad range of characteristics of the poor, consistent with a human development approach, most poverty assessments tend to be based largely on income/consumption data, to the neglect of other poverty-related data. The result is often a biased and incomplete assessment of poverty. (*Poverty Assessments*, Renata Lok-Dessalien, UNDP, ?)

3.1.2.4 - Establishing Priority Areas

Since it is impossible to assess all elements of the national policy framework with equal depth, the poverty profile should be used to flag important areas for concentration. In other words, the emphasis of the policy review should be based on knowledge of the main characteristics of the poor, where they live and why they are poor, as well as an understanding of which types of policies, and instruments thereof, are most likely to have the strongest impact upon them (both positive and negative). (*Poverty Assessments*, Renata Lok-Dessalien, UNDP, ?)

3.2 - Poverty Lines: International Standards

In deriving poverty lines, many assumptions are made.

All poverty lines will retain an element of arbitrariness, and a convincing analysis of poverty is built on a whole sequence of steps with the poverty line being just one of them.

While the extent to which poverty is a subject of popular debate depends on many factors aside from where the poverty line happens to be located, a poverty line which is clearly understood and which is easy to interpret, by laymen as well as experts, can help to encourage such debate. These latter purposes would suggest, therefore, that emphasis should be on intuition and simplicity. (J.O.Lanjouw, UNDP, ?)

3.2.1 - Relative versus Absolute Poverty Lines

There are two main types of poverty lines: relative and absolute.

3.2.1.1 - Relative Poverty Line

A relative poverty line is simply determined from a percentage cut-off point in the welfare distribution, such as the income or consumption level below which, say, 20 per cent of the population is located. Alternatively, it might refer to a cut-off point such as one-half the median income or expenditure. (J.O.Lanjouw, UNDP, ?)

Table 3.2. Relative Poverty Lines as Cut Points for Per Capita Monthly Expenditure Quintiles

Percentage of population	20 %	40%	60%	80%
Cut point (relative poverty line)	548.06	789.72	1096.08	1658.50

Table 3.3. Relative Poverty Lines as One Half of the Median of the Per Capita Monthly Expenditure (Adjusted for Regional Price Differences)

Median	934.6	
Poverty Line: Half Median	467.3	
Poor (% and number)	12.4 %	71,978
Non poor (% and number)	87.6 %	510,436
Total (% and number)	100 %	582,414

This approach to setting the poverty line is attractive in that it is both simple and transparent, and it is quite functional in terms of identifying a population sub-group upon which to focus attention. There are two principal disadvantages to this approach, however. First, a relative poverty line is not terribly useful if one wants to monitor poverty over time or space. Doesn't yield a consistent set of comparisons for the measurement of poverty. There is always a bottom 30 per cent of the population, even if living standards for the whole population have risen over time. Similarly, this approach does not allow for comparisons of poverty across regions. Second, the relative poverty line is essentially quite arbitrary. It is not clear why poverty should be defined in terms of one percentage point instead of another—and what percentage point is settled upon can have a bearing on the characteristics of the population subgroup designated as poor. (J.O.Lanjouw, UNDP, ?)

3.2.1.2 - Absolute Poverty Line

An absolute poverty line is explicitly linked to a specific welfare level. Anchoring the poverty line in this way allows one to make comparisons over time or across groups. (J.O.Lanjouw, UNDP, ?)

A household is said to be poor if its income or consumption level is insufficient to acquire a given level of goods and services regarded as essential for a minimum standard of living. An absolute poverty line fixes the poverty line at a level of food consumption or total consumption that assures basic consumption needs are met.

In chapter 3.3 of this report, such an absolute poverty line will be constructed.

3.2.2 - Income or Consumption?

Most multi-topic surveys, as well as income and expenditure surveys, collect detailed Information on household income and household expenditure. Which of the two, then, should be used for welfare measurement? If both sections are well-developed—and the expenditure section, for example, probes for outlays on specific goods and not only for aggregate categories--consumption expenditures may be preferable to an indicator such as household income in developing countries, for many reasons:

- Consumption expenditures reflect not only what a household can command based on its current income, but also whether that household can access credit markets or household savings at times when current income is low or even negative, due perhaps to seasonal variation or harvest failure. Consumption can therefore provide a better picture of longer-run standard of living than current income.
- In poor agrarian economies, incomes for many of the rural population fluctuate significantly during the year in line with the harvest cycle. Making seasonal adjustments can be difficult. Also, to accurately measure net income, farming households will have to record and remember gross income, including self-consumption of produce, and all inputs purchased for agricultural production.
- In economies with large informal sectors, households might find it difficult to correctly recall income from many informal-sector activities that immediately pay for the purchase of food or other necessities.
- Where consumption information is collected, a poverty line can usually be derived from the same survey, thereby strengthening the link between the welfare indicators used in the analysis and the threshold determined to separate the poor from the non-poor.

(A.Coudouel and J.Hentschel, 2000)

Last but not least, quality of income data may be questionable, as is the case for the HIES 2000 (see 1.1.6.3).

3.2.3 - Different Approaches for Absolute Poverty Lines

3.2.3.1 - The Direct or Basic-Needs Approach

Unsatisfied human needs can be observed directly. For instance, one can find out if somebody is able to read and write, or, one can calculate the caloric intake of a person to define if he/she is meeting this measure of nutritional requirements. One is thus verifying the factual satisfaction of needs. The observed condition is compared, need by need, with its

normative threshold. This is the direct or basic-needs approach to poverty measurement. A nontrivial issue regarding this method is what elements to include as basic needs.

Basic need measures focus not only on material deprivation, but also on deprivation in access to basic services, such as safe drinking water and health and education services.

Subsistence measures focus on material deprivation, such as inadequate consumption of food and non-food items. (J.Boltvinik, ?)

3.2.3.2 - The Indirect Approach

Alternatively, one can measure the resources (not only income but, in a more general sense, entitlement or rights) that a household commands, and compare the magnitude and composition of these resources with the resource requirement to meet the set of basic needs. This is the indirect approach to the measurement of poverty. When the resources identified are reduced to private current income (or private consumption expenditures) the methodology is referred to as poverty line. This consists of comparing a specified level of income (or consumption) called "the poverty line" with actual household income (or consumption/ expenditure). Both terms of the comparison are expressed as a quantity of money per unit of time. This is the only method, within the indirect approach, which has been applied empirically. In the indirect approach, what one identifies is the potential satisfaction of human needs. In effect, the household with a high level of income might not satisfy any need if it saves most of its income, or even when it spends huge amounts on things like alcohol and drugs. Nevertheless, the method classifies them as non-poor when they have the resources to meet needs but choose not to do so. (J.Boltvinik, ?)

3.3 - Setting-up the Poverty Lines for Bhutan

The indirect approach will be used. Many different methods or variants may be implemented. We chose to apply a method recommended and widely used by the World Bank (M.Ravallion, 1994; A.Coudouel and J.Hentschel, 2000).

Poverty lines are made of two components: (i) a food poverty line, giving the cost of a bundle of goods attaining a pre-determined minimum food energy requirement, and (ii) an allowance for basic non-food goods.

The approach involves two basic steps:

1. Setting and valuation of the basic needs food bundle. This approach requires detailed household survey data on food consumption, which measures not only food expenditures but also quantities consumed. The food poverty line is constructed on the basis of calorie requirements of individuals or families. One can assume that an individual has access to adequate food if he or she can obtain adequate nutrition (calorie and protein requirements). We may consider that, with the typical Bhutanese diet, if calorie requirement fulfilled then the protein requirement is automatically fulfilled. Thus, the construction of the poverty line is based on calories needs only.
2. Valuation of the nonfood component of the basic needs bundle.

Intra household allocation

Measuring intra-household allocation and inequality is difficult when we confine analysis to income and consumption. This is because measures typically fail to capture individual spending and consumption directly. Intra-household inequality has not been systematically measured, but evidence points to its existence. One study suggests that relying only on household information could lead to an underestimate of inequality and poverty of more than 25 percent. Evidence on differences in health and education confirms that discrimination within households does exist in certain regions and countries. Capturing intra-household inequality and assessing its Importance can be done partly through qualitative and participatory surveys. Another solution is to base the analysis on non-income measures of living standards, such as nutrition status (anthropometric measures), education, or health, for which direct measures at the individual level are possible. (A.Coudouel and J.Hentschel, 2000)

A consequence of this is that poverty is measured at the household level only. If a household is considered poor, then all members are considered poor. If a household is non-poor, then none of its member is poor.

3.3.1 - Poverty Lines Based on Per-Capita Expenditure

3.3.1.1 - Setting the Food Bundle

The food component of the basic need bundle is anchored to the food energy (nutritional) requirements, and its composition is adjusted to accord with observed diets of the poor (the combination of foods must bear resemblance to people's actual eating habits).

One need to select the reference group of household deemed to be typical of the poor (for example the poorest 20 percent of the population or the quintile whose mean calorie consumption is closest to 2100 calories/day/person, etc). This involves a certain degree of arbitrariness. We chose to consider the poorest 40 percent of the population as the reference group.

The consumption pattern of this group becomes the anchor for the subsequent stages (typical diet of the poor). It is re-scaled (preserving the relative quantities in the diet) by computing the absolute quantities that provide the food energy requirement of a fixed amount of Calories per person per day (about 2100 Calories per person per day). The calorie norms vary from country to country. It is important to use norms appropriate to the country. If not available, one must use the norms from a similar population in terms of stature and climatic conditions. Since no specific food energy requirement is available for the Bhutanese population, we use the norms applied in Nepal (2124 Calories per day per person).[5]

3.3.1.2 - National or Regional Food Basket?

A common issue that arises has to do with the fact that consumption patterns can vary markedly across regions, but can as well. When deriving the food poverty line, the conventional practice is to obtain some basket of goods, representing a certain nutritional value, which is consistent with the observed consumption patterns among low-income households in the country as a whole. This common basket can then be priced using region-specific average prices per food item yielding region-specific food poverty lines.

Allowing both food baskets, as well as prices, to differ across regions, or across the rural/ urban divide, while appealing from a certain perspective, is not really acceptable because it makes it difficult to argue that the welfare level in the different regions is being held constant. The argument is sometimes made that insisting on a common consumption basket is unreasonable because consumption patterns across regions are very different.

[5] For more information, see P.Lanjouw, G.Prennushi and S.Zaidi, 1996).

Table 3.4. Structure of the Food Consumption by Stratum (Percent, at 2-Digit Level)

Item	Stratum 1	Stratum 2	Stratum 3	Stratum 4
Cereals and pulses	29.18	31.61	41.07	42.93
Dairy products	20.23	21.18	14.59	16.60
Eggs	2.52	2.24	2.11	1.78
Fish	3.42	2.32	4.03	2.70
Meat	11.64	10.57	5.18	6.77
Fruits and vegetables	13.66	12.45	10.69	9.85
Miscellaneous food	13.79	14.75	13.90	12.58
Beverages	5.57	4.88	8.42	6.79
Total	**100.00**	**100.00**	**100.00**	**100.00**

Table 3.5. Structure of the Food Consumption by Stratum (Percent, at 3-Digit Level)

Item	Stratum 1	Stratum 2	Stratum 3	Stratum 4
Rice	19.37	22.28	23.16	29.82
Wheat grain	0.03	0.00	0.17	0.61
Cereal preparations	8.16	7.49	16.22	11.05
Pulses	1.60	1.84	1.41	1.36
Other cereal preparations	0.02	.	0.12	0.09
Milk	8.69	9.89	4.26	4.99
Cheese and butter	11.53	11.29	10.34	11.61
Other diary products	.	.	.	0.00
Local eggs	0.44	0.63	1.76	1.34
Imported eggs	2.08	1.61	0.35	0.44
Fresh fish	2.03	0.90	0.84	0.47
Dried fish	1.33	1.26	3.07	2.20
Canned fish	0.06	0.16	0.11	0.03
Other fish	.	.	0.00	.
Fresh meat	10.67	8.67	4.68	5.65
Dry meat	0.97	1.91	0.50	1.13
Fruits	3.68	1.53	0.32	0.57
Vegetables	9.99	10.92	10.38	9.28
Tea	1.92	2.24	1.49	1.74
Coffee	0.28	0.28	0.01	0.04
Cooking oil	5.30	5.84	4.54	4.27
Spices and seasonings	3.64	3.43	5.23	4.54
Salt	0.34	0.27	0.72	0.45
Sugar	1.69	1.98	1.87	1.47
Jams	0.29	0.18	0.00	0.01
Pickels	0.31	0.54	0.03	0.06
Alcoholic beverages	3.08	3.10	8.05	6.41
Non-alcoholic beverages	2.49	1.78	0.38	0.39
Total	**100.00**	**100.00**	**100.00**	**100.00**

The critical question is then whether one believes that the reason for the divergence of consumption habits across, say, urban and rural areas is the result of taste differences or different levels of wealth in urban versus rural areas. On the other hand, if in one part of the country the staple diet of low income households consists mainly of potatoes, while in another the poor tend to eat bread, then one can imagine that taking a national average consumption basket would result in a mixture of potatoes and bread which, in fact, is not observed anywhere in the country.

Although some significant differences exist in regional patterns of consumption, we decided to use one single national food basket, based on the consumption pattern of the 40% poorest people.

HIES 2000 collected data on 142 different food items. It was first decided to retain the 40 most consumed items (in terms of nominal expenditure), representing about 86.5% of the total expenditure at the national level (see 3.3.1.3 below). Unfortunately, for some of these items the quantities are expressed in non-standard units (such as bundle, packet or ball), for which no conversion factor is available. Some of the 40 items had to be excluded from the basket. The 32 items used for computing the indices (table 3.6) represent 73.5% of the total food expenditure (see details in 3.3.1.3 and 3.3.1.4 below).

NOTE

Applying an average food poverty line to all households, independent of their structure, is a shortcut (see 3.3.2 below).

Table 3.6: Food Bundle for Setting-Up the Poverty Line

Population (deciles 1 to 4): 232991.00

Rank	Item	Quantity per month	Quantity per day per capita	Quantity unit	Edible share	Calories per unit *	Calorie intake	Rescaled quantity	Rescaled calorie intake
1	Kharang	556338818	79.5937	grams	1.00	3.42	272.21	142.37	486.89
2	Rice fine	536980318	76.8242	grams	1.00	3.49	268.12	137.41	479.57
3	Rice FCB	492233166	70.4223	grams	1.00	3.46	243.66	125.96	435.83
4	Potatoe	295629934	42.2949	grams	0.85	0.97	34.87	75.65	62.37
5	Rice bhutanese	266466011	38.1225	grams	1.00	3.46	131.90	68.19	235.93
6	Local eggs	154184	0.0221	no.	1.00	75.00	1.65	0.04	2.96
7	Milk fresh	78216674	11.1902	mls	1.00	0.67	7.50	20.02	13.41
8	Flour atta	110718867	15.8402	grams	1.00	3.41	54.02	28.33	96.61
9	Beans	46333730	6.6288	grams	1.00	1.58	10.47	11.86	18.73
10	Sugar	39134425	5.5988	grams	1.00	3.98	22.28	10.01	39.86
11	Rice other	26708081	3.8210	grams	1.00	3.46	13.22	6.83	23.65
12	Tomatoe	46172252	6.6057	grams	0.98	0.20	1.29	11.82	2.32
13	Onions	36523453	5.2253	grams	0.95	0.50	2.48	9.35	4.44
14	Chillies green imported	30276811	4.3316	grams	1.00	0.29	1.26	7.75	2.25
15	Local butter	29403173	4.2066	grams	1.00	7.29	30.67	7.52	54.85
16	Fresh beef	25732592	3.6815	grams	1.00	1.14	4.20	6.58	7.51
17	Imported eggs	9736	0.0014	no.	1.00	75.00	0.10	0.00	0.19
18	Dried fish	20561556	2.9417	grams	1.00	2.55	7.50	5.26	13.42
19	Other pulses	40277622	5.7624	grams	1.00	3.47	20.00	10.31	35.77
20	Masur dal flat	18106906	2.5905	grams	1.00	3.43	8.89	4.63	15.89
21	Mustard oil	20953651	2.9978	mls	1.00	9.00	26.98	5.36	48.26
22	Fresh pork	16820262	2.4064	grams	1.00	1.14	2.74	4.30	4.91
23	Chillies dried local	12569369	1.7983	grams	1.00	2.46	4.42	3.22	7.91
24	Zaw white	5455672	0.7805	grams	1.00	3.25	2.54	1.40	4.54
25	Zaw red/brown	5131955	0.7342	grams	1.00	3.25	2.39	1.31	4.27
26	Powdered milk	3080209	0.4407	grams	1.00	4.96	2.19	0.79	3.91
27	Fresh fish	4926387	0.7048	grams	0.78	0.97	0.53	1.26	0.95
28	Dalda	4296490	0.6147	grams	1.00	9.00	5.53	1.10	9.90
29	Fresh chicken	6192345	0.8859	grams	1.00	1.09	0.97	1.58	1.73
30	Indian tea	7062308	1.0104	grams	1.00	0.00	0.00	1.81	0.00
31	Dry beef	1991125	0.2849	grams	1.00	2.00	0.57	0.51	1.02
32	Refined oil	1815458	0.2597	mls	1.00	9.00	2.34	0.46	4.18
							1187.49		**2124.00**
						Scaling coefficient:	**1.79**		

** Source:* Nutritive value of Indian foods, *G.Gopalan, B.Rama Sastri & S.Balasubramanian, National Institute of Nutrition*

3.3.1.3 - Computing Regional Price Indices

Before our measure of consumption could be used to compare standards of living of individuals residing in different parts of the country, it is necessary to take into account differences in cost of living.

In countries where information on regional price variations is available in the form of a consumer price index (CPI) or other such measure of differences in price across the country, the adjustment for cost of living differences is relatively straightforward: nominal consumption measures across different parts of the country can be deflated by the appropriate price index to arrive at a "price-adjusted" or "real" measure of consumption that is comparable across different parts of the country. (P.Lanjouw, G.Prennushi and S.Zaidi, 1996)

Unfortunately, Bhutan does not have spatial cost-of-living index (the CPI covers Thimphu only). Therefore, data collected by the HIES are used to construct regional price deflators. It was possible to proceed with spatial cost-of-living adjustments by means of the unit values (expenditure per food item divided by quantity purchased). These unit values are not the same as prices; it is difficult to distinguish actual price variation from quality differences. However, adjustments based on unit values are likely to remain more appealing than failure to adjust for cost of living variation altogether.

Based on HIES data, we construct regional price indices.[6]

Regional price indices are made of at least two components: the food price index and the non-food price index (sometimes divided into sub-components, such as housing price index, etc.) The overall regional price index is a weighted average of these components.

The first step to compute the indices is to select the regions. A fine level of disagregation is desirable, but we have to take the sample size into consideration and make sure that each group has enough observations to allow accurate estimates within the group.

Five regions were considered:

1. Thimphu (part of stratum 1);
2. Other towns with 850 households or more: Phuentsholing, Gelephu, Punakha, Samdrup Jongkhar, Chhaukha and Wangduephodrang (part of stratum 1);

[6] In the next round of the HIES, it is absolutely crucial to collect information on regional prices as well as conversion factors of non-standard quantity units.

3. 15 remaining towns, with less than 850 households (urban; equivalent to stratum 2);
4. Geogs with 750 households or more (rural; equivalent to stratum 3);
5. Geogs with less than 750 households (rural; equivalent to stratum 4).

Thimphu is used as the numeraire in relation to which regional price levels will be expressed.

The next step is to select the food items to be used to compute the regional food price index. Since the constraints are the same as the ones we faced for setting the reference food basket for the food poverty line (see 2.3.1.2), we used 32 heavily consumed items for which data on quantities consumed is available). Based on these data, the following Laspeyres food price indices are computed (see detailed tables below).

Thimphu	100
Other towns with 850 households or more	83.693
15 remaining towns, with less than 850 households	94.137
Geogs with 750 households or more	76.586
Geogs with less than 750 households	84.218

As for the non-food items, the HIES does not provide satisfactory data. The non-food and the overall price indices are thus considered as equivalent to the food price indices (food and non-food price indices appeared to be very similar in Nepal, 1996; see P.Lanjouw, G.Prennushi and S.Zaidi, 1996).

Table 3.7: Structure of the Food Consumption at the National Level

Rank	Item	Code	Expenditure	% ot total	Cum.%	Retained	% ot total	Cum.%	% retained
1	Rice bhutanese	1111	35625170	12.26%	12.26%	35625170	16.68%	16.68%	12.26%
2	Rice fine	1113	20565420	7.08%	19.33%	20565420	9.63%	26.31%	7.08%
3	Local butter	12222	19167411	6.60%	25.93%	19167411	8.98%	35.29%	6.60%
4	Rice FCB	1114	17871607	6.15%	32.08%	17871607	8.37%	43.66%	6.15%
5	Kharang	11351	13838826	4.76%	36.84%	13838826	6.48%	50.14%	4.76%
6	Cheese local	12211	12327501	4.24%	41.08%		0.00%	50.14%	
7	Ara	18131	9347471	3.22%	44.30%		0.00%	50.14%	
8	Fresh beef	1511	8380917	2.88%	47.18%	8380917	3.92%	54.06%	2.88%
9	Milk fresh	1211	8237859	2.83%	50.02%	8237859	3.86%	57.92%	2.83%
10	Mustard oil	1731	7808709	2.69%	52.70%	7808709	3.66%	61.58%	2.69%
11	Powdered milk	1215	7366841	2.53%	55.24%	7366841	3.45%	65.03%	2.53%
12	Potatoe	16231	7061984	2.43%	57.67%	7061984	3.31%	68.34%	2.43%
13	Fresh pork	1512	6568235	2.26%	59.93%	6568235	3.08%	71.41%	2.26%
14	Dried fish	142	6288320	2.16%	62.09%	6288320	2.94%	74.36%	2.16%
15	Bangchang	18132	5192719	1.79%	63.88%		0.00%	74.36%	
16	Chillies dried local	17413	5109362	1.76%	65.64%	5109362	2.39%	76.75%	1.76%
17	Sugar	1761	4544855	1.56%	67.20%	4544855	2.13%	78.88%	1.56%
18	Local eggs	131	3597150	1.24%	68.44%	3597150	1.68%	80.56%	1.24%
19	Indian tea	1712	3408106	1.17%	69.61%	3408106	1.60%	82.16%	1.17%
20	Flour atta	11312	3249438	1.12%	70.73%	3249438	1.52%	83.68%	1.12%
21	Chillies green imported	17414	3066806	1.06%	71.78%	3066806	1.44%	85.12%	1.06%
22	Spinach (sag),bunch	16221	2691315	0.93%	72.71%		0.00%	85.12%	
23	Rice other	1119	2634506	0.91%	73.62%	2634506	1.23%	86.35%	0.91%
24	Beans	16211	2630425	0.91%	74.52%	2630425	1.23%	87.58%	0.91%
25	Zaw white	11342	2618260	0.90%	75.42%	2618260	1.23%	88.81%	0.90%
26	Refined oil	1734	2596495	0.89%	76.32%	2596495	1.22%	90.02%	0.89%
27	Biscuits	1136	2398555	0.83%	77.14%		0.00%	90.02%	
28	Fresh chicken	1513	2364280	0.81%	77.95%	2364280	1.11%	91.13%	0.81%
29	Fresh fish	141	2338225	0.80%	78.76%	2338225	1.09%	92.23%	0.80%
30	Onions	16235	2335699	0.80%	79.56%	2335699	1.09%	93.32%	0.80%
31	Dry beef	1521	2307432	0.79%	80.36%	2307432	1.08%	94.40%	0.79%
32	Tegma	11352	2210100	0.76%	81.12%		0.00%	94.40%	
33	Zaw red/brown	11341	2163025	0.74%	81.86%	2163025	1.01%	95.41%	0.74%
34	Imported eggs	132	2123107	0.73%	82.59%	2123107	0.99%	96.41%	0.73%
35	Other pulses	1149	2033246	0.70%	83.29%	2033246	0.95%	97.36%	0.70%
36	Beer	1811	1955047	0.67%	83.96%		0.00%	97.36%	
37	Tomatoe	16212	1911839	0.66%	84.62%	1911839	0.90%	98.26%	0.66%
38	Masur dal flat	1141	1887424	0.65%	85.27%	1887424	0.88%	99.14%	0.65%
39	Dalda	1733	1838118	0.63%	85.90%	1838118	0.86%	100.00%	0.63%
40	Fern (nakey)	16293	1831863	0.63%	86.53%				
41	Cabbage	16223	1530411	0.53%	87.06%				
42	Bhutanese tea (salted)	1711	1517741	0.52%	87.58%			Total	73.48%
43	Noodles	1132	1494503	0.51%	88.10%				
44	Chillies dried imported	17415	1420146	0.49%	88.59%				
45	Salt	175	1364504	0.47%	89.06%				
46	Mushroom	16292	1298297	0.45%	89.50%				
47	Flour kapche	11311	1281869	0.44%	89.94%				
48	Wheat grain	112	1234537	0.42%	90.37%				
49	Other floor	11319	1222143	0.42%	90.79%				
50	Radish	16232	1220711	0.42%	91.21%				
51	Pasturized butter	12221	1208579	0.42%	91.62%				
52	Bananas	1614	1204969	0.41%	92.04%				
53	Fresh mutton	1515	1083336	0.37%	92.41%				
54	Orange juice	18211	1080511	0.37%	92.78%				
55	Flour maida	11313	1051142	0.36%	93.15%				
56	Garlic	16236	1029030	0.35%	93.50%				
57	Rice bhog	1112	881668.6	0.30%	93.80%				
58	Bread	1133	810711.5	0.28%	94.08%				
59	Chillies green local	17412	792846.3	0.27%	94.35%				
60	Cauliflower	16222	781475.2	0.27%	94.62%				
61	Bringal	16213	756464	0.26%	94.88%				
62	Chillies powder local	17411	737875.6	0.25%	95.14%				
63	Mangos	1613	621902.2	0.21%	95.35%				
64	Sunflower	1732	613511.3	0.21%	95.56%				
65	Dry pork	1522	595884.4	0.21%	95.77%				

Table 3.7: Structure of the Food Consumption at the National Level (cont.)

66	Ginger	17492	535188.8	0.18%	95.95%
67	Other fruits	1619	514268.9	0.18%	96.13%
68	Cane shoot (pacha)	16291	513378.3	0.18%	96.31%
69	Pepsi	18221	460162.8	0.16%	96.46%
70	Grapes	1617	435556.1	0.15%	96.61%
71	Cucumber	16214	391811.8	0.13%	96.75%
72	Whisky	18122	388336.5	0.13%	96.88%
73	Rice boiled	1115	373671.5	0.13%	97.01%
74	Rum	18121	369321.7	0.13%	97.14%
75	Pasturized milk	1214	356209.4	0.12%	97.26%
76	Asparagus,bunch	16218	333084.4	0.11%	97.38%
77	Bitter gourd	16216	302491.3	0.10%	97.48%
78	Other cooking oil	1739	298410.2	0.10%	97.58%
79	Haldi powder	17461	293688.8	0.10%	97.68%
80	Squash (iskus)	16219	290920.6	0.10%	97.78%
81	Processed cheese	12212	267273.1	0.09%	97.88%
82	Jeera powder	17462	248594.2	0.09%	97.96%
83	Mirinda	18222	243576	0.08%	98.04%
84	Other cereal preparations	119	241159.2	0.08%	98.13%
85	Coriander leaves	17491	233377.7	0.08%	98.21%
86	Condensed milk	1212	229781.3	0.08%	98.29%
87	Instant coffee	1721	226606.9	0.08%	98.36%
88	Gram channa	1142	216071.6	0.07%	98.44%
89	Oranges	1612	211147.5	0.07%	98.51%
90	Mixed pickel	1781	205585.6	0.07%	98.58%
91	Frooti	18224	205274.8	0.07%	98.65%
92	Other leafy vegetables	16229	183130.6	0.06%	98.72%
93	Corn flakes	11353	172352	0.06%	98.78%
94	Garlic leaves	17493	166179.3	0.06%	98.83%
95	Jeera whole	17463	163376.1	0.06%	98.89%
96	Carrot	16233	162068.7	0.06%	98.94%
97	Other corn/preparation	11359	148210.9	0.05%	99.00%
98	Other liquor	18129	147761.5	0.05%	99.05%
99	Other butter	12229	146068	0.05%	99.10%
100	Canned fish	143	140094.4	0.05%	99.14%
101	Other fresh meat	1519	138714	0.05%	99.19%
102	Other tea	1719	136052.7	0.05%	99.24%
103	Other chilies	17419	124000.6	0.04%	99.28%
104	Other vegetables	16299	121797.5	0.04%	99.32%
105	Jam mixed fruit	1771	116677.8	0.04%	99.36%
106	Other rice preparation	11349	111796.4	0.04%	99.40%
107	Fresh yak	1514	111764.1	0.04%	99.44%
108	Other fruit vegetable	16220	111502.8	0.04%	99.48%
109	Other root and tubers	16239	102636.6	0.04%	99.51%
110	Sweet potatoe	16238	98613.51	0.03%	99.55%
111	Dry yak	1523	96233.12	0.03%	99.58%
112	Turnip	16234	92469.27	0.03%	99.61%
113	Apples	1611	87407.12	0.03%	99.64%
114	Other milk	1219	76648.3	0.03%	99.67%
115	Chilli pickel	1782	74298.14	0.03%	99.70%
116	Ladies finger	16217	74091.64	0.03%	99.72%
117	Apple juice	18212	70449.04	0.02%	99.75%
118	Thumsup	18223	63094.74	0.02%	99.77%
119	Other local wines	18139	51858.51	0.02%	99.78%
120	Gourd (ola chhoto)	16215	50745.91	0.02%	99.80%
121	Gur	1762	50176.44	0.02%	99.82%
122	Mango juice	18213	45529.34	0.02%	99.84%
123	Other pickel	1789	44443.96	0.02%	99.85%
124	Other cheese	12219	43948.86	0.02%	99.87%
125	Other juice	18219	42779.41	0.01%	99.88%
126	Jam strawberry	1772	42661.22	0.01%	99.90%
127	Brandy	18123	31898.38	0.01%	99.91%
128	Other carbonated drink	18229	29926.56	0.01%	99.92%
129	Pineapples	1616	29813.29	0.01%	99.93%
130	Tapioca	16237	27009.63	0.01%	99.94%
131	Dhania powder	17464	26698.36	0.01%	99.95%
132	Other coffee	1729	26438.14	0.01%	99.95%
133	Garlic powder	17494	23688.9	0.01%	99.96%
134	Dhania seed	17465	22433	0.01%	99.97%
135	Guavas	1615	22062.6	0.01%	99.98%
136	Other jam	1779	17251.25	0.01%	99.98%
137	Other spices	17499	16385.06	0.01%	99.99%
138	Pineapple juice	18214	16072.36	0.01%	99.99%
139	Other sugar	1769	7792.28	0.00%	100.00%
140	Other dry meat	1529	4101.4	0.00%	100.00%
141	Gin	18124	2517.24	0.00%	100.00%
142	Other fish	149	507.78	0.00%	100.00%
	TOTAL		290627613.9		213539097

Table 3.8: Computation of the Regional Food Price Index

Extrapolated population: 582414

Rank	Item	Item code	Quantity unit	Total quantity consumed per month	Quantity per month per person	Price in Thimphu	Price in region 2	Price in region 3	Price in region 4	Price in region 5	Cost in Thimphu	Cost in region 2	Cost in region 3	Cost in region 4	Cost in region 5
1	Rice bhutanese	1111	kg	1599252	2.746	24.438	24.506	23.943	19.031	22.532	67.106	67.290	65.744	52.257	61.872
2	Rice fine	1113	kg	1488257	2.555	13.753	12.773	14.748	12.959	14.098	35.143	32.639	37.685	33.115	36.025
3	Rice FCB	1114	kg	1426870	2.450	11.535	12.759	14.724	11.762	12.947	28.259	31.259	36.073	28.816	31.718
4	Kharang	11351	kg	1300194	2.232	28.345	12.019	14.882	10.220	10.874	63.278	26.831	33.224	22.816	24.275
5	Local eggs	131	no.	1285299	2.207	3.408	2.539	4.028	2.595	2.849	7.521	5.602	8.889	5.726	6.288
6	Potatoe	16231	kg	986184.8	1.693	7.308	5.766	9.139	6.893	7.309	12.374	9.764	15.475	11.673	12.376
7	Imported eggs	132	no.	783868.5	1.346	2.097	2.637	2.697	2.698	3.596	2.823	3.550	3.630	3.631	4.839
8	Milk fresh	1211	lit.	673399.9	1.156	18.247	13.537	12.738	11.319	12.167	21.098	15.652	14.728	13.087	14.068
9	Flour atta	11312	kg	290303	0.498	11.357	10.776	12.034	10.433	11.374	5.661	5.371	5.998	5.200	5.669
10	Sugar	1761	kg	221923.1	0.381	21.060	19.496	21.956	20.305	20.495	8.025	7.429	8.366	7.737	7.809
11	Fresh beef	1511	kg	203994.8	0.350	50.367	39.191	39.063	36.737	39.942	17.641	13.727	13.682	12.867	13.990
12	Beans	16211	kg	200395.2	0.344	14.614	14.295	17.019	12.482	12.701	5.028	4.918	5.856	4.295	4.370
13	Onions	16235	kg	188083.5	0.323	11.865	9.994	17.315	12.502	12.695	3.832	3.228	5.592	4.037	4.100
14	Tomatoe	16212	kg	187831	0.323	11.523	8.328	14.806	9.090	10.220	3.716	2.686	4.775	2.931	3.296
15	Rice other	1119	kg	177562.9	0.305	11.454	12.676	11.420	14.262	16.002	3.492	3.865	3.482	4.348	4.879
16	Mustard oil	1731	lit.	171929.8	0.295	47.853	45.306	49.795	45.097	45.299	14.126	13.374	14.699	13.313	13.372
17	Chillies green imported	17414	kg	165731.5	0.285	18.395	12.600	22.092	18.240	19.553	5.234	3.586	6.286	5.190	5.564
18	Local butter	12222	kg	140911.4	0.242	160.786	138.092	158.699	124.147	135.993	38.901	33.410	38.396	30.037	32.903
19	Dried fish	142	kg	102753.7	0.176	75.716	54.704	60.592	58.279	61.248	13.358	9.651	10.690	10.282	10.806
20	Zaw white	11342	kg	96673.96	0.166	30.593	26.045	28.114	26.719	26.706	5.078	4.323	4.667	4.435	4.433
21	Other pulses	1149	kg	96186.16	0.165	27.885	25.101	22.529	22.584	20.746	4.605	4.145	3.721	3.730	3.426
22	Fresh pork	1512	kg	93734.15	0.161	72.869	70.341	73.596	60.386	71.349	11.728	11.321	11.845	9.719	11.483
23	Zaw red/brown	11341	kg	79800.48	0.137	33.305	27.319	27.617	28.000	25.752	4.563	3.743	3.784	3.836	3.528
24	Masur dal flat	1141	kg	71898.52	0.123	29.541	25.907	28.338	24.974	25.271	3.647	3.198	3.498	3.083	3.120
25	Powdered milk	1215	kg	64393.73	0.111	118.242	113.956	124.191	101.675	112.340	13.073	12.599	13.731	11.242	12.421
26	Chillies dried local	17413	kg	63400.77	0.109	141.673	93.207	93.749	71.644	80.278	15.422	10.146	10.205	7.799	8.739
27	Refined oil	1734	lit.	52238.83	0.090	51.081	47.420	58.653	47.580	48.653	4.582	4.253	5.261	4.268	4.364
28	Indian tea	1712	kg	47102.87	0.081	85.356	82.470	103.371	46.739	77.067	6.903	6.670	8.360	3.780	6.233
29	Dalda	1733	kg	41059.97	0.070	41.071	41.081	47.048	47.381	45.516	2.895	2.896	3.317	3.340	3.209
30	Fresh fish	141	kg	40190.91	0.069	66.916	54.318	68.913	52.567	57.616	4.618	3.748	4.756	3.627	3.976
31	Fresh chicken	1513	kg	34777.75	0.060	67.768	70.010	74.210	65.621	67.234	4.047	4.180	4.431	3.918	4.015
32	Dry beef	1521	kg	23338.44	0.040	78.117	98.690	105.100	88.291	103.792	3.130	3.955	4.212	3.538	4.159
										Total cost of food basket	**440.909**	**369.012**	**415.057**	**337.675**	**371.324**
										Regional price index	**100.000**	**83.693**	**94.137**	**76.586**	**84.218**

(SPSS program file: computation of regional price index.sps)

Region 2 (urban) includes Phuentsholing, Gelephu, Punakha, Samdrup Jongkhar, Chhaukha and Wangduephodrang
Region 3 (urban) consists of the 15 towns with less than 850 households
Region 4 (rural) consists of 22geogs with more than 750 households (= stratum 3)
Region 5 (rural) consists of 180 geogs with less than 750 households (= stratum 4)

3.3.1.4 - Valuing the Food Basket

The cost of the reference food basket is estimated using the average prices in Thimphu. The amount obtained is the food poverty line. The food poverty line is thus set at 458.9 Nu. per month per capita (in real prices).

Table 3.9: Valuing the Food Bundle for Setting-Up the Food Poverty Line

Rank	Item	Quantity per day in bundle	Quantity unit	Cost per unit	Total cost per day per capita
1	Kharang	142.37	grams	0.0283	4.0353
2	Rice fine	137.41	grams	0.0138	1.8898
3	Rice FCB	125.96	grams	0.0115	1.4529
4	Potatoe	75.65	grams	0.0073	0.5529
5	Rice bhutanese	68.19	grams	0.0244	1.6664
6	Local eggs	0.04	no.	3.4081	0.1345
7	Milk fresh	20.02	mls	0.0182	0.3652
8	Flour atta	28.33	grams	0.0114	0.3218
9	Beans	11.86	grams	0.0146	0.1733
10	Sugar	10.01	grams	0.0211	0.2109
11	Rice other	6.83	grams	0.0115	0.0783
12	Tomatoe	11.82	grams	0.0115	0.1362
13	Onions	9.35	grams	0.0119	0.1109
14	Chillies green imported	7.75	grams	0.0184	0.1425
15	Local butter	7.52	grams	0.1608	1.2098
16	Fresh beef	6.58	grams	0.0504	0.3317
17	Imported eggs	0.00	no.	0.0021	0.0000
18	Dried fish	5.26	grams	0.0757	0.3984
19	Other pulses	10.31	grams	0.0279	0.2874
20	Masur dal flat	4.63	grams	0.0295	0.1369
21	Mustard oil	5.36	mls	0.0479	0.2566
22	Fresh pork	4.30	grams	0.0729	0.3136
23	Chillies dried local	3.22	grams	0.1417	0.4557
24	Zaw white	1.40	grams	0.0306	0.0427
25	Zaw red/brown	1.31	grams	0.0333	0.0437
26	Powdered milk	0.79	grams	0.1182	0.0932
27	Fresh fish	1.26	grams	0.0669	0.0844
28	Dalda	1.10	grams	0.0411	0.0452
29	Fresh chicken	1.58	grams	0.0678	0.1074
30	Indian tea	1.81	grams	0.0854	0.1543
31	Dry beef	0.51	grams	0.0781	0.0398
32	Refined oil	0.46	mls	0.0511	0.0237

Food poverty line (Nu per capita per day):	**15.2952**
Food poverty line (Nu per capita per month):	**458.8557**

(deflated expenditure)

3.3.1.5 - Valuation of the Non-food Component

Valuing the non-food component of the poverty line is more complex. The non-food needs must be consistent with the consumption behavior of those who can just afford their basic food needs.

Directly Choosing a Nonfood Basket

One approach to specifying essential nonfood expenditure is to simply choose directly what nonfood items should be included in the basket. These items are priced in each region, and the total gives an amount for minimum non-food expenditure. This total is then added to the food poverty line that has already been developed to yield a final poverty line.

But there is no basis for selecting the items (analogous as the one used for setting the food bundle). Also, the HIES 2000 does not provide reliable regional data on non-food commodities prices. A second approach seeks to ground the nonfood component of the poverty line in observed consumption behavior.

Scaling Up the Food Poverty Line

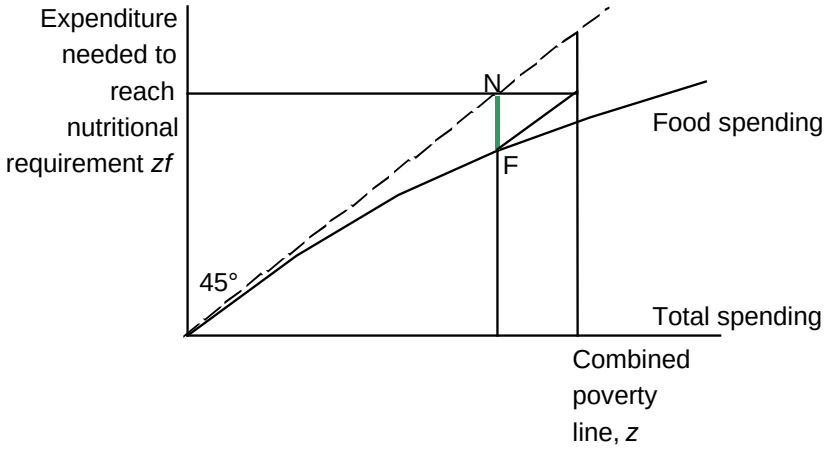
This method avoids choosing directly the specific items that should be included in minimum nonfood expenditure. Instead, the food poverty line is simply scaled up by some factor to allow for the purchase of some essential nonfood items to reach a final poverty line. There are two ways that this is generally done, both of which are based on observed consumption patterns. The most commonly used method is to determine the average level of total expenditure of those people whose food expenditures are just equal to the food poverty line. This level of total expenditure is then used as the final poverty line.

The argument in favor of this method of reaching the final poverty line is that people with total expenditure below this level would be expected to have food expenditures below the food poverty line, and those with total expenditure above this level would be expected to have food expenditures above the food poverty line.

The best solution is to measure what is the typical value of non-food spending by a household that is just able to reach its food requirements. This will equal the lowest level of non-food spending for households that are able to acquire the basic food bundle. It can thus be considered a minimal allowance for nonfood goods.

Households examined in the first case have total expenditure that is higher than the food poverty line, and so, higher than the households examined

in the second case. Typically, then, these households would also have higher nonfood expenditures. As a result, the final poverty line obtained using the first method will be higher than that obtained using the second method.



Having set the food poverty line, a non-food component was added to obtain an overall poverty line that incorporated both food and non-food needs. In order to make an allowance for the non-food component, this report estimated both a lower- and an upper poverty line, which represent a lower- and a upper bound, respectively, for the "true" poverty line.

Lower poverty line: The lower poverty line is defined by considering those households whose *total* expenditure is just enough to reach the food poverty line. Anything that these households spend on non-food goods can be considered a minimum allowance for basic non-food goods, since the households gave up basic food needs. By adding such amount to the food poverty line one obtains the lower poverty line. The lower poverty line is estimated using the following food-share demand system:

(1) $$w = \alpha + \beta \log\left(x / z_f\right) + \varepsilon.$$

where w denotes the budget shares for food, x is the total household per capita expenditure, z_f is the food poverty line, α and β are real parameters, and ε is the error term with standard properties. From (1) it follows that α represents the food budget share when $x = z_f$. Thus, the lower poverty line z_l can be defined as a scaled up version of the food poverty line:

(2) $$z_l = z_f + (1-\alpha) z_f = (2-\alpha) z_f .$$

Upper poverty line: A more generous allowance for non-food spending was estimated by considering those households whose *food* expenditure is equal to the food poverty line. The level of non-food spending found

amongst those who actually reach the food poverty line (rather than those who can merely afford to do so, if they cut all non-food spending) provides a maximum allowance for basic non-food needs. A good first approximation can be obtained using the following formula:

(3) $$z_u = z_f / \tilde{w}, \quad \tilde{w} = (\alpha + \beta)/(1 + \beta).$$

where α and β are the parameters of the demand system (1).

α	0.666
(standard error)	*(0.001)*
β	-0.136
(standard error)	*(0.001)*
Adjusted R^2	0.317
z_f *(food poverty line)*	**458.9 Nu**
(2-α)	1.334
(α+β)/(1+β)	0.6134
Z_l *(lower poverty line)*	**612.2 Nu**
Z_u *(upper poverty line)*	**748.1 Nu**

(poverty lines expressed in real prices)

3.3.2 - Poverty Lines Based on Per-Adult Equivalent Expenditure

As mentioned before, applying an average food poverty line to all households, independent of their structure, is a shortcut. How to compare household's standards of living when they differ in size and structure?

Nutritionists have developed detailed tables of recommended daily nutrient intakes. These tables are divided according to age and gender.

The 'pure' way to measure poverty would assign each household in the data set an individual food poverty line that reflects the unique composition of the households.

Analysts also use adult equivalent scales. An adult male is used as the basis to standardize household sizes. All members are weighted in proportion to an adult male, according to their age and sex. In most cases, weights are derived by econometric models based on tables of recommended daily calorie intakes and other parameters, including economies of scale.

The use of country-specific equivalence scales would provide a powerful tool to improve the identification of the poor, thereby allowing better-

targeted policy choices. There is no specific adult equivalent scale available for Bhutan. The methodology could however be applied using adult equivalent scale for population living in similar conditions.

3.4 - Poverty Measures

3.4.1 - Poverty Headcount or Poverty Incidence (P0)

The poverty headcount is the proportion of the *population* that is poor (percentage of the total population below the poverty line). The percentage of *households* below the poverty line may also be computed (since poor households usually have a smaller size, the proportion of poor households is usually lower than the proportion of poor population),

$$H = q/n$$

where
H = proportion of population deemed to be poor (poverty headcount)
q = number of poor people (below the poverty line)
n = total population

The headcount index doesn't tell anything about the depth of poverty.

NOTE

The fact that poverty calculations are based on a *sample* of households, or a subset of the population, carries implications. Samples are designed to reproduce the whole population, but they can never be as exact as information that covers everybody in the country. They carry a margin of error, as do poverty rates calculated from these sample surveys. Such standard errors, which most statistical packages will easily calculate when poverty rates are computed will depend on the sample design--stratification, clustering--and sample size, in relationship to the total population. (A.Coudouel and J.Hentschel, 2000)

Table 3.10: Poverty Incidence by Stratum (Lower Poverty Line)
Number and Percentage of Population

	Non-poor			**Poor**		
	Count	Row %	Col %	Count	Row %	Col %
Urban - Towns >= 850 households	71425	97.6	16.4	1748	**2.4**	1.2
Urban - Towns < 850 households	10191	94.0	2.3	654	**6.0**	0.4
Rural - Geogs >= 750 households	73615	71.8	16.9	28930	**28.2**	19.7
Rural - Geogs < 750 households	280070	70.8	64.3	115783	**29.2**	78.7
Total	435300	74.7	100.0	147114	**25.3**	100.0

Table 3.11: Poverty Incidence by Stratum (Upper Poverty Line)
Number and Percentage of Population

	Non-poor			**Poor**		
	Count	Row %	Col %	Count	Row %	Col %
Urban - Towns >= 850 households	68748	94.0	18.5	4425	**6.0**	2.1
Urban - Towns < 850 households	9863	91.0	2.7	981	**9.0**	0.5
Rural - Geogs >= 750 households	59148	57.7	15.9	43396	**42.3**	20.5
Rural - Geogs < 750 households	233280	58.9	62.9	162573	**41.1**	76.9
Total	371039	63.7	100.0	211376	**36.3**	100.0

Table 3.12. Poverty incidence by type of household (lower poverty line)

	Non-poor		Poor		All	
	Count	%	Count	%	Count	%
Urban						
Self-employed	22958	98.06	454	1.94	23412	100.00
Regular wage/salary	55441	96.63	1931	3.37	57371	100.00
Casual labour	1265	98.71	17	1.29	1281	100.00
Other	1953	100.00			1953	100.00
Total	81615	97.14	2402	2.86	84017	100.00
Rural						
Self-employed in non-agriculture	43790	88.03	5956	11.97	49747	100.00
Agriculture labour	23485	62.25	14239	37.75	37724	100.00
Other labour	1803	91.73	163	8.27	1965	100.00
Self-employed in agriculture	277282	69.75	120260	30.25	397542	100.00
Other	7325	64.15	4094	35.85	11420	100.00
Total	353685	70.96	144713	29.04	498397	100.00

Table 3.13. Poverty incidence by type of household (upper poverty line)

	Non-poor		Poor		All	
	Count	%	Count	%	Count	%
Urban						
Self-employed	22269	95.12	1143	4.88	23412	100.00
Regular wage/salary	53232	92.79	4139	7.21	57371	100.00
Casual labour	1193	93.13	88	6.87	1281	100.00
Other	1916	98.12	37	1.88	1953	100.00
Total	78610	93.56	5407	6.44	84017	100.00
Rural						
Self-employed in non-agriculture	41095	82.61	8652	17.39	49747	100.00
Agriculture labour	19217	50.94	18508	49.06	37724	100.00
Other labour	708	36.04	1257	63.96	1965	100.00
Self-employed in agriculture	224715	56.53	172827	43.47	397542	100.00
Other	6693	58.61	4726	41.39	11420	100.00
Total	292428	58.67	205969	41.33	498397	100.00

The poverty incidence is also sometimes computed as a percentage of households, not population. Since poor households tend to have larger size, the poverty incidence expressed as a proportion of households is lower than the poverty incidence expressed in terms of population.

Table 3.14: Poverty Incidence by Stratum (Lower Poverty Line)
Number and Percentage of Households

	Non-poor			**Poor**		
	Count	Row %	Col %	Count	Row %	Col %
Urban - Towns >= 850 households	15700	98.3	18.1	276	**1.7**	1.5
Urban - Towns < 850 households	2366	96.1	2.7	97	**3.9**	0.5
Rural - Geogs >= 750 households	14502	79.0	16.7	3854	**21.0**	20.8
Rural - Geogs < 750 households	54108	79.1	62.4	14337	**20.9**	77.2
Total	86677	82.4	100.0	18563	**17.6**	100.0

Table 3.15: Poverty Incidence by Stratum (Upper Poverty Line)
Number and Percentage of Households

	Non-poor			**Poor**		
	Count	Row %	Col %	Count	Row %	Col %
Urban - Towns >= 850 households	15259	95.5	19.9	717	**4.5**	2.5
Urban - Towns < 850 households	2304	93.5	3.0	159	**6.5**	0.6
Rural - Geogs >= 750 households	12200	66.5	15.9	6156	**33.5**	21.6
Rural - Geogs < 750 households	46943	68.6	61.2	21502	**31.4**	75.4
Total	76706	72.9	100.0	28534	**27.1**	100.0

3.4.2 - Poverty Gap Index (P1) and Income Gap Ratio

For one individual, the depth of poverty is the proportion by which that individual is below the poverty line (it has a value of 0 for all individuals above the poverty line).

The poverty gap index is the average depth of poverty for the population. This is the sum of the depth of poverty of each individual, divided by the total number of individuals in the population. This gives a good indication of the depth of poverty, in that it depends on the distances of the poor below the poverty line.

$$P_1 = \frac{1}{n}\sum_{i=1}^{q}\frac{(z - y_i)}{z}$$

This can also be written as P1 = H * (z – y^p / z) where (z – y^p / z) is referred to as the “income gap ratio” (= mean depth of poverty as a proportion of the poverty line).

Table 3.16. Poverty gap based on the lower poverty line, by stratum

Stratum	Poverty gap
Urban - Towns >= 850 households	0.0044
Urban - Towns < 850 households	0.0144
Rural - Geogs >= 750 households	0.0680
Rural - Geogs < 750 households	0.0789
National	0.0664

Table 3.17. Poverty gap based on the upper poverty line, by stratum

Stratum	Poverty gap
Urban - Towns >= 850 households	0.0115
Urban - Towns < 850 households	0.0253
Rural - Geogs >= 750 households	0.1206
Rural - Geogs < 750 households	0.1286
National	0.1106

The income gap ratio is not a good poverty measure. To see why, suppose that someone just below the poverty line is made sufficiently better off to escape poverty. The mean of the remaining poor will fall, and so the income gap ratio will increase. And yet one of the poor has become better off, and none are worse off; one would be loathe to say that there is not less poverty, and yet that is what the income gap ratio would suggest. This problem doesn't arise if the income gap ratio is multiplied by the head count index to yield P1.

P1 also has an interpretation as an indicator of the potential for eliminating poverty by targeting transfers to the poor. The minimum cost of eliminating poverty using targeted transfers is simply the sum of all the poverty gaps in a population; every poverty gap is filled up to the poverty line. The cost would be

$$\sum_{i=1}^{q}[z - y_i]$$

Table 3.18. Cost of eliminating poverty, based on different poverty lines, by stratum (Nu/month)

Stratum	Food pov.line	Lower pov.line	Upper pov.line
Urban - Towns >= 850 households	24,749	197,675	631,439
Urban - Towns < 850 households	27,901	95,400	205,469
Rural - Geogs >= 750 households	1,207,276	4,271,218	9,251,664
Rural - Geogs < 750 households	5,699,864	19,126,022	38,090,646
National	6,959,790	23,690,314	48,179,218

The poverty gap index doesn't tell us how the poverty is distributed among individuals; it may not convincingly capture differences in the severity of poverty. The poverty gap will be unaffected by a transfer from a poor person to someone who is less poor.

3.4.3 - Poverty Severity (P2)

The poverty severity index gives a weight to the poverty gap (more weight to very poor than to less poor).

It is the average value of the square of depth of poverty for each individual. Poorest people contribute relatively more to the index.

$$P_2 = \frac{1}{n}\sum_{i=1}^{q}\left(\frac{(z - yi)}{z}\right)^2$$

Table 3.19. Poverty severity based on the lower poverty line, by stratum

Stratum	Poverty gap
Urban - Towns >= 850 households	0.0012
Urban - Towns < 850 households	0.0054
Rural - Geogs >= 750 households	0.0253
Rural - Geogs < 750 households	0.0314
National	0.0260

Table 3.20. Poverty severity based on the upper poverty line, by stratum

Stratum	Poverty gap
Urban - Towns >= 850 households	0.0033
Urban - Towns < 850 households	0.0102
Rural - Geogs >= 750 households	0.0481
Rural - Geogs < 750 households	0.0554
National	0.0468

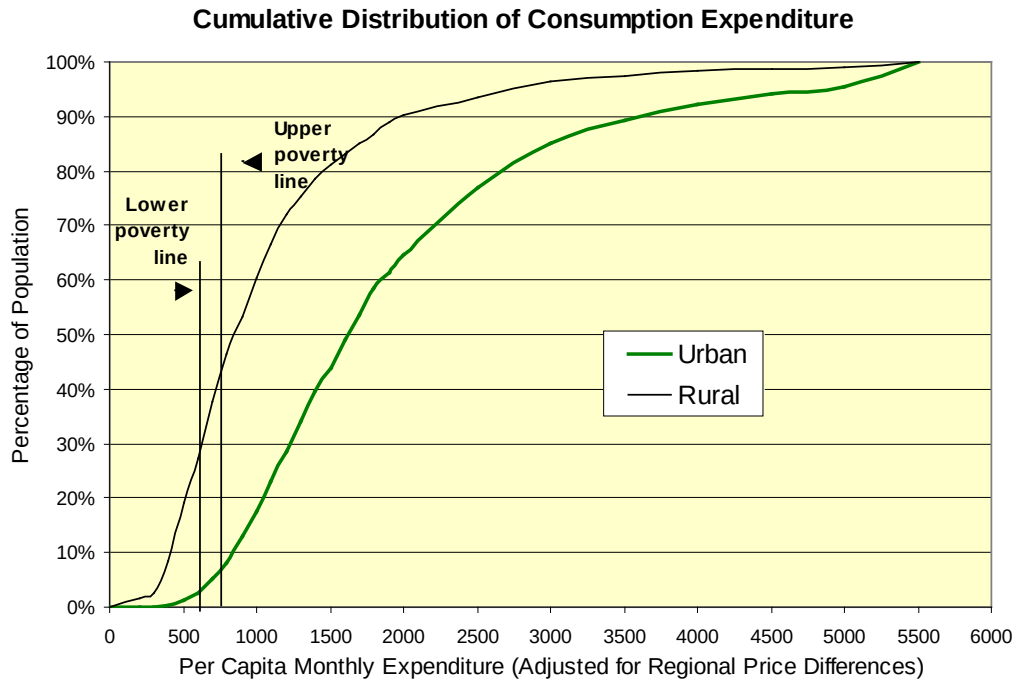
While this measure has clear advantages for some purposes, such as comparing policies which are aiming to reach the poorest, it is not easy to interpret. For poverty comparisons, however, the key point is that a ranking of dates, places or policies in terms of P2 should reflect well their ranking in terms of the severity of poverty. It is the ability of the measure to order distributions in a better way than the alternatives that makes it useful, not the precise numbers obtained.

3.4.4 - Sensitivity of the Poverty Indicators to the Poverty Lines

Since we have to make many assumptions about the poverty line, it is important to explore the sensitivity of the poverty indicators to the chosen poverty line. An intuitive way to do this is to plot cumulative distribution functions—also called poverty incidence curves—as shown below. In this diagram, the horizontal axis shows monetary values while the vertical axis shows cumulative percent of the population.

It therefore indicates the change in poverty incidence that results from changes in the poverty line. If the poverty line intersects a steep part of the distribution function, small variations in the poverty line will cause large variations in the calculated poverty rates.

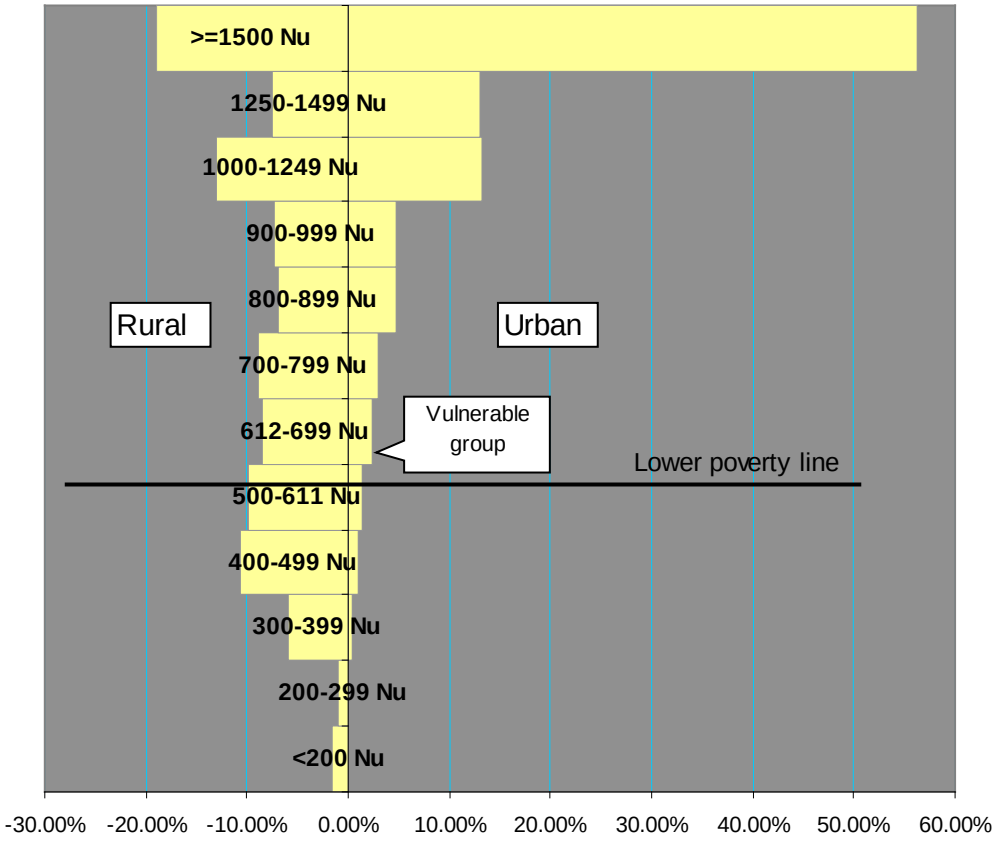
Distribution functions are also powerful tools to compare well-being in different areas of the country, for example, between rural and urban areas.



Another way of testing the sensitivity of calculated poverty measures is simply to calculate the various poverty indices for various lines, for example, the base poverty line plus and minus 5 percent in monetary value. We can then compare the results across different groups.

The chart below shows the distribution of the rural and urban populations into different expenditure groups around the lower poverty line (monthly real per capita expenditure).

Distribution of the Rural and Urban Population by Expenditure Group (Per Capita Real Expenditure)



3.5 - Inequality

3.5.1 - Income or Expenditure by Quintile or Decile of Population

Table 3.21. Mean per capita expenditure by population decile

Decile	National	Urban	Rural
1	343.05	666.08	323.53
2	493.69	945.14	475.45
3	611.75	1138.48	570.79
4	727.30	1318.83	676.71
5	860.36	1518.56	785.05
6	1011.94	1729.28	920.48
7	1196.41	2008.25	1073.74
8	1479.52	2414.92	1294.73
9	1941.54	3057.04	1697.63
10	3948.36	6080.25	3404.93
All	1261.16	2088.22	1121.74

Expenditure adjusted for regional price differences

Deciles at the national level and at the urban/rural level computed separately.

3.5.2 - Decile/Quintile Dispersion Ratio

Also sometimes used is the decile dispersion ratio, which sets the average income of the richest 10 percent of the population in relation to the average income of the bottom 10 percent.

Table 3.22. Share of expenditure by population decile

Decile	National	Urban	Rural
1	2.80	3.19	2.89
2	3.81	4.52	4.31
3	4.85	5.44	5.01
4	5.78	6.34	6.08
5	6.79	7.25	6.95
6	8.05	8.31	8.14
7	9.52	9.61	9.64
8	11.69	11.55	11.53
9	15.36	14.62	15.16
10	31.35	29.16	30.30
All	100.00	100.00	100.00

Expenditure adjusted for regional price differences

Deciles at the national level and at the urban/rural level computed separately.

Table 3.23. Decile dispersion ratio

National	Urban	Rural
8.69%	10.95%	9.50%

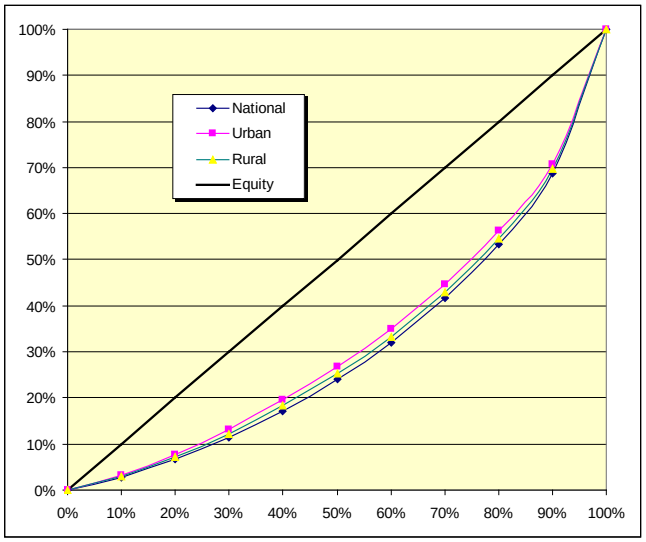
3.5.3 - Lorenz Curve

The Lorenz curve maps the cumulative income (or expenditure) share on the vertical axis against the distribution of the population on the vertical axis. If each individual had the same income, or total equality, the income distribution curve would be the straight line in the graph.

Table 2.23 - Distribution of Real Expenditure by Population Decile

	National			Urban			Rural		
Population decile	Expenditure	% of expenditure	Cumulative % of expenditure	Expenditure	% of expenditure	Cumulative % of expenditure	Expenditure	% of expenditure	Cumulative % of expenditure
1	20538332	2.80%	2.80%	5599745	3.19%	3.19%	16143916	2.89%	2.89%
2	27957952	3.81%	6.60%	7925049	4.52%	7.71%	24085795	4.31%	7.20%
3	35599597	4.85%	11.45%	9549961	5.44%	13.15%	27991269	5.01%	12.20%
4	42430520	5.78%	17.23%	11129219	6.34%	19.50%	33987857	6.08%	18.28%
5	49895293	6.79%	24.02%	12713889	7.25%	26.74%	38834650	6.95%	25.23%
6	59147310	8.05%	32.07%	14574020	8.31%	35.05%	45493512	8.14%	33.37%
7	69913848	9.52%	41.59%	16867312	9.61%	44.66%	53912444	9.64%	43.01%
8	85880041	11.69%	53.28%	20261577	11.55%	56.21%	64466836	11.53%	54.54%
9	112858119	15.36%	68.65%	25657641	14.62%	70.84%	84765360	15.16%	69.70%
10	230297238	31.35%	100.00%	51167824	29.16%	100.00%	169390373	30.30%	100.00%
All	734518249	100.00%		175446236	100.00%		559072013	100.00%	

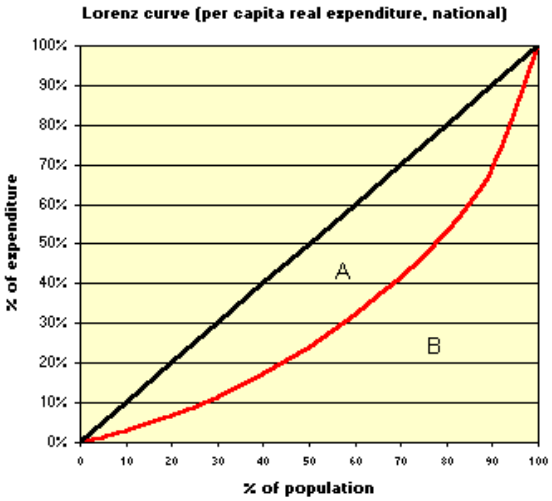
Lorenz Curve by Area (Real Expenditure)



3.5.4 - Gini Coefficient

Graphically, the Gini coefficient can be easily represented by different areas of the *Lorenz curv*e. The Gini coefficient is calculated as the area A divided by the sum of areas A and B.

If income is distributed completely equally, then, the Gini coefficient is zero; if only one individual owns all income, it is one. The Gini coefficient of inequality. varies between 0, or complete equality of incomes/ expenditures, to 1, or complete inequality (one person has all the income, all others have none).



$$Gini = \frac{1}{2n^2 y} \sum_{i=1}^{n} \sum_{j=1}^{n} | y_i - y_j |$$

where n represents the population, y the average income (or expenditure) and yi the income (or expenditure) of person i.

The Gini coefficient can also be formulated as follows[7]:

$$Gini = 1 - 2\sum \left[\frac{1}{2} (f'_h - f'_{h-1})(\theta EH'_h - \theta EH'_{h-1}) + (f'_h - f'_{h-1})\theta EH'_{h-1} \right]$$

where f'_h is the cumulated household share of households 1 through *h*, and $\theta EH'_h$ is the cumulative consumption share of households 1 through h.

The Gini coefficient is the most commonly used indicator although it has one major disadvantage: it is not additive, that is, the Gini coefficient for a group is not equal to the sum of the Gini coefficients for the separate subgroups in which the group can be divided. For example, the Gini coefficient for the distribution of consumption in a country is not equal to

[7] This formulation is easier to implement using a spreadsheet program.

the sum of the Gini coefficients for consumption for the geographical regions of the country.

Table 3.24: Gini Coefficient for the Real Total Expenditure, by Stratum

	Urban		Rural	
National	Stratum 1 (Towns with more than 850 households)	Stratum 2 (Towns with less than 850 households)	Stratum 3 (Geogs with more than 750 households)	Stratum 4 (Geogs with less than 850 households)
0.365	0.356	0.418	0.350	0.352

Another disadvantage of Gini coefficients is that they vary when the distribution varies, no matter if the change occurs at the top or at the bottom or in the middle. If a society is most concerned about the share of income enjoyed by the people at the bottom, a better indicator may be a direct measure, such as the share of income that goes to the poorest 10 or 20 percent. (A.Coudouel and J.Hentschel, 2000)

3.5.5 - Atkinson Indices

The Atkinson class of measures has the general formula:

$$A_\varepsilon = 1 - \left[\frac{1}{n} \sum_{i=1}^{n} \left[\frac{y_i}{\overline{y}} \right]^{1-\varepsilon} \right]^{\frac{1}{(1-\varepsilon)}}$$

where ε is an inequality aversion parameter, $0<\varepsilon<\infty$: the higher the value of ε the more society is concerned about inequality. The Atkinson class of measures ranges from 0 to 1, with zero representing no inequality. (J.A.Litchfield, 1999)

The higher ε, the more sensitive the Atkinson index is to expenditure differences at the bottom of the distribution.

Table 3.25: Atkinson Indices for the Real Total Expenditure, for Various Aversion Parameters ε

ε = 2	ε = 3	ε = 4	ε = 5
0.36	0.44	0.53	0.60

Part IV – Socioeconomic Profile

4.1 - Demography

4.1.1 - Household Size

Table 4.1: Average Household Size by Stratum and Poverty Status (Lower Poverty Line)

Stratum	Non-poor	Poor	All
Urban - Towns >= 850 households	4.5	6.3	4.6
Urban - Towns < 850 households	4.3	6.8	4.4
Rural - Geogs >= 750 households	5.1	7.5	5.6
Rural - Geogs < 750 households	5.2	8.1	5.8
National	5.0	7.9	5.5

Table 4.2: Average Household Size by Stratum and Poverty Status (Upper Poverty Line)

Stratum	Non-poor	Poor	All
Urban - Towns >= 850 households	4.5	6.2	4.6
Urban - Towns < 850 households	4.3	6.2	4.4
Rural - Geogs >= 750 households	4.8	7.0	5.6
Rural - Geogs < 750 households	5.0	7.6	5.8
National	4.8	7.4	5.5

4.1.2 - Repartition by Age Group

Table 4.3: National Population by Age Group and Poverty Status (Lower Poverty Line)

	Non-poor			Poor			All		
Age group	Count	Col %	Row %	Count	Col %	Row %	Count	Col %	Row %
0 to 12 years	136695	31.40	71.17	55362	37.63	28.83	192056	32.98	100.00
13 to 17 years	47401	10.89	75.22	15620	10.62	24.78	63021	10.82	100.00
18 to 49 years	181136	41.61	76.27	56351	38.30	23.73	237487	40.78	100.00
50 to 64 years	47433	10.90	81.83	10531	7.16	18.17	57964	9.95	100.00
65 and over	22636	5.20	70.99	9251	6.29	29.01	31887	5.47	100.00
Total	435300	100.00	74.74	147114	100.00	25.26	582414	100.00	100.00

Table 4.4: National Population by Age Group and Poverty Status (Upper Poverty Line)

	Non-poor			Poor			All		
Age group	Count	Col %	Row %	Count	Col %	Row %	Count	Col %	Row %
0 to 12 years	114314	30.81	59.52	77743	36.78	40.48	192056	32.98	100.00
13 to 17 years	39787	10.72	63.13	23233	10.99	36.87	63021	10.82	100.00
18 to 49 years	156710	42.24	65.99	80776	38.21	34.01	237487	40.78	100.00
50 to 64 years	41135	11.09	70.97	16829	7.96	29.03	57964	9.95	100.00
65 and over	19092	5.15	59.88	12795	6.05	40.12	31887	5.47	100.00
Total	371039	100.00	63.71	211376	100.00	36.29	582414	100.00	100.00

Table 4.5: Urban Population by Age Group and Poverty Status (Lower Poverty Line)

	Non-poor			Poor			All		
Age group	Count	Col %	Row %	Count	Col %	Row %	Count	Col %	Row %
0 to 12 years	27636	33.86	95.93	1173	48.84	4.07	28809	34.29	100.00
13 to 17 years	9728	11.92	97.52	247	10.29	2.48	9975	11.87	100.00
18 to 49 years	39096	47.90	97.88	848	35.29	2.12	39943	47.54	100.00
50 to 64 years	3691	4.52	97.52	94	3.91	2.48	3785	4.51	100.00
65 and over	1464	1.79	97.35	40	1.66	2.65	1504	1.79	100.00
Total	81615	100.00	97.14	2402	100.00	2.86	84017	100.00	100.00

Table 4.6: Urban Population by Age Group and Poverty Status (Upper Poverty Line)

	Non-poor			Poor			All		
Age group	Count	Col %	Row %	Count	Col %	Row %	Count	Col %	Row %
0 to 12 years	26323	33.48	91.37	2487	45.99	8.63	28809	34.29	100.00
13 to 17 years	9382	11.93	94.05	594	10.98	5.95	9975	11.87	100.00
18 to 49 years	37917	48.23	94.93	2027	37.48	5.07	39943	47.54	100.00
50 to 64 years	3593	4.57	94.91	193	3.57	5.09	3785	4.51	100.00
65 and over	1397	1.78	92.89	107	1.98	7.11	1504	1.79	100.00
Total	78610	100.00	93.56	5407	100.00	6.44	84017	100.00	100.00

Table 4.7: Rural Population by Age Group and Poverty Status (Lower Poverty Line)

	Non-poor			Poor			All		
Age group	Count	Col %	Row %	Count	Col %	Row %	Count	Col %	Row %
0 to 12 years	109058	30.83	66.81	54189	37.45	33.19	163247	32.75	100.00
13 to 17 years	37673	10.65	71.02	15372	10.62	28.98	53045	10.64	100.00
18 to 49 years	142040	40.16	71.90	55503	38.35	28.10	197543	39.64	100.00
50 to 64 years	43742	12.37	80.74	10437	7.21	19.26	54179	10.87	100.00
65 and over	21172	5.99	69.68	9211	6.36	30.32	30383	6.10	100.00
Total	353685	100.00	70.96	144713	100.00	29.04	498397	100.00	100.00

Table 4.8: Rural Population by Age Group and Poverty Status (Upper Poverty Line)

	Non-poor			Poor			All		
Age group	Count	Col %	Row %	Count	Col %	Row %	Count	Col %	Row %
0 to 12 years	87991	30.09	53.90	75256	36.54	46.10	163247	32.75	100.00
13 to 17 years	30406	10.40	57.32	22640	10.99	42.68	53045	10.64	100.00
18 to 49 years	118794	40.62	60.14	78750	38.23	39.86	197543	39.64	100.00
50 to 64 years	37542	12.84	69.29	16636	8.08	30.71	54179	10.87	100.00
65 and over	17695	6.05	58.24	12688	6.16	41.76	30383	6.10	100.00
Total	292428	100.00	58.67	205969	100.00	41.33	498397	100.00	100.00

4.1.3 - Age Dependency Ratio

The age dependency ratio gives an indication of young (less than 15 years) and old (65 years and above) being supported by the working age (15-64 years) population. The formulae used was as under:

$$\text{Age Dependency Ratio} = \frac{\text{Population (0-14 years + 65 years and over)}}{\text{Population (15-64 years)}} \times 100$$

Table 4.9: Age Dependency Ratio by Stratum and Poverty Status (Lower Poverty Line)

	Non-poor	Poor	All
Urban	68.10	129.17	69.39
Urban - Towns >= 850 households	*68.60*	*122.41*	*69.58*
Urban - Towns < 850 households	*64.65*	*149.43*	*68.09*
Rural	70.25	90.75	75.73
Rural - Geogs >= 750 households	*70.69*	*91.60*	*76.11*
Rural - Geogs < 750 households	*70.14*	*90.53*	*75.64*
National	69.84	91.27	74.79

Table 4.10: Age Dependency Ratio by Stratum and Poverty Status (Upper Poverty Line)

	Non-poor	Poor	All
Urban	66.98	114.26	69.39
Urban - Towns >= 850 households	*67.38*	*112.97*	*69.58*
Urban - Towns < 850 households	*64.22*	*120.26*	*68.09*
Rural	67.89	88.22	75.73
Rural - Geogs >= 750 households	*67.88*	*88.72*	*76.11*
Rural - Geogs < 750 households	*67.89*	*88.09*	*75.64*
National	67.69	88.81	74.79

Table 4.11: Number of Households by Primary Source of Energy for Cooking and Poverty Status (Based on Lower Poverty Line)

	National			Urban			Rural		
	Non-poor	Poor	All	Non-poor	Poor	All	Non-poor	Poor	All
Coke, coal	727	102	830	31	…	31	696	102	798
Firewood and chips	60212	17471	77684	642	59	701	59571	17412	76983
Gobar gas	182	61	243	35	…	35	148	61	209
Dung cake	60	…	60	17	…	17	43	…	43
LPG	19767	255	20022	14388	177	14565	5379	78	5457
Charcoal	496	…	496	126	…	126	371	…	371
Kerosene	4138	641	4779	1971	105	2075	2167	537	2704
Electricity	974	32	1007	770	32	802	204	…	204
Solar	27	…	27	27	…	27	…	…	…
Others	92	…	92	59	…	59	33	…	33
Total	**86677**	**18563**	**105240**	**18066**	**373**	**18439**	**68610**	**18191**	**86801**

Table 4.12: Percentage of Households by Primary Source of Energy for Cooking and Poverty Status (Based on Lower Poverty Line)

	National			Urban			Rural		
	Non-poor	Poor	All	Non-poor	Poor	All	Non-poor	Poor	All
Coke, coal	0.84	0.55	0.79	0.17	…	0.17	1.01	0.56	0.92
Firewood and chips	69.47	94.12	73.82	3.55	15.77	3.80	86.82	95.72	88.69
Gobar gas	0.21	0.33	0.23	0.19	…	0.19	0.22	0.34	0.24
Dung cake	0.07	…	0.06	0.10	…	0.09	0.06	…	0.05
LPG	22.81	1.37	19.02	79.64	47.50	78.99	7.84	0.43	6.29
Charcoal	0.57	…	0.47	0.70	…	0.68	0.54	…	0.43
Kerosene	4.77	3.45	4.54	10.91	28.03	11.25	3.16	2.95	3.11
Electricity	1.12	0.17	0.96	4.26	8.70	4.35	0.30	…	0.24
Solar	0.03	…	0.03	0.15	…	0.15	…	…	…
Others	0.11	…	0.09	0.33	…	0.32	0.05	…	0.04
Total	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Table 4.13: Number of Households by Primary Source of Energy for Lighting and Poverty Status (Based on Lower Poverty Line)

	National			Urban			Rural		
	Non-poor	Poor	All	Non-poor	Poor	All	Non-poor	Poor	All
Kerosene	48329	15282	63611	224	45	269	48105	15237	63342
Other oil	647	99	746	40	…	40	607	99	706
Gas	45	…	45	25	…	25	20	…	20
Candle	60	…	60	30	…	30	30	…	30
Electricity	31333	1454	32787	17469	328	17796	13865	1126	14991
Solar	580	…	580	123	…	123	457	…	457
Pine trees (mepchey)	5052	1658	6710	12	…	12	5040	1658	6698
Others	630	71	701	143	…	143	487	71	558
Total	**86677**	**18563**	**105240**	**18066**	**373**	**18439**	**68610**	**18191**	**86801**

Table 4.14: Percentage of Households by Primary Source of Energy for Lighting and Poverty Status (Based on Lower Poverty Line)

	National			Urban			Rural		
	Non-poor	Poor	All	Non-poor	Poor	All	Non-poor	Poor	All
Kerosene	55.76	82.32	60.44	1.24	12.07	1.46	70.11	83.76	72.97
Other oil	0.75	0.53	0.71	0.22	…	0.22	0.88	0.54	0.81
Gas	0.05	…	0.04	0.14	…	0.13	0.03	…	0.02
Candle	0.07	…	0.06	0.16	…	0.16	0.04	…	0.03
Electricity	36.15	7.83	31.15	96.69	87.93	96.52	20.21	6.19	17.27
Solar	0.67	…	0.55	0.68	…	0.67	0.67	…	0.53
Pine trees (mepchey)	5.83	8.93	6.38	0.07	…	0.07	7.35	9.11	7.72
Others	0.73	0.38	0.67	0.79	…	0.78	0.71	0.39	0.64
Total	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Table 4.15: Population by Primary Source of Energy for Lighting and Poverty Status (Based on Lower Poverty Line)

	National			Urban			Rural		
	Non-poor	Poor	All	Non-poor	Poor	All	Non-poor	Poor	All
Kerosene	246365	125114	371479	753	242	995	245612	124872	370484
Other oil	3259	825	4084	182	…	182	3077	825	3902
Gas	167	…	167	87	…	87	80	…	80
Candle	417	…	417	146	…	146	270	…	270
Electricity	154086	10027	164113	79145	2160	81305	74941	7867	82808
Solar	2528	…	2528	429	…	429	2099	…	2099
Pine trees (mepchey)	25404	10442	35845	50	…	50	25354	10442	35796
Others	3074	707	3781	823	…	823	2251	707	2958
Total	**435300**	**147114**	**582414**	**81615**	**2402**	**84017**	**353685**	**144713**	**498397**

Table 4.16: Percentage of Population by Primary Source of Energy for Lighting and Poverty Status (Based on Lower Poverty Line)

	National			Urban			Rural		
	Non-poor	Poor	All	Non-poor	Poor	All	Non-poor	Poor	All
Kerosene	56.60	85.05	63.78	0.92	10.08	1.18	69.44	86.29	74.34
Other oil	0.75	0.56	0.70	0.22	…	0.22	0.87	0.57	0.78
Gas	0.04	…	0.03	0.11	…	0.10	0.02	…	0.02
Candle	0.10	…	0.07	0.18	…	0.17	0.08	…	0.05
Electricity	35.40	6.82	28.18	96.97	89.92	96.77	21.19	5.44	16.61
Solar	0.58	…	0.43	0.53	…	0.51	0.59	…	0.42
Pine trees (mepchey)	5.84	7.10	6.15	0.06	…	0.06	7.17	7.22	7.18
Others	0.71	0.48	0.65	1.01	…	0.98	0.64	0.49	0.59
Total	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Table 4.17: Households by Principal Industry and Poverty Status (Based on Lower Poverty Line)

	National			Urban			Rural		
	Non-poor	Poor	All	Non-poor	Poor	All	Non-poor	Poor	All
Agriculture,hunting and related service activities	60053	17365	77418	492	7	499	59561	17358	76919
Forestry, logging and related activities	368	7	376	214	7	221	154	...	154
Fishing, operation of fish hatcheries and fish farms	9	...	9	9	...	9	...	...	...
Extraction of crude petroleum and natural gas	12	...	12	12	...	12	...	...	...
Mining of Uranium and thorium ores	55	...	55	55	...	55	...	...	...
Mining of metal ores	47	...	47	47	...	47	...	...	...
Other mining and quarring	34	...	34	34	...	34	...	...	...
Manufacture of food productsand beverages	82	...	82	29	...	29	53	...	53
Manufacture of wearing apparel; dressing and dying of fur	25	...	25	25	...	25	...	...	...
Manufacture of wood & products of wood and cork, except furnitures	133	...	133	133	...	133	...	...	...
Manufacture of paper and paper products	41	...	41	41	...	41	...	...	...
Publishing, printing & reproduction of recorded media	12	...	12	12	...	12	...	...	...
Manufacture of coke, refined petroleum products & nuclear fu	28	...	28	28	...	28	...	...	...
Manufacture of chemical and chemical products	31	...	31	31	...	31	...	...	...
Manufacture of rubber and plastic products	43	...	43	43	...	43	...	...	...
Manufacture of fabricated metal products	130	...	130	61	...	61	70	...	70
Manufacture of motor vehicle, trailers & semi trailers	19	...	19	19	...	19	...	...	...
Manufacture of furniture: manufacturing not elsewhere classified	686	2	688	478	2	481	208	...	208
Electricity, gas steam and hot water supply	862	74	937	827	26	853	35	48	84
Collection, purification and distribution of water	78	12	91	20	12	32	58		58
Construction	826	98	924	567	40	607	259	59	317
Sale, maintenance and repair of motor vehicle & motorcycles	251	12	263	251	12	263	...	...	...
Wholsale trade and commission trade except of motor vehicle	217	...	217	164	...	164	53	...	53
Retail trade, except of motor vehicle etc: repair of personal	4039	110	4149	2010	...	2010	2029	110	2139
Hotel and restaurants	484	...	484	427	...	427	57	...	57
Land transport; transport via pipelines	222	...	222	222	...	222	...	...	...
Water transport	53	...	53	...	...	...	53	...	53
Air transport	59	...	59	59	...	59	...	...	...
Supporting and auxiliary transport activities; activities	293	...	293	273	...	273	19	...	19
Post and telecommunication	371	...	371	340	...	340	30	...	30
Financial intermediation, except insurance and pension fund	635	12	648	635	12	648	...	...	...
Insurance & pension funding, except compulsory social security	45	10	56	45	10	56	...	...	...
Activities auxiliary to financial intermediation	91	...	91	91	...	91	...	...	...
Real estate activities	138	...	138	107	...	107	31	...	31
Renting machinery & equipment without operator and of person	10	...	10	10	...	10	...	...	...
Research and development	16	...	16	...	...	...	16	...	16
Other business activities	320	...	320	320	...	320	...	...	...
Public distribution and defence; compulsory social security	9552	673	10225	6585	136	6721	2967	537	3504
Education	1498	...	1498	770	...	770	728	...	728
Health and social work	1031	...	1031	509	...	509	522	...	522
Unclassified	999	51	1051	720	51	772	279	...	279
Sewage & refuse disposal sanitaion and similar activities	22	12	34	22	12	34	...	...	...
Recreational, cultural and sporting activities	110	...	110	110	...	110	...	...	...
Other service activities	483	71	554	376	12	389	107	58	165
Private households with employed persons	777	31	808	591	31	621	187	...	187
Extra - Territorial organisation and bodies	102	...	102	102	...	102	...	...	...
All	**85392**	**18544**	**103936**	**17916**	**373**	**18289**	**67476**	**18171**	**85647**

Warning: Due to relatively small sample size, many cells have no or low extrapolated value. Table to be analyzed with care.

Table 4.18: Structure of Total Real Consumption Expenditure, by Poverty Status (Lower Poverty Line)

	National			Urban			Rural		
	Non-poor	Poor	All	Non-poor	Poor	All	Non-poor	Poor	All
Cereals and pulses	17.56	32.03	18.87	10.21	19.25	10.27	20.15	32.26	21.57
Dairy products	7.96	7.53	7.92	7.03	6.98	7.03	8.29	7.54	8.20
Eggs	0.92	0.88	0.92	0.85	1.55	0.86	0.95	0.86	0.94
Fish	1.42	1.45	1.42	1.14	1.53	1.14	1.52	1.44	1.51
Meat	3.55	2.31	3.44	3.99	3.23	3.99	3.39	2.29	3.27
Fruits and vegetables	4.73	7.50	4.98	4.63	7.01	4.64	4.77	7.51	5.09
Miscellaneous food	5.97	7.57	6.12	4.79	8.16	4.82	6.39	7.56	6.52
Beverages	3.06	4.81	3.22	1.93	3.39	1.94	3.46	4.83	3.62
Total food	*45.17*	*64.08*	*46.88*	*34.57*	*51.10*	*34.68*	*48.92*	*64.31*	*50.71*
Tobacco	1.03	0.66	0.99	1.05	0.80	1.04	1.02	0.66	0.98
House maintenance/minor repairs	3.07	2.50	3.02	2.82	0.10	2.81	3.16	2.54	3.09
Miscellaneous expenses	3.72	0.93	3.47	2.22	0.81	2.21	4.25	0.93	3.86
Clothing	12.87	8.77	12.50	15.89	11.73	15.86	11.81	8.72	11.45
Housing	14.40	8.62	13.88	18.49	17.87	18.48	12.96	8.45	12.43
Fuel and light	7.68	8.73	7.77	3.00	8.15	3.04	9.33	8.74	9.26
Transport	2.89	0.67	2.69	5.75	1.08	5.72	1.88	0.66	1.74
Communication	0.78	0.01	0.71	2.51	0.04	2.50	0.17	0.01	0.15
Household operation	1.35	1.21	1.34	1.99	2.10	1.99	1.12	1.19	1.13
Education	1.53	0.95	1.48	2.96	2.47	2.96	1.02	0.92	1.01
Recreation	0.62	0.02	0.57	1.73	0.41	1.72	0.23	0.02	0.21
Medical care and health services	0.86	0.46	0.83	0.75	0.13	0.74	0.91	0.47	0.85
Personnal care and effects	2.69	1.80	2.61	3.89	2.56	3.88	2.27	1.79	2.21
Non-durable furnishing	0.98	0.58	0.95	1.27	0.66	1.27	0.88	0.58	0.84
Durable furniture and equipment	0.35	0.01	0.32	1.11	0.02	1.10	0.08	0.01	0.07
Total non-food (including tobacco)	*54.83*	*35.92*	*53.12*	*65.43*	*48.90*	*65.32*	*51.08*	*35.69*	*49.29*
Total	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Table 4.19: Structure of Total Real Consumption Expenditure, by Poverty Status (Upper Poverty Line)

	National			Urban			Rural		
	Non-poor	Poor	All	Non-poor	Poor	All	Non-poor	Poor	All
Cereals and pulses	16.74	30.98	18.87	10.13	18.05	10.27	19.25	31.37	21.57
Dairy products	7.83	8.46	7.92	7.02	7.95	7.03	8.14	8.48	8.20
Eggs	0.92	0.92	0.92	0.85	1.33	0.86	0.95	0.90	0.94
Fish	1.40	1.52	1.42	1.13	1.59	1.14	1.51	1.52	1.51
Meat	3.57	2.71	3.44	3.99	3.53	3.99	3.40	2.68	3.27
Fruits and vegetables	4.58	7.29	4.98	4.59	7.30	4.64	4.57	7.29	5.09
Miscellaneous food	5.86	7.57	6.12	4.75	8.13	4.82	6.28	7.55	6.52
Beverages	2.97	4.60	3.22	1.93	2.21	1.94	3.37	4.67	3.62
Total food	*43.86*	*64.04*	*46.88*	*34.40*	*50.09*	*34.68*	*47.47*	*64.45*	*50.71*
Tobacco	1.03	0.82	0.99	1.04	0.99	1.04	1.02	0.81	0.98
House maintenance/minor repairs	3.27	1.62	3.02	2.86	0.06	2.81	3.42	1.67	3.09
Miscellaneous expenses	3.85	1.26	3.47	2.24	0.58	2.21	4.47	1.28	3.86
Clothing	13.05	9.37	12.50	15.92	12.58	15.86	11.96	9.27	11.45
Housing	14.76	8.84	13.88	18.44	20.78	18.48	13.36	8.48	12.43
Fuel and light	7.65	8.47	7.77	2.98	6.19	3.04	9.43	8.53	9.26
Transport	3.05	0.63	2.69	5.81	0.78	5.72	2.00	0.62	1.74
Communication	0.83	0.01	0.71	2.54	0.22	2.50	0.18	0.01	0.15
Household operation	1.37	1.16	1.34	1.99	1.94	1.99	1.13	1.13	1.13
Education	1.57	0.94	1.48	2.98	2.06	2.96	1.04	0.90	1.01
Recreation	0.66	0.03	0.57	1.74	0.35	1.72	0.25	0.02	0.21
Medical care and health services	0.88	0.54	0.83	0.75	0.15	0.74	0.93	0.55	0.85
Personnal care and effects	2.77	1.67	2.61	3.91	2.43	3.88	2.34	1.65	2.21
Non-durable furnishing	1.01	0.59	0.95	1.28	0.67	1.27	0.90	0.59	0.84
Durable furniture and equipment	0.37	0.02	0.32	1.12	0.11	1.10	0.09	0.02	0.07
Total non-food (including tobacco)	*56.14*	*35.96*	*53.12*	*65.60*	*49.91*	*65.32*	*52.53*	*35.55*	*49.29*
Total	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Table 4.20: Structure of Real Food Expenditure, by Poverty Status (Lower Poverty Line) – Broad Categories

	National			Urban			Rural		
	Non-poor	Poor	All	Non-poor	Poor	All	Non-poor	Poor	All
Cereals and pulses	38.87	49.99	40.25	29.54	37.68	29.62	41.20	50.16	42.53
Dairy products	17.62	11.76	16.90	20.34	13.67	20.28	16.95	11.73	16.17
Eggs	2.04	1.37	1.96	2.47	3.03	2.47	1.94	1.34	1.85
Fish	3.14	2.26	3.03	3.29	2.99	3.29	3.10	2.24	2.97
Meat	7.86	3.61	7.33	11.54	6.31	11.49	6.94	3.57	6.44
Fruits and vegetables	10.48	11.71	10.63	13.38	13.72	13.38	9.75	11.68	10.04
Miscellaneous food	13.22	11.82	13.04	13.86	15.96	13.89	13.05	11.76	12.86
Beverages	6.77	7.50	6.86	5.57	6.63	5.58	7.07	7.51	7.13
Total	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*

Table 4.21: Structure of Real Food Expenditure, by Poverty Status (Lower Poverty Line) – Detailed Categories

	National			Urban			Rural		
	Non-poor	Poor	All	Non-poor	Poor	All	Non-poor	Poor	All
Rice	26.20	31.90	26.91	19.75	32.97	19.88	27.81	31.88	28.42
Wheat grain	0.34	1.05	0.43	0.02	0.25	0.02	0.42	1.06	0.51
Cereal preparations	10.94	14.69	11.40	8.09	2.85	8.04	11.65	14.86	12.13
Pulses	1.32	2.14	1.42	1.65	1.61	1.65	1.24	2.15	1.37
Other cereal preparations	0.07	0.21	0.08	0.02	.	0.02	0.08	0.21	0.10
Milk	5.79	3.82	5.55	8.88	6.95	8.86	5.02	3.77	4.83
Cheese and butter	11.83	7.94	11.35	11.47	6.71	11.42	11.93	7.96	11.34
Other diary products	0.00	.	0.00				0.00	.	0.00
Local eggs	1.27	1.19	1.26	0.47	0.35	0.47	1.47	1.21	1.43
Imported eggs	0.77	0.18	0.70	1.99	2.68	2.00	0.47	0.14	0.42
Fresh fish	0.85	0.37	0.79	1.90	1.25	1.90	0.58	0.36	0.55
Dried fish	2.23	1.88	2.19	1.29	1.75	1.29	2.47	1.88	2.38
Canned fish	0.06	0.01	0.05	0.10	.	0.10	0.05	0.01	0.04
Other fish	0.00	.	0.00				0.00	.	0.00
Fresh meat	6.71	3.54	6.32	10.45	6.13	10.41	5.78	3.51	5.44
Dry meat	1.14	0.06	1.01	1.09	0.18	1.08	1.16	0.06	1.00
Fruits	1.11	0.38	1.02	3.37	0.49	3.34	0.54	0.38	0.52
Vegetables	9.37	11.33	9.61	10.01	13.24	10.04	9.21	11.30	9.52
Tea	1.76	1.59	1.74	1.97	1.83	1.97	1.71	1.58	1.69
Coffee	0.08	0.05	0.08	0.28	.	0.28	0.03	0.05	0.03
Cooking oil	4.54	4.31	4.52	5.38	7.29	5.40	4.34	4.27	4.33
Spices and seasonings	4.54	4.12	4.49	3.56	3.70	3.56	4.78	4.13	4.69
Salt	0.48	0.46	0.48	0.33	0.52	0.33	0.51	0.46	0.51
Sugar	1.63	1.25	1.59	1.73	2.62	1.73	1.61	1.23	1.55
Jams	0.06	.	0.06	0.27	.	0.27	0.01	.	0.01
Pickels	0.12	0.04	0.11	0.35	.	0.34	0.06	0.04	0.05
Alcoholic beverages	5.93	7.43	6.11	3.13	6.45	3.16	6.63	7.45	6.75
Non-alcoholic beverages	0.84	0.07	0.75	2.45	0.18	2.42	0.44	0.07	0.39
Total	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*

Table 4.22: Structure of Real Food Expenditure, by Poverty Status (Upper Poverty Line) – Broad Categories

	National			Urban			Rural		
	Non-poor	Poor	All	Non-poor	Poor	All	Non-poor	Poor	All
Cereals and pulses	38.16	48.38	40.25	29.44	36.04	29.62	40.56	48.67	42.53
Dairy products	17.85	13.21	16.90	20.40	15.88	20.28	17.14	13.15	16.17
Eggs	2.10	1.43	1.96	2.47	2.66	2.47	1.99	1.40	1.85
Fish	3.20	2.37	3.03	3.29	3.18	3.29	3.17	2.35	2.97
Meat	8.13	4.23	7.33	11.61	7.05	11.49	7.17	4.16	6.44
Fruits and vegetables	10.44	11.38	10.63	13.35	14.56	13.38	9.63	11.30	10.04
Miscellaneous food	13.36	11.82	13.04	13.82	16.23	13.89	13.23	11.72	12.86
Beverages	6.78	7.18	6.86	5.62	4.40	5.58	7.10	7.24	7.13
Total	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*

Table 4.23: Structure of Real Food Expenditure, by Poverty Status (Upper Poverty Line) – Detailed Categories

	National			Urban			Rural		
	Non-poor	Poor	All	Non-poor	Poor	All	Non-poor	Poor	All
Rice	25.95	30.61	26.91	19.61	29.84	19.88	27.71	30.63	28.42
Wheat grain	0.35	0.73	0.43	0.02	0.14	0.02	0.44	0.75	0.51
Cereal preparations	10.57	14.67	11.40	8.14	4.56	8.04	11.24	14.90	12.13
Pulses	1.24	2.14	1.42	1.66	1.41	1.65	1.12	2.15	1.37
Other cereal preparations	0.05	0.23	0.08	0.02	0.09	0.02	0.06	0.23	0.10
Milk	6.00	3.79	5.55	8.91	7.04	8.86	5.19	3.71	4.83
Cheese and butter	11.85	9.42	11.35	11.49	8.84	11.42	11.95	9.44	11.34
Other diary products	0.00	.	0.00				0.00	.	0.00
Local eggs	1.27	1.23	1.26	0.47	0.47	0.47	1.49	1.25	1.43
Imported eggs	0.83	0.20	0.70	2.00	2.18	2.00	0.50	0.16	0.42
Fresh fish	0.87	0.45	0.79	1.91	1.37	1.90	0.59	0.43	0.55
Dried fish	2.26	1.91	2.19	1.28	1.78	1.29	2.53	1.92	2.38
Canned fish	0.07	0.01	0.05	0.11	0.03	0.10	0.05	0.01	0.04
Other fish	0.00	.	0.00				0.00	.	0.00
Fresh meat	6.93	3.93	6.32	10.51	6.51	10.41	5.95	3.87	5.44
Dry meat	1.20	0.29	1.01	1.10	0.54	1.08	1.22	0.29	1.00
Fruits	1.18	0.40	1.02	3.40	1.16	3.34	0.56	0.38	0.52
Vegetables	9.26	10.98	9.61	9.95	13.40	10.04	9.07	10.92	9.52
Tea	1.78	1.60	1.74	1.95	2.40	1.97	1.73	1.58	1.69
Coffee	0.09	0.03	0.08	0.28	.	0.28	0.04	0.03	0.03
Cooking oil	4.60	4.20	4.52	5.36	6.92	5.40	4.39	4.13	4.33
Spices and seasonings	4.56	4.21	4.49	3.55	3.79	3.56	4.84	4.22	4.69
Salt	0.47	0.50	0.48	0.33	0.51	0.33	0.51	0.50	0.51
Sugar	1.67	1.24	1.59	1.71	2.55	1.73	1.66	1.21	1.55
Jams	0.07	0.00	0.06	0.28	0.03	0.27	0.01	.	0.01
Pickels	0.12	0.04	0.11	0.35	0.03	0.34	0.06	0.04	0.05
Alcoholic beverages	5.86	7.09	6.11	3.14	3.98	3.16	6.61	7.16	6.75
Non-alcoholic beverages	0.92	0.08	0.75	2.48	0.43	2.42	0.49	0.08	0.39
Total	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*

Table 4.24: Mean Per Capita Monthly Expenditure (Nu) by Category and Poverty Status (Real Expenditure; Based on the Lower Poverty Line)

	National			Urban			Rural		
	Non-poor	Poor	All	Non-poor	Poor	All	Non-poor	Poor	All
Cereals & pulses	269.6	144.5	238.0	218.0	94.4	214.5	281.4	145.3	241.9
Dairy products	122.2	34.0	99.9	150.2	34.2	146.9	115.8	34.0	92.0
Eggs	14.2	4.0	11.6	18.2	7.6	17.9	13.2	3.9	10.5
Fish	21.8	6.5	17.9	24.3	7.5	23.8	21.2	6.5	16.9
Meat	54.5	10.4	43.4	85.2	15.8	83.2	47.4	10.3	36.6
Fruits/vegetables	72.6	33.9	62.8	98.8	34.4	96.9	66.6	33.8	57.1
Misc. food	91.6	34.2	77.1	102.3	40.0	100.6	89.2	34.1	73.2
Beverages	46.9	21.7	40.6	41.1	16.6	40.4	48.3	21.8	40.6
Total food	***693.4***	***289.1***	***591.3***	***738.2***	***250.5***	***724.3***	***683.1***	***289.7***	***568.9***
Tobacco	15.8	3.0	12.5	22.3	3.9	21.8	14.3	3.0	11.0
Clothing/footwear	197.6	39.6	157.7	339.2	57.5	331.2	164.9	39.3	128.4
Housing	221.0	38.9	175.0	394.8	87.6	386.0	180.9	38.1	139.4
Fuel & light	117.9	39.4	98.0	64.1	39.9	63.4	130.3	39.4	103.9
Transport	44.4	3.0	33.9	122.7	5.3	119.4	26.3	3.0	19.5
Communication	11.9	0.0	8.9	53.7	0.2	52.2	2.3	0.0	1.6
Household operation	20.7	5.4	16.8	42.5	10.3	41.6	15.6	5.4	12.7
Education	23.5	4.3	18.6	63.3	12.1	61.8	14.3	4.2	11.4
Recreation	9.6	0.1	7.2	36.9	2.0	35.9	3.3	0.1	2.3
Health	13.3	2.1	10.4	15.9	0.6	15.5	12.7	2.1	9.6
Personal care	41.3	8.1	32.9	83.1	12.5	81.0	31.6	8.1	24.8
Non-dur.furnishing & equipment	15.1	2.6	11.9	27.2	3.2	26.5	12.3	2.6	9.5
Durable furniture & equipment	5.4	0.1	4.0	23.6	0.1	23.0	1.2	0.1	0.8
House maintenance & minor repairs	47.2	11.3	38.1	60.3	0.5	58.6	44.1	11.5	34.6
Misc non-food	57.1	4.2	43.7	47.4	4.0	46.1	59.3	4.2	43.3
Total non-food	***825.7***	***159.1***	***657.3***	***1374.7***	***235.8***	***1342.2***	***699.1***	***157.8***	***541.9***
Total	**1534.9**	**451.2**	**1261.2**	**2135.2**	**490.2**	**2088.2**	**1396.4**	**450.5**	**1121.7**

Table 4.25: Mean Per Capita Monthly Expenditure (Nu) by Category and Poverty Status (Nominal Expenditure; Based on the Lower Poverty Line)

	National			Urban			Rural		
	Non-poor	Poor	All	Non-poor	Poor	All	Non-poor	Poor	All
Cereals & pulses	226.9	119.8	199.8	202.0	86.3	198.7	232.6	120.3	200.0
Dairy products	104.1	28.1	84.9	139.8	31.9	136.8	95.8	28.1	76.2
Eggs	12.0	3.3	9.8	17.0	7.2	16.7	10.9	3.2	8.7
Fish	18.4	5.4	15.1	22.7	6.9	22.2	17.4	5.3	13.9
Meat	46.9	8.6	37.2	79.6	14.5	77.8	39.3	8.5	30.4
Fruits/vegetables	62.0	28.1	53.4	92.5	31.9	90.8	54.9	28.0	47.1
Misc. food	77.6	28.2	65.2	95.2	37.1	93.6	73.6	28.1	60.4
Beverages	39.3	17.9	33.9	37.6	14.5	37.0	39.7	18.0	33.4
Total food	***587.2***	***239.4***	***499.3***	***686.5***	***230.2***	***673.4***	***564.3***	***239.5***	***470.0***
Tobacco	13.6	2.5	10.8	20.7	3.5	20.2	11.9	2.4	9.2
Clothing/footwear	171.7	32.8	136.6	321.9	53.4	314.2	137.0	32.4	106.7
Housing	189.8	32.3	150.0	365.2	81.4	357.1	149.3	31.4	115.1
Fuel & light	98.4	32.5	81.8	59.5	37.2	58.9	107.4	32.4	85.6
Transport	39.5	2.5	30.1	115.4	4.5	112.2	21.9	2.5	16.3
Communication	11.0	0.0	8.2	50.5	0.2	49.0	1.9	0.0	1.3
Household operation	17.9	4.5	14.5	39.4	9.5	38.5	12.9	4.4	10.4
Education	20.8	3.6	16.4	59.2	11.5	57.8	11.9	3.4	9.4
Recreation	8.7	0.1	6.6	34.7	1.8	33.8	2.7	0.1	2.0
Health	11.3	1.7	8.9	14.7	0.5	14.3	10.5	1.7	7.9
Personal care	35.7	6.7	28.3	76.9	11.3	75.0	26.1	6.6	20.5
Non-dur.furnishing & equipment	13.0	2.2	10.3	25.4	2.9	24.7	10.2	2.2	7.8
Durable furniture & equipment	4.9	0.0	3.7	21.9	0.1	21.3	1.0	0.0	0.7
House maintenance & minor repairs	39.8	9.5	32.1	54.2	0.4	52.6	36.4	9.6	28.7
Misc non-food	48.5	3.4	37.1	44.0	3.3	42.8	49.5	3.4	36.1
Total non-food	***710.8***	***131.8***	***564.5***	***1282.8***	***218.1***	***1252.4***	***578.8***	***130.4***	***448.6***
Total	**1311.6**	**373.6**	**1074.6**	**1990.0**	**451.8**	**1946.0**	**1155.0**	**372.3**	**927.8**

ANNEXES

I - Bibliography and Recommended Readings

Bhutan

Paper on Poverty and Infrastructure, 7th Round Table Meeting, Thimphu, 7-9 November 2000, Dr Pema Gyamtsho, Head, PPD, Ministry of Agriculture

Poverty Assessment and Analysis 2000, Planning Commission, Bhutan

Asian Development Bank (ADB)

Fighting Poverty in Asia and the Pacific, The Poverty Reduction Strategy, Asian Development Bank, November 1999
(Available on the internet at www.adb.org/Development)

Effectiveness of ADB Approaches and Assistance to Poverty Reduction, Asian Development Bank, May 2000
(Available on the internet at www.adb.org/Development)

United Nations Development Program (UNDP)

Human Development Report 2000, United Nations Development Program, 2000
(Available on the internet at www.undp.org/hdro/HDR2000.html)

Demystifying poverty Lines, Jean Olson Lanjouw, ?
(Available on the internet at www.undp.org/poverty/publications)

Review of Poverty Concepts and Indicators, Renata Lok-Dessalien, ?
(Available on the internet at www.undp.org/poverty/publications)

Poverty Assessments, Renata Lok-Dessalien, ?
(Available on the internet at www.undp.org/poverty/publications)

Poverty Measurement Methods – An Overview, Julio Boltvinik, ?
(Available on the internet at www.undp.org/poverty/publications)

Poverty Data and Measurement, A.Coudouel and J.Hentschel, in Poverty Reduction Strategy Sourcebook (draft), The World Bank, Washington DC, April-September 2000 (Available on the internet at www.worldbank.org/poverty/strategies)

World Development Report 2000/2001, The World Bank, 2000
(Available on the internet at www.worldbank.org/poverty/wdrpoverty/report)

Inequality: Methods and Tools – Text for World Bank's Web Site on Inequality, Poverty, and Socio-Economic Performance, Julie A. Lichtfield, March 1999
(Available on the internet at www.worldbank.org/poverty/inequal)

Poverty Comparisons. A Guide to Concepts and Methods, Martin Ravallion, Living Standard Measurement Study, February 1992

How Robust is a Poverty Profile? , Martin Ravallion and Benu Bidani, The World Bank Economic Review, Vol.8, No.1, 1994

The Measurement of Poverty, EDI Learning Resources Series, Learning Module 1 (prepublication draft), The World Bank, October 1997

(Note: the text below is copied from the IMPS 3.1 – CENVAR, *User's Guide* (International Systems Team, Bureau of the Census, U. S. Department of Commerce, Washington, D.C. 20233-8860, imps@info.census.gov, January 11, 1995.

Sampling error is constituted mainly by variable errors called 'variance'. There are also sampling biases, for example, those associated with the use of certain biased estimators such as the ratio estimator. But these biases tend to become negligible as the sample size increases. The variance is the average deviation of sample estimates from the average of all possible estimates under the same sample design and the same essential conditions.

The variance indicates the precision (reliability) of the estimates which is represented usually by the standard error of the estimate equal to the square root of the variance. The variance is lower when the sample size is large and when the sample design is efficient. Let $\hat{\theta}$ represent any sample estimator for any parameter q (mean, total, proportion, or ratio). Then, the standard error of $\hat{\theta}$, is given by:

$$s(\hat{\theta}) = \sqrt{var(\hat{\theta})}$$

The standard error is used in:

- hypothesis tests, which enable data users to identify significant differences and reach valid conclusions with regard to the true value of the parameter;

$$t = \frac{\hat{\theta} - \theta_{hyp}}{s(\hat{\theta})}$$

- confidence intervals which allow users to see the range of possibilities for the true parameter value;

$$\hat{\theta} + \_ 1.96\ s(\hat{\theta})$$

• coefficients of variation (CV)--the relative standard errors--which allow users to evaluate the precision in relative terms and compare precision levels for estimates of different parameters in different populations;

$$CV(\hat{\theta}) = \frac{s(\hat{\theta})}{\hat{\theta}}$$

• the calculation of the design effect (DEFF) which is used to compare the efficiency of a given complex sample design used with that of a simple random sample (SRS) design.

The package *CENVAR* is designed for the calculation of the variances and uses formulas appropriate for stratified multistage sample designs. Simple random sampling formulas or computer programs that assume a simple random sample should not be used to estimate variances in a complex survey (for example, a three-stage cluster design) because such calculations tend to result in gross underestimates of the true variance.

Stratum field **- stratum/substratum code.**

If there is more than one stratification level, the stratum chosen for the variance calculation will normally be the lowest (the more homogeneous the stratification cells, the lower the variance). However, each defined substratum must contain at least two sample clusters in the subpopulations being analyzed. Substrata failing to meet this criterion must be collapsed with other homogeneous ones before executing *CENVAR*. If collapsing is impractical, then a higher level of stratification should be chosen for calculating the variance. There must be a stratum code on each data record.

Stratum Rates **- sampling rates for the different strata.**

The use of sampling rates is optional. They are used to calculate the finite population correction (fpc) factor in the variance formula. When the sampling rates are 5 percent or lower, their effect on the variance is negligible. Ignoring the fpc in this case results in a conservative estimate of the variance, that is, a slight overestimation. If the rates are higher than 5 percent, they should be used in the variance calculation. If you specify stratum rates, you must also specify stratum, cluster and weights fields. There must be a rate for each stratum and this rate must appear on each data record.

Ultimate Cluster Variance Formulas

The variance is obtained from the *ultimate cluster* estimate. An *ultimate cluster* consists of the entire sample from the primary sampling unit (PSU), whether obtained by one, two, or more stages of sampling. The *ultimate cluster variance estimate* is based on the deviations among the PSU totals.

1. Estimator of Total

The estimator of a given total Y for a given subpopulation A is:

$$\hat{Y}_A = \sum_{h}^{DOM} \sum_{i} \sum_{j \in A} w_{h'ij}\, y_{hij} \qquad \textbf{(1)}$$

where:

$\hat{Y}_A$ = the estimated total for variable Y in subpopulation A (2)

DOM = the domain of estimation desired, for example, the urban zone or a given province

h = the substratum within the estimation domain

i = the sample PSU

j = the unit of analysis or element

A = a subset of elements possessing a given attribute, that is, belonging to a given subpopulation A, for example, persons in a given age group

y_{hij} = the observed value of the variable 'y' for the j-th element of the i-th sample PSU in substratum h; and

w'_{hij} = the final (adjusted) sampling weight for the element; includes all the stages of selection.

2. Estimator of Ratio

The estimator of a given ratio R for subpopulation A is the following:

$$\hat{R}_A = \frac{\hat{Y}_A}{\hat{X}_A} \qquad \textbf{(2)}$$

where:

$\hat{R}_A$ = estimate for the ratio of Y to X in subpopulation A

$\hat{Y}_A$ = estimated total for variable Y in subpopulation A, given by formula (1)

$\hat{X}_A$ = estimated total for variable X in subpopulation A, also given by formula (1).

When cluster designs are involved, means and proportions are special types of ratios. In the case of the mean, the variable X, in the denominator of the ratio, is defined to equal 1 for each element so that the denominator is the sum of the weights in the subpopulation. In the case of the proportion, the variable X in the denominator is also defined to equal 1 for all elements. But, in addition, the variable Y in the numerator is binomial and is defined to equal either 0 or 1, depending on the absence or presence, respectively, of a specified attribute in the element observed.

3. True Variance of Total Estimator

The true variance of an estimator of total in a given domain of estimation under a stratified two-stage sampling scheme with probability proportional to size with replacement (PPS-WR) in the first stage, and simple random sampling without replacement (SRS-WOR) in the second-stage is:

$$Var(\hat{Y}_A) = \sum_{h}^{DOM} \left[\frac{1}{n_h} \sum_{i=1}^{N_h} p_{hi} \left(\frac{Y_{Ahi}}{p_{hi}} - Y_{Ah} \right)^2 + \frac{1}{n_h} \sum_{i=1}^{N_h} M_{hi}^2 \frac{(1 - f_{2hi}) S_{Ahi}^2}{m_{hi}\, p_{hi}} \right] \qquad \textbf{(3)}$$

"between PSU component" "within PSU component"

where, N_h = the total number of PSU's in substratum h

n_h = number of sample PSU's in substratum h

M_{hi} = the total number of population elements in the i-th PSU of substratum h

m_{hi} = number of sample elements in the i-th PSU of substratum h

$p_{hi} = \frac{M_{hi}}{M_h}$ = the relative size of the i-th PSU in substratum h

$f_{2hi} = \frac{m_{hi}}{M_{hi}}$ = the second-stage sampling rate

$S^2_{Ahi} = \frac{\sum_j^{N_h} (Y_{Ahij} - \overline{Y}_{Ahi})^2}{M_{hi} - 1}$ = population variance among elements within the i-th PSU

Y_{Ahij} = Y_{hij}, if j e A ;=the value of characteristic y for the j-th element belonging to subpopulation A
0, otherwise

$\overline{Y}_{Ahi} = \frac{\sum_j^{M_{hi}} Y_{Ahij}}{M_{hi}}$ = population mean per element within i-th PSU for subpopulation A

$Y_{Ahi} = \sum_j^{M_{hi}} Y_{Ahij}$ = population total for all elements within i-th PSU for subpopulation A

$Y_{Ah} = \sum_i^{N_h} \sum_j^{M_{hi}} Y_{Ahij}$ = population total for all elements in substratum h (over all PSU's) for subpopulation A

If the sample is selected systematically without replacement at both the first and the second stage, the true variance of the estimator is smaller than that stated in expression (3), although the exact expression cannot be defined. These procedures usually are incorporated specifically to improve the efficiency of the design, that is, reduce the variance of the estimators.

The ultimate clusters method is a very convenient way of estimating the total variance of the estimator. However, it does not give separate estimates of the between and within components, that is, it does not supply separate estimates of the variance contribution from sampling within PSU's. These components are not needed, however, for the purpose of estimating the precision of the results. The ultimate clusters formulas can be used with either PPS or equal probability selection, in single-stage or multi-stage sampling. The key is to define appropriately the PSU's and the weights for the elements.

4. Estimator of Variance for Total

Under the ultimate clusters approach, the variance of an estimator of total for a given subpopulation A, within any domain of estimation is estimated by:

$$v(\hat{Y}_A) = \sum_{h}^{DOM} \left[\frac{n_h}{n_h - 1} \sum_{i=1}^{n_h} \left(\hat{Y}_{Ahi} - \frac{\hat{Y}_{Ah}}{n_h} \right)^2 \right] \qquad \textbf{(4)}$$

where:

$$\hat{Y}_{Ahi} = \sum_{j \in A} w_{h'ij}\, y_{hij}$$

$$\hat{Y}_{Ah} = \sum_{i} \sum_{j \in A} w_{h'ij}\, y_{hij}$$

Note that although $\hat{Y}_{Ah}$ is an unbiased estimator of Y_{Ah}, $\hat{Y}_{Ahi}$ as defined here is not an estimator of Y_{Ahi} since w'_{hij} includes the first-stage sampling weight as well as the second-stage.

The expression in (4) is an unbiased estimator of the variance in expression (3). But in the case of systematic selection, formula (4) will result in a conservative variance estimate, that is, it will slightly over-estimate the true variance of the estimates.

5. Estimator of Variance for Ratio

The ultimate clusters estimator of the variance of a ratio for a given subpopulation A, within any domain of estimation is:

$$v(\hat{R}_A) = \frac{1}{\hat{X}_A^2}\left[v(\hat{Y}_A) + \hat{R}_A^2 v(\hat{X}_A) - 2\,\hat{R}_A\, cov(\hat{X}_A, \hat{Y}_A)\right] \quad \textbf{(5)}$$

where:

$$cov(\hat{X}_A, \hat{Y}_A) = \sum_h^{DOM}\left[\frac{n_h}{n_h - 1}\sum_{i=1}^{n_h}\left(\hat{X}_{Ahi} - \frac{\hat{X}_{Ah}}{n_h}\right)\left(\hat{Y}_{Ahi} - \frac{\hat{Y}_{Ah}}{n_h}\right)\right]$$

$v(\hat{Y}_A)$ and $v(\hat{X}_A)$ are calculated according to formula (4);

$\hat{X}_A$ is calculated according to formula (1); and

$\hat{R}_A$ according to formula (2).

The program algorithm for the estimated variance of the ratio is based on a Taylor series approximation.

Determination of Sample Sizes for Future Surveys

Often, there is a need to estimate sample sizes required in future surveys based on the level of reliability obtained in the current survey or a past survey. Mathematically, this is simple once the relative standard error or coefficient of variation (CV) for the estimator under a fixed sample design is known. However, estimates of CVs are often not available.

CENVAR can be used on past data or current data for the purpose of estimating these CVs and using them to determine the sample size for the future survey. Still, given the different factors involved in sample size determination, sample design expertise is required for making the final decision on the appropriate sample size for the survey. A sample design textbook should be consulted.

For a given characteristic and a given domain of estimation, the required sample size *n* would be given by:

$$required\ n = n_{used} * \left[\frac{CV\ obtained}{target\ CV} \right]^2$$

where:

n used = number of observations the estimate was based on (from CENVAR output table)

CV obtained = estimated coefficient of variation or relative standard error (from CENVAR output table)

target CV = coefficient of variation desired in future survey (user-specified, for example, .05, .10, .15 or .20).

Thus, the required sample size could be calculated in a spreadsheet, by adding a column to include the above relation for each row or selected rows representing the desired characteristic and level.

The user must be extremely careful, however, to interpret the results correctly. There are a number of underlying assumptions which would have to be satisfied before the suggested sample size could guarantee the target precision for the estimate.

The core assumption is that of a fixed DEFF (design effect), equal to the value obtained in the *CENVAR* output table. To achieve the target precision with the calculated sample size, the proposed survey would need to have the same sample design and the same efficiency level. In general, the underlying assumptions are that the proposed survey will have:

- the same stratification scheme
- the same cluster (PSU) sizes
- the same number of sample elements per PSU, and
- the same intraclass correlation coefficient

If these assumptions are not met, the actual precision level obtained will be higher or lower than expected, depending on whether the actual design is more efficient or less efficient.

There are other considerations to bear in mind, the most important being:

1. Different characteristics will produce different required sample sizes since their variability in the population may be different. Therefore, it is necessary to target the most important ones. Seasonal variability would have to be taken into account also.

2. For overall accuracy, it is necessary to reduce the total error of the estimate: sampling errors as well as nonsampling errors (NSE's). While large sample sizes reduce sampling errors and increase precision, too large a sample can impose an excessive burden on the resources (if they are limited) and increase the likelihood of NSE's. Therefore, practical considerations must be taken into account in deciding the final sample size for the survey.

3. If past experience permits to anticipate a certain level of nonresponse, it may be advisable to inflate the calculated sample size before data collection to compensate for the expected loss in the number of usable units.

Sampling errors in HIES 2000 computed for selected variables using IMPS-CENVAR (version 3.1)

```
Files:
    Data dictionary: C:\ADB\BHUTAN\PROGRAMS\SAMP_ERR.DD
         Input data: SAMPERR.BCH
     Output listing: SAMPERR1.VAR

Sample design:
      Stratum field: STRATUM
      Cluster field: EA
       Weight field: MULTIPLI
      Stratum rates: <none>

   Two-stage option: NO
```

ANALYSIS TYPE: RATIOS

Number of observations: 3854

Num / Denom	Estimate	Standard Error	C.V. (%)	95% Confidence Interval Lower	95% Confidence Interval Upper	Design Effect
MEAN EXPENDITURE PER HOUSEHOLD:						
CEREALS AND PULSES	1,105.874	44.054	3.98	1,019.529	1,192.219	12.01
DAIRY PRODUCTS	469.880	21.070	4.48	428.582	511.178	9.87
EGGS	54.374	3.284	6.04	47.937	60.811	8.45
FISH	83.464	6.399	7.67	70.922	96.005	10.81
MEAT	205.949	11.253	5.46	183.894	228.004	4.33
FRUITS & VEGETABLES	295.592	11.295	3.82	273.453	317.731	8.81
MISC. FOOD	360.553	15.560	4.32	330.055	391.051	13.43
BEVERAGES	187.739	12.417	6.61	163.401	212.077	7.70
TOBACCO	59.533	5.774	9.70	48.216	70.850	6.51
TOTAL FOOD	2,763.425	88.657	3.21	2,589.658	2,937.192	12.02
TOTAL NON-FOOD	3,114.427	153.160	4.92	2,814.233	3,414.622	3.57
TOTAL EXPENDITURE	5,926.207	202.683	3.42	5,528.948	6,323.465	4.88
REAL FOOD EXP.	3,272.200	104.730	3.20	3,066.930	3,477.470	12.31
REAL NON-FOOD EXP.	3,547.195	156.071	4.40	3,241.296	3,853.094	3.81
REAL TOTAL EXP.	6,865.908	216.542	3.15	6,441.487	7,290.330	5.51

ANALYSIS TYPE: SUBPOPULATION RATIOS

Analysis Ratio: **MEAN REAL TOTAL EXPENDITURE PER HOUSEHOLD, BY STARTUM**

Category	Estimate	Standard Error	C.V. (%)	95% Confidence Interval Lower	95% Confidence Interval Upper	Design Effect	Number of Observations
STRATUM							
1	9,328.838	318.359	3.41	8,704.853	9,952.822	1.12	1,528
2	9,378.047	1,387.210	14.79	6,659.115	12,096.979	1.72	347
3	5,866.057	223.238	3.81	5,428.511	6,303.603	1.34	871
4	6,468.773	288.331	4.46	5,903.644	7,033.902	8.12	1,108

Analysis Ratio: **MEAN REAL FOOD EXPENDITURE PER HOUSEHOLD, BY STRATUM**

Category	Estimate	Standard Error	C.V. (%)	95% Confidence Interval Lower	95% Confidence Interval Upper	Design Effect	Number of Observations
STRATUM							
1	3,311.445	73.738	2.23	3,166.919	3,455.972	0.92	1,528
2	3,226.576	309.134	9.58	2,620.674	3,832.478	1.94	347
3	3,231.833	101.117	3.13	3,033.644	3,430.022	1.98	871
4	3,275.506	157.624	4.81	2,966.564	3,584.449	18.43	1,108

Analysis Ratio: **MEAN REAL NON-FOOD EXPENDITURE PER HOUSEHOLD, BY STRATUM**

Category	Estimate	Standard Error	C.V. (%)	95% Confidence Interval Lower	95% Confidence Interval Upper	Design Effect	Number of Observations
STRATUM							
1	6,044.798	281.285	4.65	5,493.480	6,596.117	0.94	1,528
2	6,071.800	1,097.029	18.07	3,921.623	8,221.977	1.46	347
3	2,609.788	180.309	6.91	2,256.383	2,963.194	1.18	871
4	3,124.772	202.311	6.47	2,728.242	3,521.301	6.15	1,108

Analysis Ratio: **MEAN TOTAL (NOMINAL) EXPENDITURE PER HOUSEHOLD, BY STRATUM**

Category	Estimate	Standard Error	C.V. (%)	95% Confidence Interval Lower	95% Confidence Interval Upper	Design Effect	Number of Observations
STRATUM							
1	8,734.356	350.059	4.01	8,048.240	9,420.471	1.38	1,528
2	8,828.212	1,305.878	14.79	6,268.690	11,387.733	1.72	347
3	4,619.017	233.218	5.05	4,161.910	5,076.123	1.39	871
4	5,516.886	264.608	4.80	4,998.254	6,035.518	7.10	1,108

Analysis Ratio: **MEAN FOOD (NOMINAL) EXPENDITURE PER HOUSEHOLD, BY STRATUM**

Category	Estimate	Standard Error	C.V. (%)	95% Confidence Interval Lower	95% Confidence Interval Upper	Design Effect	Number of Observations
STRATUM							
1	3,073.237	84.408	2.75	2,907.798	3,238.677	1.31	1,528
2	3,037.402	291.009	9.58	2,467.024	3,607.780	1.94	347
3	2,475.131	77.441	3.13	2,323.346	2,626.916	1.98	871
4	2,758.566	132.747	4.81	2,498.381	3,018.751	18.43	1,108

Analysis Ratio: **MEAN NON-FOOD (NOMINAL) EXPENDITURE PER HOUSEHOLD, BY STRATUM**

Category	Estimate	Standard Error	C.V. (%)	95% Confidence Interval Lower	95% Confidence Interval Upper	Design Effect	Number of Observations
STRATUM							
1	5,640.186	299.115	5.30	5,053.921	6,226.450	1.19	1,528
2	5,715.810	1,032.711	18.07	3,691.698	7,739.923	1.46	347
3	2,121.629	208.211	9.81	1,713.536	2,529.722	1.30	871
4	2,697.525	197.462	7.32	2,310.499	3,084.550	5.39	1,108

```
Files:
    Data dictionary: C:\ADB\BHUTAN\PROGRAMS\SAMP_ERR.DD
         Input data: SAMPERR.BCH
     Output listing: SAMPERR2.VAR

Sample design:
      Stratum field: STRATUM
      Cluster field: EA
       Weight field: POPW
      Stratum rates: <none>

   Two-stage option: NO
```

ANALYSIS TYPE: RATIOS

Number of observations: 3854

Num / Denom	Estimate	Standard Error	C.V. (%)	95% Confidence Interval Lower	95% Confidence Interval Upper	Design Effect
POVERTY HEADCOUNT						
LOWER POVERTY LINE	0.253	0.070	27.70	0.115	0.390	99.92
UPPER POVERTY LINE	0.363	0.065	17.85	0.236	0.490	69.96
MEAN EXPENDITURE PER CAPITA						
FOOD (NOMINAL)	499.340	28.406	5.69	443.665	555.015	33.97
NON-FOOD (NOMINAL)	562.765	49.286	8.76	466.164	659.365	8.86
TOTAL (NOMINAL)	1,072.843	75.971	7.08	923.939	1,221.746	15.76
FOOD (REAL)	591.273	33.567	5.68	525.482	657.065	35.39
NON-FOOD (REAL)	655.218	57.362	8.75	542.789	767.647	8.98
TOTAL (REAL)	1,259.012	88.747	7.05	1,085.068	1,432.956	16.32

ANALYSIS TYPE: SUBPOPULATION RATIOS

Analysis Ratio: **POVERTY HEADCOUNT (LOWER POVERTY LINE) BY STRATUM**

Category	Estimate	Standard Error	C.V. (%)	95% Confidence Interval Lower	95% Confidence Interval Upper	Design Effect	Number of Observations
STRATUM							
1	0.024	0.006	26.62	0.011	0.036	0.84	1,528
2	0.060	0.017	28.40	0.027	0.094	0.37	347
3	0.282	0.028	10.01	0.227	0.337	2.67	871
4	0.292	0.098	33.34	0.101	0.484	120.34	1,108

Analysis Ratio: **POVERTY HEADCOUNT (UPPER POVERTY LINE) BY STRATUM**

Category	Estimate	Standard Error	C.V. (%)	95% Confidence Interval Lower	95% Confidence Interval Upper	Design Effect	Number of Observations
STRATUM							
1	0.060	0.009	14.76	0.043	0.078	0.68	1,528
2	0.090	0.022	23.85	0.048	0.133	0.41	347
3	0.423	0.029	6.89	0.366	0.480	2.36	871
4	0.411	0.089	21.57	0.237	0.584	84.91	1,108

Analysis Ratio: **MEAN PER CAPITA FOOD EXPENDITURE (NOMINAL) BY STRATUM**

Category	Estimate	Standard Error	C.V. (%)	95% Confidence Interval Lower	95% Confidence Interval Upper	Design Effect	Number of Observations
STRATUM							
1	671.009	18.077	2.69	635.578	706.440	1.19	1,528
2	689.708	48.282	7.00	595.076	784.341	1.26	347
3	443.052	17.022	3.84	409.688	476.416	2.72	871
4	476.973	38.251	8.02	402.002	551.944	47.96	1,108

Analysis Ratio: **MEAN PER CAPITA NON-FOOD EXPENDITURE (NOMINAL) BY STRATUM**

Category	Estimate	Standard Error	C.V. (%)	95% Confidence Interval Lower	95% Confidence Interval Upper	Design Effect	Number of Observations
STRATUM							
1	1,231.475	61.308	4.98	1,111.312	1,351.638	0.88	1,528
2	1,297.899	183.651	14.15	937.944	1,657.854	0.95	347
3	379.774	36.368	9.58	308.493	451.056	0.99	871
4	466.419	59.526	12.76	349.747	583.091	12.29	1,108

Analysis Ratio: **MEAN PER CAPITA TOTAL EXPENDITURE (NOMINAL) BY STRATUM**

Category	Estimate	Standard Error	C.V. (%)	95% Confidence Interval Lower	95% Confidence Interval Upper	Design Effect	Number of Observations
STRATUM							
1	1,922.983	74.954	3.90	1,776.074	2,069.893	1.01	1,528
2	2,004.637	220.454	11.00	1,572.548	2,436.727	1.07	347
3	826.810	42.190	5.10	744.118	909.502	1.12	871
4	953.903	94.554	9.91	768.577	1,139.230	22.89	1,108

Analysis Ratio: **MEAN PER CAPITA FOOD EXPENDITURE (REAL) BY STRATUM**

Category	Estimate	Standard Error	C.V. (%)	95% Confidence Interval Lower	95% Confidence Interval Upper	Design Effect	Number of Observations
STRATUM							
1	723.019	17.374	2.40	688.967	757.071	0.99	1,528
2	732.664	51.289	7.00	632.138	833.191	1.26	347
3	578.502	22.226	3.84	534.938	622.066	2.72	871
4	566.355	45.418	8.02	477.336	655.375	47.95	1,108

Analysis Ratio: **MEAN PER CAPITA NON-FOOD EXPENDITURE (REAL) BY STRATUM**

Category	Estimate	Standard Error	C.V. (%)	95% Confidence Interval Lower	95% Confidence Interval Upper	Design Effect	Number of Observations
STRATUM							
1	1,319.818	57.940	4.39	1,206.255	1,433.381	0.71	1,528
2	1,378.734	195.089	14.15	996.361	1,761.108	0.95	347
3	495.879	47.486	9.58	402.806	588.953	0.99	871
4	553.823	70.681	12.76	415.288	692.359	12.29	1,108

Analysis Ratio: **MEAN PER CAPITA TOTAL EXPENDITURE (REAL) BY STRATUM**

Category	Estimate	Standard Error	C.V. (%)	95% Confidence Interval Lower	95% Confidence Interval Upper	Design Effect	Number of Observations
STRATUM							
1	2,065.005	69.595	3.37	1,928.599	2,201.411	0.79	1,528
2	2,129.489	234.184	11.00	1,670.489	2,588.490	1.07	347
3	1,079.584	55.088	5.10	971.611	1,187.557	1.12	871
4	1,132.660	112.273	9.91	912.604	1,352.715	22.89	1,108

Housing Unit: It is a structurally separated and independent place of abode. It may have been, built, constructed, converted or arranged for human habitation, such as commercial, industrial or agricultural building, or natural or man made shelters such as caves, abandoned trucks, culverts which are used for living.

Household: A single person or group of persons (related or unrelated or a combination of both) living together normally and taking food from a common kitchen constitutes a household. The word "normally" means that temporary visitors are excluded but temporary stay away are included. "Living together" is usually given more importance than "sharing food from a common kitchen" in drawing the boundaries of a household in case the two criteria are in conflict. The following guidelines are considered for determining normal members of a household:
(a) In case the place of residence of a person is different from the place of boarding, he or she will be treated as a member of the household with whom he or she resides.
(b) A resident employee, or domestic servant, or a paying guest (but not just a tenant in the household) is considered as a member of the household with whom he or she resides even without being a member of the same family.
(c) When a person sleeps in a place (say, in a shop or a room in another house) and usually takes food with his or her family, he or she should be treated not as a single member household but as a member of the household in which other members of his or her family stay.
(d) If a member of a household stays out in a hostel for studies or for any reason, he/she is not considered as member of his/her parent's household.

Head of Household: The head of a household is an adult (age 15 or more years) member who is accepted and recognized as one responsible for taking decisions on all household matters.

Household Size: The total number of persons in the household is the size of the household.

Expatriate: A person who is paid for by an agency other than the Royal Government of Bhutan (RGB) or any private organization/agency of Bhutan like the government of another country, international organizations like the United Nations, FAO, the World Bank etc., or a company/organization in another country is treated as an expatriate for the purpose of HIES.

Prime Means of Livelihood (PML): The means of livelihood that fetches maximum income to the household is termed as the prime means of livelihood.

Owned Land: A piece of land is considered "owned by the household" if permanent heritable possession with or without the right to transfer the title is vested in one or more members of the household. Land held in owner-like possession under long-term lease or assignment is also considered as land owned.

Homestead Land: The courtyard, compound, garden, orchard or plantation, out-house, shop, tank, well, latrine etc., annexed to the dwelling house is considered homestead land of the household.

Land Leased-in/Leased-out: Land leased-in is the land taken on rent or free from the owner (not household member) without the right to inheritance title. Land leased-out is the land given out to other household(s) on rent, or free by the sample household without surrendering the title. If the household possesses land which is neither owned nor leased-in, it is considered as land "neither owned nor leased-in".

Total Land Possessed: It is land owned plus land leased-in plus land neither owned nor leased-in minus land leased out. In case servants/paying guests are normal members of a household, the land possessed by them is not included in computing the total land possessed.

Land Cultivated During Last Six Months: For the first round of HIES land cultivated during last six months is the net area sown during the winter season of 1999. It includes area sown with field crops and under orchards and plantations. By net is meant that same area will be counted once even if sown more than once during the season.

Number of Meals Usually Taken in a DAY: For the HIES, a meal means cooked food, the major constituent being cereals. Meal is considered different from 'nastha' or 'snacks' since meal contains more quantity of food items. Normally a person takes two or three meals in a day. If more than three meals per day were reported in HIES, it was considered as three only.

Household Consumer Expenditure: It is the expenditure incurred by a household on domestic consumption during the reference period. All expenditure incurred towards productive enterprise of household is excluded. Consumption includes all consumption of both monetary and non-monetary purchases and goods received as gift, loan etc. Expenditure incurred on pet animals and livestock belonging to the household are excluded from household consumption expenditure. However, the consumption by the households out of household own produced livestock

products like milk, meat, egg etc., is included in the household consumer expenditure. Transfer payments in kind like loans , advances, charities, gifts and other payments in kind do not form a part of the household consumer expenditure, while consumption from transfer receipts are included. Thus consumption by the sample household consists of consumption made out of (1) commodities purchased in cash; (2) commodities received in exchange of goods and services; (3) home-grown/home-produced stock; (4) transfer receipts such as gifts, loans, charities etc.; and (5) free collection.

The household consumer expenditure is the total of the monetary values of consumption of various groups of items namely (a) food, beverages, betel leaves, tobacco, fuel and light; (b) clothing, bedding and footwear; and (c) miscellaneous goods and services. For (a) and (b), the total value of consumption is derived by aggregating the monetary value of goods actually consumed during the reference period. An item of clothing, bedding, and footwear is considered to have been consumed if it is brought into maiden use or first use during the reference period. The consumption may be out of (i) purchases made during the reference period or earlier; (ii) home grown/produced stock; (iii) receipt in exchange of goods and services; (iv) any other receipt like gift, charity, borrowing; and (v) free collection. In case of items in group (c) i.e., items categorized as miscellaneous goods and services and durable articles, the expenditure made during the reference period for purchase of these goods and services is considered as consumption.

It may be added for clarification that the expenditure of a household on food items relates to actual consumption by the normal resident members of the household as also by the guests whether during ceremonies or otherwise. To avoid double counting, transfer payments like charity, loan advances, etc., made by the household are not considered consumption for items of groups (a) and (b), since transfer receipts of these items are treated as consumption. However, the item “cooked meals” is an exception to the rule. Meals prepared in the household kitchen and provided to the employees and/or others should get included in domestic consumption of employer (payer) household. This is on account of the practical difficulty of estimating the quantities and values of individual items used for preparing the meals served to employees and others. Thus, to avoid double counting, cooked meals received as perquisites from employer household or as gift and charity are not to be recorded as consumption in the recipient household. The cooked meals purchased from the market for consumption of the normal resident members as also for guest and employees will also be recorded in the purchaser household. Since the proportion of donors and recipient of free cooked meals are likely to vary in opposite directions over the expenditure classes, the nutritional intake derived from HIES data may present a somewhat distorted picture. These derived nutrition intakes may get inflated for the rich (donors) and somewhat understated for the poor (recipients). This

point needs to be taken note of in any nutritional studies based on HIES data.

Value of Consumption: The value of commodities consumed is imputed as follows:
(a) the value of consumption out of purchase is the value at which it was purchased;
(b) the value of consumption out of home-grown stock is imputed at the ex-farm/factory rate and goods consumed from own shop/business is to be imputed at whole sale price or the price at which it was purchased;
(c) the value of goods received in exchange of goods and services are imputed at the locally prevailing retail price during the reference period. The same applies to consumption of gifts, loans, and free collection.

Durable Goods: The durable goods, other than clothing, bedding and footwear, are goods having an expected lifetime of use of one year or more.

Monthly Per Capita Expenditure (MPCE): It is the total household consumer expenditure for a month divided by the household size. A person's MPCE is taken as that of the household to which he/she belongs**.**

Literate: A person who can read and write a simple message with understanding in at least one language is considered as 'literate'. Those who are not able to do so are considered as 'not-literate'.

Economic Activity: Any activity resulting in production of goods and/or services that add value to the national product is considered as an economic activity. Such activities include production of all goods and services for market i.e., production for pay or profit and the production of primary commodities for own consumption and own account of fixed assets, among the non-market activities. The entire spectrum of human activity falls into two categories viz., economic and non-economic. The economic activities have two parts- market activities and non-market activities. Market activities are those that involve remuneration to those who perform it, i.e., activity performed for pay or profit. These are essentially production of goods and services for the market including those of government services etc. Non-market activities are the production for own consumption of primary products including own account processing of primary products and own account production of fixed assets. The whole spectrum of economic activities as defined in the UN System of National Accounts 1993 were not be covered under 'economic activity' for the HIES. In this survey, the term economic activity includes:
(a) all market activities described above i.e., the activities performed for pay or profit;
(b) of all the non market activities, (i) all the activities relating to agricultural sector which result in production (including gathering of uncultivated crops, forestry, collection of firewood, hunting, fishing etc.) of agricultural produce

for own consumption, and (ii) the activities relating to own account production of fixed assets. Own account production of fixed assets includes construction of own houses, roads, wells etc., and of machinery, tools etc., for household enterprise and also construction of any private or community facilities free of charge. A person may be engaged in own account construction either in the capacity of a labour or a supervisor. Begging, prostitution, smuggling will not be considered as an economic activity for purpose of this survey.

Usual Economic Activity Status: The three categories of economic activity status are- (i) employed (or at work); (ii) not employed but available for work; and (iii) neither employed nor available for work. The activity status of a person can change day to day. The number of days a person was in status (i), (ii), and (iii) during the last 365 days is ascertained and the largest number of days amongst these three categories is termed as the usual economic activity status of the person.

Worker: For purpose of classifying a person a worker or not under the HIES, a reference period of 365 days is used. If during the period of 365 days a person was usually economically active (for major part of the reference period), he/she will be considered as a worker. If a person worked for pay, profit, or family gain at least for one hour in a day then he/she will be considered as having worked for the day.

Household Income: Household income is the total income accrued to usual members of the household through participation in any economic activity as also receipts from other sources by household members. Income from employment includes (i) salaries and wages including allowances from paid employment; (ii) net receipts/profits derived from the operation of household enterprise/activities; and (iii) net receipts from trade or profession. Receipt from other sources include receipts, gifts and assistance received, dividends and interest from investments, imputed rental value of owner-occupied houses, pensions, rentals including landowner's share of agricultural products from leased out land. Household income also includes from family sustenance activities which are not considered as family-operated enterprise. Income received from begging, prostitution, smuggling is not considered as income for the HIES**.**

Industry: Industry or kind of economic activity refers to the nature of work done by the institution or the work place or enterprise where the person works.

Principal Industry of Household: One or more members of the household may be pursuing economic activities either in the same industry or different industries. In such cases the industry which fetches the maximum (largest) income to the household is taken as the principal industry of the household. It may happen that in some case the earnings from two different industries are the same. By convention the industry in

which the senior most member of the household works is taken as the principal industry of the household**.**

Occupation: This refers to the type of work, trade or profession performed by the person (worker) during the reference period. If the person is not at work but with a job, occupation refers to the kind of work the person will be doing when he/she reports for work**.**

Monthly Per Capita Income Classes (MPCI): This is defined and determined following the same procedure indicated for MPCE with the change to replace the variable 'household expenditure' by 'household income'

HOUSEHOLD INCOME AND EXPENDITURE SURVEY

2000

CENTRAL STATISTICAL OFFICE

PLANNING COMMISSION

ROYAL GOVERNMENT OF BHUTAN

SCHEDULE 1 : HOUSEHOLD SCHEDULE

Block (0) : identification and operational particulars

0.1 geographic particulars

1. stratum number ☐

2. name of town/geog ……. ☐☐☐

3. EA no./name of chupen ……. ☐☐☐☐☐☐☐☐

0.2 operational particulars

1. name of respondent …….

2. name of enumerator …….

3. date of data collection ……/……/2000

3.1 time started …….

3.2 time finished ……

4. name of supervisor ……

5. date of supervisory check ……/…../2000

6. date of despatch ……/……/2000

0.3 sampling particulars

1. hh serial no. in the list ……
2. hh control no.

3. hh address ……

4. multiplier

0.4 processing particulars

1. manual security

1.1 name of staff ……..

1.2 date ……/……/2000

2. coding

2.1 name of staff ……..

2.2 date ……/……/2000

3. data entry

3.1 name of staff ……..

3.2 date ……/……/2000

4. data verification

4.1 name of staff ……

4.2 date ……/……/2000

Block (1) : households characteristics

1.01 household size

1.02 principal industry .....

code .....

1.03 household type (code)

1.04 religion (code)

1.05 whether owns any land (yes –1, no – 2)

1.06 if yes in item1.05, type of land owned (code)

1.07 land as on date of survey in (0.00 acres)

1.07.1 owned

1.07.2 leased-in

1.07.2 neither owned nor leased in

1.07.3 leased-out

1.07.4 **total**

1.08 land cultivated during winter season of 1999 (0.00 acres)

1.09. does the hh possess a kitchen garden (yes-1, no-2)

1.10. primary source of energy for

1.10.1 cooking (code)

codes

item 1.02. enumerator will give full description and code will be determined by the supervisor.

item 1.03. household type

: For **urban areas**

self-employed	- 1
regular wage/salary earning	- 2
casual labour	- 3
others	- 9

: for **rural areas**

self-employed in non-agriculture	- 1
agriculture labour	- 2
other labour	- 3
self-employed in agriculture	- 4
others	- 9

item 1.04. **religion**

buddhist	- 1
hindu	- 2
christian	- 3
others	- 9

item 1.06 type of land owned

homestead only	- 1
homestead and other land	- 2
other land	- 3

item 1.10.1 primary source of energy for cooking

coke, coal	-01
firewood and chips	- 02
gobar gas	- 03
dung cake	- 04

1.01 primary source of energy for

1.07.1 cooking (code) ☐

1.07.2 lighting (code)

1.08 during the last one year, did the hh receive any income from

(yes – 1, no – 2)

1.08.1 crop farming & gardening ☐

1.08.2 livestock and poultry ☐

1.08.3 fishing ☐

1.08.4 forestry/hunting ☐

1.08.5 wage/salary employment ☐

1.11.6 non-agricultural enterprise ☐

.1.11.7 pension ☐

1.11.8 rent ☐

1.07.2 remittances ☐

1.07.3 interest and dividends ☐

1.11.11 others ☐

item 1.10.1 primary source of energy for cooking

coke, coal	- 01
firewood & chips	- 02
Gobar gas	- 03
Dung cake	- 04
LPG	- 05
Charcoal	- 06
Kerosene	- 07
electricity	- 08
solar	- 09
others	- 99

item 1.10.2 primary source of energy for lightning

kerosene	- 1
other oil	- 2
gas	- 3
candle	- 4
electricity	- 5
solar	- 6
pine trees (mepchey)	- 7
others	- 8

Block (2): demographic and other particulars of households members

srl.no	name of member	relation to head (code)	sex (male-1, female-2)	age (years)	marital status (code)	general education level (code)	during last 365 days: whether a worker (yes-1, no-2)	during last 365 days: type of income received (code)	no. of days stayed away from home during last 30 days	no. of meals usually taken in a day	no. of meals taken during last 30 days: away from home: free of cost: from school	no. of meals taken during last 30 days: away from home: free of cost: from employer as perquisites or part of wage	no. of meals taken during last 30 days: away from home: free of cost: others	no. of meals taken during last 30 days: away from home: on payment	no. of meals taken during last 30 days: at home
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)

CODES FOR BLOCK :

Col. (3) : relation to head : self 1, spouse of head-2, married child=3, spouse of married child-4, grandchild-5, unmarried child-6, father/mother/father-in law/mother-in-law-7,brother/sister/borther-in-law/sister-in-law/other relatives-8, servants/employeess/other-relatives-9.

Col. (6) : marital status code : never married - 1, married -2, widowed - 3, divorced/separated -

Col.(7): general education code :not literate-01; literate but below primary-02; junior-03; high school - 04; 12th grade - 05; graduate and above in arts/science-6; engineering/technology-07; agriculture/dairying-08; medicure-09; medicine (MBBS)-10; non-formal education-11, religious education (monks)-12,others-99

Col.9 : type of income received : income from economic activity-1, other sources-2; no income-3.

Block (3) : HOUSEHOLD COMSUMPTION EXPENDITURE

Block (3.1) : consumption of food, beverages and tobacco during the last one week and one month

Code	Item	unit	last week				last one month				source
			quantity		value (Nu. 0.00)		quantity		value (Nu. 0.00)		
(1)	(2)	(3)	(4)		(5)		(6)		(7)		(8)
11	CEREAL, CEREAL										
	PREPARATION AND PULSES										
111	RICE										
1111	rice bhutanese										
1112	rice bhog										
1113	rice fine										
1114	rice FCB										
1115	rice boiled										
1119	rice other (specify)										
112	wheat grain										
113	CEREAL PREPARATION										
1131	flour										
	flour kapche										
	flour atta										
	flour maida										
	other flour										
1132	noodles										
1133	bread										
1134	rice preparation										
	zaw red/brown										
	zaw white										
	other rice preparation										
1135	corn and corn preparation										
	kharang										
	tegma										
	corn flakes										
	others (specify)										
1136	biscuits										
114	PULSES										
1141	masur dal flat										
1142	gram channa										
1149	other pulses										

119	OTHER CEREAL PREPARATION										
	(SPECIFY)										
12	DAIRY PRODUCTS										
121	MILK										
1211	milk fresh										
1212	condensed milk										
1214	pasturised milk										
1215	powdered milk										
1219	other milk										
122	CHEESE & BUTTER										
1221	cheese										
	cheese local										
	processed cheese										
	other cheese										
1222	butter										
	pasturized butter										
	local butter										
	other butter										
129	OTHER DIARY PRODUCTS										
	(SPECIFY)										
13	EGG										
	local										
	imported										
14	FISH										
141	fresh fish										
142	dried fish										
143	canned fish										
149	other fish (specify)										
15	MEAT										
151	fresh meat										
	beef										
	pork										
	chicken										
	yak										
	mutton										
	other meat (specify)										

152	dry meat										
	beef										
	pork										
	yak										
	others (specify)										
16	FRUITS & VEGETABLES										
161	fruits										
	apple										
	orange										
	mango										
	banana										
	guava										
	pineapple										
	grapes										
	other fruits (specify)										
162	VEGETABLES										
1621	fruits vegetables										
	beans										
	tomatoe										
	bringal										
	cucumber										
	gourd(ola chhoto)										
	bitter gourd										
	ladies finger										
	asparagus,bunch										
	squash (iskus)										
	other fruits vegetables										
1622	leafy vegetables										
	spinach (sag), bunch										
	cauliflower										
	cabbage										
	other leafy vegetables										
1623	roots and tubers										
	potatoe										
	radish										
	carrot										
	turnip										
	onions										
	garlic										
	tapioca										
	sweet potatoe										
	other roots and tubers										

1629	other vegetables										
	cane shoot(pacha)										
	mushroom										
	fern (nakey)										
	others (specify)										
17	MISC. FOODS										
171	TEA										
1711	bhutanese tea (salted)										
1712	indian tea										
1719	other tea (specify)										
172	COFFEE										
1721	instant coffee										
1729	other coffee										
173	COOKING OIL										
1731	mustard oil										
1732	sunflower										
1733	dalda										
1734	refined oil										
	refined vegetable oil										
	soya refined oil										
1739	other cooking oil (specify)										
174	SPICES & SEASONINGS										
1741	chillies										
	chillies powder local										
	chillies green local										
	chillies dried local										
	chillies green imported										
	chillies dried imported										
1746	indian spices										
	haldi power										
	jeera powder										
	jeera whole										
	dhania powder										
	dhania seed										

1749	other spices										
	coriander leaves										
	ginger										
	garlic leaves										
	garlic powder										
	others (specify)										
175	SALT										
176	SUGAR										
1761	sugar										
1762	gur										
1769	other sugar (specify)										
177	JAMS										
1771	jam mixed fruit										
1772	jam strawberry										
1779	other jam (specify)										
178	PICKELS										
1781	mixed pickel druk										
1782	chilli pickel druk										
1789	other pickel (specify)										
179	OTHER MISC. FOODS (SPECIFY)										
18	BEVERAGES										
181	ALCOHOLIC BEVERAGES										
1811	beer										
1812	liguor										
	rum										
	whisky										
	brandy										
	gin										
	other liquor (specify)										

1813	local wine										
	ara										
	bangchang										
	others (specify)										
182	NON-ALCOHOLIC BEVERAGES										
1821	juices										
	orange juice										
	apple juice										
	mango juice										
	pineapple juice										
	other juice (specify)										
1822	carbonated drinks										
	pepsi										
	mirinda										
	thumsup										
	frooti										
	other carbinated drink (specify)										
19	TOBACCO										
191	cigarettes and chewing tobacco										
	bedi										
	cigarette										
	chewing tobacco										
	other (specify)										
192	doma & paney										
	doma betelnut										
	pan leaves										
	dama khamtog										

Source code: (8) only purchase-1, only home grown stock-2, both purchased & home grown stock-3, only free collection-4, both purchase and free collection-5, both home grown & free collection-6, others-9

Block (3.2) : consumption of clothing and footwear.

Code	Item	unit	last month				last year				source
			quantity		value (Nu. 0.00)		quantity		value (Nu. 0.00)		
(1)	(2)	(3)	(4)		(5)		(6)		(7)		(8)
20	CLOTHING										
201	for men (10years and over)										
	gho										
	tego & lagays										
	kabney										
	underwear										
	stocking										
	kara										
	shirt										
	pant										
	coat										
	sweater										
	pullover										
	muffler										
	scarf										
	gloves										
	night suit										
	half pant										
	other (specify)										
202	for women (10years and over)										
	keera										
	tego										
	onju										
	kara										
	socks										
	shirt										
	pant										
	coat										
	sweater										
	pullover										
	muffler										
	scarf										
	gloves										
	night suit										
	other (specify)										
203	for boys (between 1 and 10 years)										
	gho										
	tego & lagays										

	kabney										
	underwear										
	stocking										
	kara										
	shirt										
	pant										
	coat										
	sweater										
	pullover										
	muffler										
	scarf										
	gloves										
	night suit										
	half pant										
	other (specify)										
204	for girls (between 1 and 10 years)										
	keera										
	tego										
	onju										
	kara										
	socks										
	shirt										
	pant										
	coat										
	sweater										
	pullover										
	muffler										
	scarf										
	gloves										
	night suit										
	other (specify)										
205	for infants (less than one year)										
	chutay/ puray										
	napkin										
	blanket										
	other (specify)										
206	clothing materials										
	cotton										
	terricot										
	silk										
	woolen										
	terry wool										
	other (specify)										

207	weaving yarns										
	therma										
	teri cotton										
	wool										
	tukuli										
	japan tukuli										
	other (specify)										
208	tailoring										
	gho										
	keera										
	woonju/ tego										
	pants										
	half-pants										
	skirts										
	shirts										
	other (specify)										
209	repairs to clothing										
210	sewing accessories										
	thread										
	needles										
	buttons										
	zippers										
212	footwear										
	men										
	women										
	boys										
	firls										
	infants										
213	repais to footwear										
214	others (specify)										

Source code: (8) only purchase-1, only home grown stock-2, both purchased & home grown stock-3, only free collection-4, both purchase and free collection-5, both home grown & free collection-6, others-9

Block (3.3) : housing, fuel and light during the last one month							
Code	Item	unit	last month				
			quantity		value (Nu. 0.00)		Source
(1)	(2)	(3)	(4)		(5)		(6)
31	HOUSING						
311	house rent	house		x		x	
312	rental value of rent free housing	house		x		x	
313	rental value of rent owner-occupied	house		x		x	
	housing						
314	repairs and maintainance	house		x		x	
32	FUEL AND LIGHT						
321	firewood and chips						
322	dung cake						
323	kerosene						
324	electricity						
325	match box						
326	coal						
327	charcoal						
328	LPG						
329	gobar gas						
330	candle						
331	others (specify)						

Source code: (6) only purchase-1, only home grown stock-2, both purchased & home grown stock-3, only free collection-4, both purchase and free collection-5, both home grown & free collection-6, others-9

Block (3.4) : transport and communication during the last one month and one year											
Code	Item	unit	**last month**				**last year**				
			quantity		value (Nu. 0.00)		quantity		value (Nu. 0.00)		source
(1)	(2)	(3)	(4)		(5)		(6)		(7)		(8)
41	TRANSPORT										
411	land transport fare										
	bus	X	x	x			x	x			
	taxi	X	x	x			x	x			
	others (specify)	X	x	x			x	x			
412	air transport										
	domestic	X	x	x			x	x			
	international	X	x	x			x	x			
413	rail international	X	x	x			x	x			
414	operation of personal transport										
	petrol										
	diesel										
	lubricants										
	car battery										
	tires										
	tubes										
	service and repairs										
	other (specify)										
419	other transport (specify)										
42	COMMUNICATION										
421	telephone bills										
	local	x	x	x			x	x			
	long-distance in Bhutan	x	x	x			x	x			
	international	x	x	x			x	x			
422	postage										
	domestic mail	x	x	x			x	x			
	foreign mail	x	x	x			x	x			
423	telegrams etc.	x	x	x			x	x			
429	other communication (specify)	x	x	x			x	x			

Source code- (8) only purchase-1, only free-2, both purchase & free-3, others-9

Block (3.5) : household operation during last one month							
Code	Item	unit	last month				
			quantity		value (Nu. 0.00)		source
(1)	(2)	(3)	(4)		(5)		(6)
51	HOUSEHOLD OPERATION						
	laundry soap						
	detergent						
	starch						
	floor wax						
	insect spray						
	mosquito killer/coil						
	cleanser powder						
	air freshner						
	bulbs						
	fluorescent tubes						
	others (brooms, battery, naphalene						
	balls etc…)						
	laundry service	x	x	x			
	dry cleaner services	x	x	x			
	maid/boy servant	x	x	x			
	gardner	x	x	x			
	other domestic services	x	x	x			
	repair and maintenance of	x	x	x			
	household appliance						

Source code- (6) only purchase-1, only free-2, both purchase & free-3, others-9

Block (3.6) : education, recreation, entertainment and cultural services during last one month and one year

Code	Item	unit	last month				last year				
			quantity		value (Nu. 0.00)		quantity		value (Nu. 0.00)		source
(1)	(2)	(3)	(4)		(5)		(6)		(7)		(8)
61	EDUCATION										
611	school/college fee and			x				x			
	related charges			x				x			
612	school/college transport			x				x			
613	school/college books			x				x			
614	school/college supplies			x				x			
	note books			x				x			
	pencils & ball pens			x				x			
	bond/pad papers			x				x			
	other (specify)			x				x			
615	boarding and lodging at										
	school/college										
616	news papers and magazines										
	newspaper			x				x			
	magazines			x				x			
	novels/comics			x				x			
	others (specify)			x				x			
619	other education expenses	x	x	x			x	x			
	(private coaching etc)										
62	RECREATION										
621	recreation goods and supplies										
	children bicycle and play cars			x				x			
	dolls and other toys			x				x			
	chess sets			x				x			
	golf clubs and balls			x				x			
	rackets			x				x			
	playing cards			x				x			
	video tapes			x				x			
	cassette tapes			x				x			
	musical records			x				x			
	others (specify)			x				x			

622	musical instruments (paino,			x				x			
	organ, guitar, violin etc.)			x				x			
				x				x			
623	photographic equipment			x				x			
				x				x			
624	admission fees to movies/shows			x				x			
				x				x			
625	mela, fair, picnic			x				x			
				x				x			
				x				x			
629	other recreational expenses			x				x			
				x				x			
	rental of video tapes			x				x			
	dances, discos and nignt clubs			x				x			
	rental for cable			x				x			
	rental for dish			x				x			
	other (specify)			x				x			

Source code- (8) only purchase-1, only free-2, both purchase & free-3, others-9

Block (3.7) : medical care and health services during last one month and one year							
Code	Item	last month		last year			
		value (Nu. 0.00)		value (Nu. 0.00)		source	remarks
(1)	(2)	(3)		(4)		(5)	(6)
71	MEDICAL CARE AND SERVICES						
711	MODERN SYSTEM						
7111	drugs and medicines						
	antibiotics						
	antacid						
	analgesic						
	expectnant						
	vitamins						
	others (specify)						
7112	hospital room charges						
	domestic						
	abroad (specify)						
7113	medical charges						
	(fee for doctors, nurses, midwives, etc)						
	Domestic						
	abroad (specify)						
7114	dental charges						
	Domestic						
	abroad (specify)						
7115	radiology and pathological tests						
	x-ray						
	Ecg						
	pathological test						
	others (specify)						
7119	others (specify)						
712	TRADITIONAL/INDIGINIOUS						
7121	consulting expenditure						
	Healer						
	Indiginious						
	Monks						
	others (specify)						

Source code: (6) only purchase-1, only home grown stock-2, both purchased & home grown stock-3, only free collection-4, both purchase and free collection-5, both home grown & free collection-6, others-9

Block (3.8) : personal cares and effects during last one month							
Code	Item	unit		last month			
			quantity		value (Nu. 0.00)		source
(1)	(2)	(3)	(4)		(5)		(6)
81	PERSONAL CARE AND EFFECTS						
811	beauty aids and toilet articles						
	make-up cosmetics			x			
	Powder			x			
	Perfumes			x			
	body deodorant			x			
	cleansing cream			x			
	lotion, baby oil			x			
	razer blades			x			
	shaving cream			x			
	toilet/bath soap			x			
	shampoo, conditioner			x			
	toilet and tissue paper			x			
	sanitary napkin			x			
	tooth brush			x			
	tooth paste			x			
	other (specify)			x			
				x			
812	personal effects			x			
	gold ornaments			x			
	silver ornaments			x			
	jewels, pearls			x			
	other ornaments			x			
	handbag, wallet			x			
	Wristwatch			x			
	Umberalla			x			
	other (specify)			x			
				x			
813	beauty parlor services			x			
	cold wax/perm			x			
	haircutcut/trim			x			
	manicure/pedicure			x			
	others (specify)			x			
				x			
814	barbarshop services			x			
	(haircut, shave etc)			x			
				x			
819	other personal care and services (sanua						
	bath, acrobic etc)			x			

Source code- (8) only purchase-1, only free-2, both purchase & free-3, others-9

Block (3.9) : furnishing and equipment during last one year							
Code	Item	unit	last year				
			quantity		value (Nu. 0.00)		source
(1)	(2)	(3)	(4)		(5)		(6)
91	NON-DURABLE FURNISHINGS						
911	crockery and utensils						
	dinnerware, glassware			x			
	stainless steel utensils			x			
	other metal utensils			x			
	casseroles, thermos and thermoware			x			
	knives/fooks/spoons			x			
	others (specify)			x			
				x			
912	household linen and furnishing			x			
	bed sheet			x			
	bed cover			x			
	rug blanket			x			
	mattress			x			
	quilt			x			
	pillow			x			
	cloth for upholstery curtain, table cloth			x			
	mosquito net			x			
	mats and matting			x			
	other (specify)			x			
				x			
913	other household furnishings			x			
	flower pote, vases			x			
	decors, figurines			x			
	others (specify)			x			
				x			
92	DURABLE FURNITURE AND			x			
	EQUIPMENT			x			
				x			
921	kitchen and laundry appliances			x			
	refrigerator			x			
	cooking range/stove			x			
	washing machine			x			
	others (specify)			x			
				x			
922	audio-visual equipment			x			
				x			
	television			x			
	video cassette recorder			x			

	stero set/system			x			
	radio/cassette player			x			
	others (specify)			x			
923	furniture			x			
	dinning set			x			
	sofa set			x			
	beds			x			
	cabinets			x			
	almirahas			x			
	others (specify)			x			
				x			
924	other majoe appliances and equipments			x			
	air conditioner			x			
	air coller			x			
	vaccum cleaner			x			
	others (specify)			x			
				x			
925	minor appliances			x			
	electric fan			x			
	rice cooker			x			
	toaster			x			
	electri iron			x			
	heater/blower			x			
	sewing machine			x			
	juices/grinder etc			x			
	others (specify)			x			
				x			
926	transport equipment			x			
				x			
	car			x			
	motorcycle/scooter			x			
	bicycle/tricycle			x			
	others (specify)			x			
				x			
927	household tools			x			
	(hammer, saw, lawn mover, spade			x			
	garden hore etc.)			x			
				x			
929	other non-durable furnishings (specify)			x			

Source code- (6) only purchase-1, only free-2, both purchase & free-3, others-9

Block (3.10) : house maintenance and minor repairs during the last one month and one year							
Code	Item	**last month** value (Nu. 0.00)		**last year** value (Nu. 0.00)		source	remarks
(1)	(2)	(3)		(4)		(5)	(6)
10	HOUSE MAINTENANCE						
	AND MINOR REPAIRS						
101	carpentary materials						
	(nails, lumber, bamboo, GI sheets,						
	plywood etc)						
102	electrical materials						
	(wires, switch etc)						
103	masonry (cement, gravel, sand, etc)						
104	plumbing materials						
	(faucet, pipes, etc)						
105	paint, varnish, thinner, etc						
106	lime, distemper, wall paper, etc						
107	paid labour						
	(wages for carpenters, electricians,						
	masons, plumbers, etc)						
109	other house maintenance and minor						
	repairs (specify)						

Source code- (5) only purchase-1, only free-2, both purchase & free-3, others-9

Block (3.11) : miscellaneous expenses during the last one month and one year

Code	Item	value (Nu. 0.00)		value (Nu. 0.00)		source	remarks
(1)	(2)	(3)		(4)		(5)	(6)
11	MISCELLANEOUS EXPENSES						
111	special family occasion like marriage,						
	birthday celebration etc.						
	food and bevarges						
	alcoholic beverages						
	rental of space						
	facilities and equipment						
	services of priests, cooks, waiters, etc						
	other expenses						
	(ballons, flowers, etc)						
112	expenditure on hotels, resturants						
113	expenditure on package tours						
	transport						
	accomodation						
	food						
	others						
114	goods not elsewhere						
	classified (specify)						
115	services not elsewhere						
	classified (specify)						

Source code- (5) only purchase-1, only free-2, both purchase & free-3, others-9

Block (3.12): consumption of selected non-food items from home produced stock during the last month						
srl. no.	item	unit	quantity	value Nu (0.00)		Remarks
(1)	(2)	(3)	(4)	(5)		(6)
1	firewood and chips	kg				
2	dung cake					
3	candle	no.				
4	clothing					
5	footwear	pair				
6	mats and matting	no.				
7	earthenware	no.				
8	basket	no.				
9	coir, rope, etc.	kg				
10	carpet, daree, other floor matting	no.				
11	others (specify)					
12	Total					

Block (3.13) : non-consumption expenditure during the last one month and one year						
Code	Item	**last month** value (Nu. 0.00)		**last year** value (Nu. 0.00)		remarks
(1)	(2)	(3)		(4)		(5)
12	NON-CONSUMPTION EXPENDITURE					
121	direct taxes					
	income tax					
	other direct taxes					
122	property tax					
123	car/scooter/motor cycle registration charges,					
	driver's license					
124	pension and insurance premia					
	pension contribution					
	provident fund contribution					
	life insurance premia					
	health insurance premia					
	property insurance premia					
	other insurance premia					
125	interest payment on loans for household expenses					
126	subscreption for welfare and civic associations etc					
127	remittances, gifts and similar transfers					
128	gifts and assistance to private individuals					
	outside the family					
1281	contributions to temples and other religious					
	institutions					
1282	contribution and donations to other institutions					
129	other gifts and contributions					

Block (3.14) : disbursements other than expenditure during the last one month and one year						
Code	Item	**last month** value (Nu. 0.00)		**last year** value (Nu. 0.00)		remarks
(1)	(2)	(3)		(4)		(5)
13	DISBURSEMENTS OTHER THAN					
	EXPENDITURE					
131	amounts deposited in banks and savings					
132	amounts disbursed in repayment of					
	loans taken					
133	amounts given out as loan					
134	amounts invested in stock, shares,					
	debantures, etc					
135	amounts invested in real estate					
136	amounts invested in co-operative or					
	household enterprise					
139	other disbursement					

Block(3.15): production and consumption from kitchen garden and backyard.

srl. no.	item		unit	production during last year				consumption during last month				remarks
	description	code		quantity		value in Nu. (0.00)		quantity		value in Nu. (0.00)		
(1)	(2)	(3)	(4)	(5)		(6)		(7)		(8)		(9)
	others (non-food items)											
999	all											

Block (3.16): sufficiency of food for household

1	do all members of your household get enough food every day yes, throughout the year – 1 yes, some months of the year – 2 no, all through the year – 3	
2	If code 2 in question, during which months did you/ all members of the household not have enough food everyday January-01; February-02; March-03; April-04; May-05; June-06; July-07; August-08; September-09; October-10; November-11; December-12.	

Block (4) : HOUSEHOLD INCOME

Block (4.1) : activity particulars of household members

srl. no		number of days (last 365 days)						occupation		status
		employed		not available for employment		describe	code	describe	code	code
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)

Code
column (6): employed-1; available for employment-2; not available for employment-3
column (8): leave blank, to be filled in office
column (10): leave blank, to be filled in office
column (11): regular paid employee with fixed wage-01; casual paid employee-02; paid worker by piece rate or work performed-03; paid non-family apperentice-04;
employer-05; own-account worker non-agriculture-06; owner cultivation-07; share cropper-08; contract cultivation-09; unpaid family work-10;
other, such as a member of producer's co-operatives, etc.-99

Block (4.2) : income from paid employment

srl. no.	name	nature of job				no. of days worked on the job last month	amount received in cash last month Nu.				value of benefits received in kind last month Nu.					bonuses received last year Nu.	
		industry		occupation			basic wage or salary Nu(000.00)	allowances, commissions and gratuities	total before deductions at source	deductions at source	food	housing	clothing	others	total	cash	kind
		describe	code *	describe	code *												
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)

* to be filled in the office

Block (4.3): check list for entreprenurial activities		
srl.no	entrepenurial activity	code yes-1 no -2
(1)	(2)	(3)
01	CROP FARMING AND GARDENING such as the growing of rice, corn, roots and tubers, vegetables, fruits, nuts, orchids, ornamental plants, etc.	
02	LIVESTOCK AND POULTRY RAISING such as raising of carabaos, cattle, yak,hogs horses, chicken, ducks, etc. and the production of fresh milk, eggs, etc.	
03	MINING AND QUARRING such as mineral extraction like gravel, sand and stone quarring, etc.	
04	FISHING such as capture fish, and culturing fish, oster, mussel, etc.	
05	FORESTRY AND HUNTING such as tree planting, firewood gathering, small-scale logging (excluding concessionaires), charcoal making, gathering forestry products (bamboo, resins, gum, etc.) or hunting wild animals/birds	
06	MANUFACTURING AND REPAIRS such as mat weaving, tailoring, dressmaking, fish drying, etc.	
07	CONSTRUCTION OR repair of house, building or any structure	
08	WHOLESALE AND RETAIL including market vending, sidewalk vending and Pedding	
09	TRANSPORTATION, STORAGE AND COMMUNICATION SERVICES such as operation of taxis, storage and warehousing activities, messenger services, etc.	
10	HOTELS, GUEST HOUSES AND RESTAURANTS	
11	COMMUNITY, SOCIAL, RECREATIONAL AND PERSONAL SERVICES Such as medical & dental practice, pratice of trade and operation of schools	
12	ACTIVITIES NOT ELSEWHERE CLASSIFIED including electricity, gas and Water, insurance, real estate and business services	

Block (4.4a) : **crop farming and gardening output during last six months**

srl. no	item		total output		transferred to quantity (kg)			consumed by hh (quantity) (kg)	used for processing (quantity) (kg)	sold	
	name	code *	quantity (kg)	value Nu.	landlord as rent	labour as wages	as loans, gifts, in exchange			quantity (kg)	value Nu.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1	cereals										
	……										
	……										
	others(specify)										
2	roots and tubers										
	……										
	……										
	others(specify)										
3	fruits and										
	vegetables										
	……										
	……										
	……										
	others(specify)										
4	other crops										
5	Total										

*to be filled in the office

	Block (4.4b) crop farming and gardening input for crops harvested during last six months					
srl. no.	item			value of input		remarks
	name	code *	purchased Nu.	homegrown stock Nu.	Total	Nu.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	seeds					
2	fertilizer					
3	pesticides					
4	fuel and oil					
5	wages of hired labour and paid family members					
6	water charges					
	irrigation fees and other					
7	rent of land, equipment					
	and work animal					
8	interest paid on agri-					
	cultural loan					
9	other expenses					
10	Total costs					
		* to be filled in the office				

Block (4.4c) COMPUTATION OF NET INCOME FROM CROP FARMING AND GARDENING			
srl. No.	Item	Code	Amount Nu.
1	Total Value		
2	Less Total Cost		
3	Net Income		

Block (4.5a) : livestock and poultry farming output during last month

srl. no	item name	unit	code *	total output quantity	total output value Nu.	transferred to (quantity) landlord as rent	transferred to (quantity) labor as wages	transferred to (quantity) as loans, gifts, in exchange	consumed by hh (quantity)	used for processing (quantity)	sold quantity	sold value Nu.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1	livestock and poultry											
	products											
	milk											
	eggs											
	other (specify)											
2	livestock and poultry											
	pigs											
	cows											
	yaks											
	carabao											
	chicken											
	other (specify)											
	Total											

Block (4.5b): livestock and poultry farming input during last month

srl. No.	item		value of input Nu.			remarks
	name	code *	purchased	home produced stock	total	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	acquisition cost of stock					
2	feeds					
3	medicine					
4	labour					
5	fuel and oil					
6	electricity					
7	other expenses					
8	Total					
	* to be filled in the office					

Block (4.5 c): COMPUTATION OF NET INCOME FROM LIVESTOCK AND POULTRY FARMING

srl. No	Item	Code *	Amount Nu.
1	Total value		
2	Less Total Cost		
3	Net Income		
	* to be filled in the office		

Block (4.6) COMPUTATION OF NET INCOME FROM OTH ER ENTREPRENURIAL ACTIVITIES DURING LAST ONE YEAR

1. FISHING

Srl. No.	Item	Code	Nu.
1	Total Value *		
2	Less Total Costs		
3	Net Income		

*includes sold; transferred to others as loans, gifts, or in exchange of goods services; transferred to labour as wages; and consumed by household.

2. FORESTRY AND HUNTING

Srl. No.	Item	Code	Nu.
1	Total Value *		
2	Less Total Costs		
3	Net Income		

* includes sold; transferred to others as loans, gifts, or in exchange of goods and services; transferred to labour as wages; and consumed by household.

3. MINING AND QUARRYING

Srl. No.	Item	Code	Nu.
1	Total Gross Receipts**		
2	Less Total Costs		
3	Net Income		

** including, used for further processing; exchange of goods and services; and transferred to labour as wages; and consumed by households.

4. MANUFACTURING AND REPAIRS

Srl. No.	Item	Code	Nu.
1	Total Sales		
2	Plus Total Consumed by Household		
3	Plus Total Gifts**		
4	Less Total Costs		
5	Net Income		

** including, used for further processing; exchange of goods and services; and transferred to labour as wages.

5. CONSTRUCTION

Srl. No.	Item	Code	Nu.
1	Total Gross Receipts **		
2	Less Total Costs		
3	Net Income		

** including, used for further processing; exchange of goods and services; and transferred to labour as wages, and consumed by household.

6. WHOLESALE AND RETAIL TRADE

Srl. No.	Item	Code	Nu.
1	Total Sales		
2	Plus Total Consumed by Household		
3	Plus Total Gifts**		
4	Less Total Costs		
5	Net Income		

** including exchange of goods and services and transferred to labour as wages.

7. TRANSPORTATION, STORAGE AND COMMUNICATION SERVICES

Srl. No.	Item	Code	Nu.
1	Total Gross Receipts		
2	Less Total Costs		
3	Net Income		

8. HOTELS, GUEST HOUSES AND RESTAURANTS

Srl. No.	Item	Code	Nu.
1	Total Gross Receipts**		
2	Less Total Costs		
3	Net Income		

**including consumed by household; exchange of goods and services; transferred to labour as wages.

9. COMMUNITY, SOCIAL, RECREATIONAL AND PERSONAL SERVICES

Srl. No.	Item	Code	Nu. (000.00)
1	Total Gross Receipts**		
2	Less Total Costs		
3	Net Income		

**including consumed by household; exchange of goods and services; transferred to labour as wages.

10. ENTREPRENEURIAL ACTIVITIES NOT ELSEWHERE CLASSIFIED

Srl. No.	Item	Code	Nu. (000.00)
1	Total Gross Receipts		

2	Less Total Costs		
3	Net Income		

Block (5) PROPERTY AND OTHER INCOME

Block (5.1) rental income on real estate during last month and last year

srl. no.	property		gross rent received Nu.		running and collection costs Nu		property taxes paid if any Nu.		mortage interest paid, if any Nu.	
	item	code	last month	last year	last month	last year	last month	last year	last month	last year
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1	land									
2	buildings									
3	spaces									
4	other properties									
	(specify)									
5	Total									

Block (5.2) other incomes received during last month and last year

sl. no.	source		income received Nu.		remarks
	item	code	last month	last year	
(1)	(2)	(3)	(4)	(5)	(6)
1	royalties				
2	interest from bank deposits				
3	interest from loans extended				
	to other families				
4	pensions				
5	workmen's compensation				
6	dividends from investment				
7	remittances from abroad				
8	domestic remittances				
9	other incomes (specify)				
10	Total				

Block (5.3) other receipts during last month and last year

sl.no.	source		income received		remarks
			Nu.		
	item	code	last month	last year	
(1)	(2)	(3)	(4)	(5)	(6)
1	insurance				
2	inheritance				
3	sale of shares and bonds				
4	sale of properties				
5	sale of durables				
6	lotteries and games of chance				
7	loans				
8	loan repayments				
9	withdrawal from saving				
10	others (specify				
11	Total				