A Nutritional Poverty Profile in Mauritius 2006-07

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Note:

A report on Nutritional Poverty in Mauritius was produced in February 2009.
The results in the February 2009 report have been revised in the light of updated information on equivalence scale and are presented in this document. Also, the benchmark of 2,100 kcal a day has been dropped in order to focus on the more relevant level of 2,700 kcal a day.
The analytical methods used to generate the results in both reports are the same.

The present document replaces the February 2009 report.

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Executive Summary

This report presents the nutritional poverty profile for Mauritius based on the 2006-07 Household Budget Survey. Absolute nutritional poverty lines have been estimated. They correspond to (1) a nutritional benchmark of 2,700 calories a day per young male adult; (2) extrapolation using Huber robust estimates of quadratic food share equations. Nutritional equivalence scales have also been estimated.

The obtained nutritional poverty line is worth 1524 Rupees a month per adult-equivalent for Mauritius Island and 1000 Rupees a month per adult-equivalent for Rodrigues. With these lines, 4.14 percent of households are under the poverty line.

However, poverty is better measured in terms of individual poverty and poverty measures. The poverty rates are respectively estimated at 5.53 percent in the whole Republic, 5.37 percent in Mauritius Island and 10.3 percent in Rodrigues. For the whole country the Poverty Severity index is estimated at 0.341 percent, while the estimate of the Watts poverty measure is 1.33 percent.

Nutritional poverty is found higher in rural areas (6.3 percent) than in urban areas (4.1percent). The results also indicate that households led by unemployed heads, separated heads or widows, or by female, elderly or little educated heads are characterised by higher nutritional poverty. Other categories of households especially affected by nutritional poverty are the large households and the households dwelling in disadvantaged areas in terms of Relative Development Index.

1. Introduction

The Social Register of Mauritius (SRM) of the Ministry of Social Security (from now MSS) will be a large database of potential and actual social programme beneficiaries. It will be used to assist MSS in identifying the beneficiaries of each programme and deciding the level of assistance for each beneficiary. It will also serve to assess social programmes and social safety nets in Mauritius, and improve their performance.

For this, poverty lines and poverty profiles must be estimated, notably by referring to minimal nutritional requirements. Indeed, better knowing the poor is of paramount importance as they are the primary target of the social system. Availing of poverty indicators is also useful to unify discussions about social issues. The main use of the poverty measures for the SRM will be to provide instruments for assessing current or planned social programs. In particular, counting the poor reached and missed by each program is a natural early stage of the analysis. In more sophisticated analyses, designing more efficient social programs always implies alleviating misery and poverty, and therefore also requires availing of poverty indicators.

Although many poverty measures can be used, they are all based on one given poverty line, or on very few alternative poverty lines with distinct meanings. Actually, the estimation of the poverty line is probably the most influential step in poverty measurement.

A previous attempt of poverty analysis (CSO, 2006) was based on HBS 2001/02 data. However, since the analysis was based on using a poverty line equal to the half median

household income per adult equivalent, a well-known convention unrelated to actual population needs (See for example Muller, 2006), we shall not compare with these past exploratory statistics.

A large literature deals with the construction of poverty lines in Less Developed Countries[1]. In this report, we adapt a well-tried method anchored on minimal nutritional requirements to the case of Mauritius. An example of use of this method is in Muller (2008) for Tunisia. The nutritional poverty line for the islands of Mauritius and Rodrigues are calculated to correspond to the situation of 2006-07. CSO and MSS staffs were associated to this work at many stages of the data processing.

In this report, we present the estimated nutritional poverty lines with associated estimations of poverty measures.

Nutritional poverty lines provide useful benchmarks in that they correspond to well-defined situations where households are not able to feed themselves properly. However, an extended poverty standard will also be estimated with general poverty lines from LCS data when available. Nutritional and general poverty lines play complementary roles. Availing of a nutritional poverty line would provide a welcome benchmark for general poverty lines based on subjective data.

Once the matching of the HBS, LCS and SRM files is done, for each relevant socio-demographic and economic category, we shall be able to estimate the percentage

[1] Greer and Thorbecke (1986), Calan and Nolan (1991), Ravallion and Bidani (1994), Ravallion and Sen (1996), Barrington (1997), Ravallion (1998).

of social program beneficiaries above and below the nutritional and general poverty lines. In that sense the generated poverty statistics are central to the assessment apparatus of the SRM. However, in this report we only focus on nutritional poverty lines and poverty profiles without explicit link with social programs.

In Section 2, we explain the methodology used to estimate the poverty profiles. We report the estimated poverty lines in Section 3, the estimated percentages of households under the poverty line in Section 4, and the main poverty estimates in Section 5. In Section 6, we show the estimated poverty profiles for diverse household characteristics. Finally Section 7 concludes

Abbreviations:

CSO: Central Statistical Office.

The Ministry or *MSS*: The Ministry of Social Security.

UNDP: United Nations Development Programme.

EU: European Union.

SRM: Social Register of Mauritius.

MOFEE: Ministry of Finance and Economic Empowerment.

DCP: Decentralized Cooperation Program.

ITS: Income Threshold Survey.

HBS: Household Budget Survey.

CS: Complementary Survey.

LCS: Living Conditions Survey.

2. Nutritional Poverty Profile: Methodology

2.1. Generalities

The data we used for the estimated poverty line and poverty profiles are extracted from the 2006/07 household consumption survey (HBS) conducted by CSO. The HBS covered 6720 households. Detailed information on expenditure and income was collected. In particular, daily diaries were used during one month for each surveyed household.

From this information, household living standard indicators can be based on the value of consumption expenditure. Household living standard indicators are typically corrected for the two main sources of heterogeneity in household situations: household composition and prices. In order to satisfy this requirement, the living standard indicator for household *s* is defined as

$$y_s = c_s/(S.I_s)$$

where c_s is the value of consumption of household *s*, *S* is an household equivalence scale, I_s is a price index that allows us to distinguish between price levels in Mauritius and Rodrigues. The deflated living standard indicator is denoted *per capita real living standard* when S is the household size, and *per adult-equivalent real living standard*, when S is another household equivalence scale. The non-deflated living standard indicator is denoted nominal living standard.

A nutritional table for Mauritius has now been constructed by the CSO/MSS team, under

our guidance. The nutritional table was needed so that measures of food expenditure observed in the HBS could be converted into measures of nutrient intakes. This conversion allows us to compare food basic needs defined in terms of nutritional minima with household budget information.

Food thresholds

The steps of the calculation

The method we apply for the estimation of the *nutrition-based food thresholds (*denoted Z^F*)* is in five steps, all based on sampling estimators.

We choose a reference group whose living standard is close to the expected poverty line, for each strata j (j = 1, for Mauritius; and 2, for Rodrigues). The two strata are chosen to take into account differences in typical consumption basket, household composition and prices across islands.

We define calorie requirements for households in this reference group in each strata j: CR_j. For this, we estimate the average household size, S_j, the average adult-equivalence scale (and other average household characteristics), all for the reference group. The calorie requirement for a young adult male is chosen at 2700 kcal per day, in order to account for activity levels consistent with work. It is then divided by the mean household size and multiplied by the mean equivalence scale. The latter adjustments allow us to account for nutritional requirements increasing by age and gender of household members.

We estimate the value of the mean food consumption for the reference group in each

strata j, V_j.

After converting the data on consumption quantities, we calculate the mean calorie of the food consumption for the reference group in each strata j, C_j.

Then, we estimate the calorie unit-value, or 'calorie price', for the reference group in each strata j, $CUV_j = V_j/C_j$.

Finally, we calculate the food threshold, z_j^F in each strata j as the estimated value of the calorie requirement for each strata j.

$$z_j^F = CUV_j\, CR_j = (V_j\, CR_j)/C_j.$$

The Reference Group

The poverty lines are based on the a priori choice of a reference group (RG) selected in such a way that the living standards of the households in this group are believed to be close to the expected poverty line. Although some arbitrariness is unavoidable in the choice of the RG, one is constrained in this choice by the requirement that wealthy households be excluded from this group.

The choice of a broad RG is justified by the necessity of getting sufficient sample sizes for each strata so as to ensure accurate estimation of the mean food values and mean calories for the RG. Moreover, such RG corresponds to substitutions between food and non-food consumption that are consistent with observations of actually satisfied food minima.

For reasons of statistical significance, we selected the first vingtile of the per

adult-equivalent total expenditure as the Representative Group (corrected for differences in price levels for Mauritius and Rodrigues). That is the 5 percent poorest households constitute the Reference Group.

Note that it may be that the corresponding food bundle does not represent a balanced diet, as it may not provide sufficient amounts or proteins, vitamins, etc. This situation also routinely takes place with the diet of quite wealthy households.

Moreover, households in the Reference Group may lack other basic needs such as housing, education and clothing. This will justify estimating general poverty lines from the Living Condition Survey data. However, in this document we focus on nutritional poverty.

Calorie requirements

The recommended calorie needs are 2700 calories per day per young male adult and correspond to what is typically used to account for moderate activities of household members (FAO/WHO/UNU, 1985). Other benchmarks have been considered in coordination with MSS and CSO experts, while the chosen one was found the most satisfactory. For example, using 2100 calories per day per adult, a benchmark consistent with no activity at all, leads to insignificant nutritional poverty rates in Mauritius.

The mean recommended needs must be estimated for each strata and the reference group because they correspond to different household populations.

The nutritional equivalence scales

The living standard variable is defined as the value of consumption expenditure for one year, divided by a nutritional adult-equivalent scale corresponding to moderate activities.

To define adult-equivalence scales, we use the following information that corresponds to international standards (SOURCE: Dietary Guidelines for Americans 2005, Department of Health and Human Service).

The US Department of Health and Medicine proposes to use given amounts of calories needed to maintain energy balance. These amounts are calculated for various gender and age groups alternatively for: sedentary, moderate or active persons. The following equations for EER (Estimated Energy Requirement) were used to reach these estimates.

Adult Men: EER = 662-(9.53*Age)+PA*((15.91*weight)+(539.6*height)).

Adult Women: EER = 354-(6.91*Age)+PA*((9.36* weight)+(726* height)).

Boys Age 3-18: EER = 88.5-(61.9*Age)+PA*((26.7* weight)+(903* height)).

Girls Age 3-18: EER = 135.3-(30.8*Age)+PA*((10* weight)+(934* height)).

Toddlers aged 2: EER = (89* weight)-80.

All weights are in kilograms, heights are in metres, and age is in years. PA is for physical activity coefficient. The physical activity coefficients are given by the following table.

Activity Level	*Boys aged 3-18*	*Girls aged 3-18*	*Adult men*	*Adult women*
Sedentary	1	1	1	1
Moderately Active	1.13	1.16	1.11	1.12
Active	1.26	1.31	1.25	1.27
Very Active	1.42	1.56	1.48	1.45

'Sedentary' means only the light physical activity associated with independent living. It means a lifestyle that includes only the light physical activity associated with typical day-to-day life.

'Moderately active' means about half an hour a day of moderate to vigorous exercises in addition to this. It means a lifestyle that includes physical activity equivalent to walking about 1.5 to 3 miles per day at 3 to 4 miles per hour, in addition to the light physical activity associated with typical day-to-day life.

'Active' means at least an hour of exercise and 'very active' means being physically active for several hours each day. It means a lifestyle that includes physical activity equivalent to walking more than 3 miles per day at 3 to 4 miles per hour, in addition to the light physical activity associated with typical day-to-day life.

Gender	Age (years)	Sedentary	Moderately Active	Active
Child	2-3	1,000	1,000-1,400	1,000-1,400
Female	4-8 9-13 14-18 19-30 31-50 51+	1,200 1,600 1,800 2,000 1,800 1,600	1,400-1,600 1,600-2,000 2,000 2,000-2,200 2,000 1,800	1,400-1,800 1,800-2,200 2,400 2,400 2,200 2,000-2,200
Male	4-8 9-13 14-18 19-30 31-50 51+	1,400 1,800 2,200 2,400 2,200 2,000	1,400-1,600 1,800-2,200 2,400-2,800 2,600-2,800 2,400-2,600 2,200-2,400	1,600-2,000 2,000-2,600 2,800-3,200 3,000 2,800-3,000 2,400-2,800

[a] These levels are based on Estimated Energy Requirements (EER) from the Institute of Medicine Dietary Reference Intakes macronutrients report, 2002, calculated by gender, age, and activity level for reference-sized individuals. "Reference size," as determined by IOM, is based on median height and weight for ages up to age 18 years of age and median height and weight for that height to give a BMI of 21.5 for adult females and 22.5 for adult males.

Two nutritional equivalence scales have been created that correspond respectively to (a) moderate activity, and (b) sedentary activity. The first one is used for the benchmark of 2700 calories a day per young male adult, while the second one is used with 2100 calories a day per young male adult. In this report, we only use the equivalence scale for moderate activity.

Of course, in all our treatments we dropped the records with missing information on household composition or consumption value.

At national level, the first vingtile threshold corresponds to a level of 1491 Rupees a month per adult-equivalent, for moderate activity (1473 Rupees for sedentary activity). These thresholds and the equivalence scale statistics slightly vary across islands.

The monetary equivalent of nutritional requirement

As mentioned before, two strata are defined to account for geographical differences in consumption habits, catering, household composition and prices: Mauritius and Rodrigues.

The calorie reference level is chosen to be equal to 2700 Calories a day per capita, and denoted Znut. In each strata, it is multiplied by the mean household equivalence scale and divided by the mean household size, both for the calculated Reference Group.

The food threshold in each strata is defined as

$$ZF = Znut \,.\, (x / y)$$

where x is the mean value of food consumption of the RG in the strata, and y is the mean calorie quantity of food consumption of the RG in the strata.

The ratio x / y defines a general ‘calorie price’ variable that can be rewritten as pxcal = ZF / Znut.

However, this definition with Znut = 2700 calories would only be appropriate for a population of adult yound males. To adjust for household composition and each member’s demographic characteristics, we define the food thresholds as follows.

ZF_j = 2700 x pxcal x [(mean household equivalence scale in strata j for the RG) / (mean household size in strata j for the RG)].

2.2.6. Price adjustment

It has been found that accounting for spatial differences in prices is important for poverty analysis (Muller, 1996, 2008).

The price adjustments of the food threshold have been done to distinguish price

differences between Mauritius and Rodrigues at the time of the survey. In practice, this correction has little impact as the relative Laspeyres food price index of Rodrigues with respect of Mauritius was of 96.61 percent at the time of the survey.

The extrapolation to nutritional poverty lines

The principle

A serious issue with calculating nutritional poverty lines is that there exists evidence that even nutritionally poor households do not maximize nutrients when choosing their baskets (Srinivasan, 1992). In that case, higher poverty lines may result from incorporating household choices. This situation justifies estimating a food demand equation in order to guide the extrapolation of the poverty line. The estimated equation will serve to control for consumption substitutions when living standards vary.

The extrapolation from the estimated food threshold ZF_j to the corresponding global nutritional poverty line Z_j is based on equation for food demand consistent with a linearized Quadratic Almost Ideal Demand System. This equation has been estimated using diverse regression methods for each strata. In particular, we attempted to instrument the total consumption using 2SLS, where the main instrument is the total household income. However, Huber robust regression estimates provided the best results.

The food consumption model

The model is the following.

$$s_i = a + \beta \ln(x_i) + g [\ln(x_i)]^2 + N_i' d + \varepsilon_i,$$

where a, β, g and d are parameter vectors to estimate, s_i is the food share of household i in its total consumption expenditure, x_i is the total consumption expenditure of household i, N_i is a vector of household and environment characteristics. Finally, ε_i is an error term.

These demand equations are consistent with the Quadratic Almost Ideal Demand System proposed by Banks et al. (1997), where unobserved environment and household characteristics are ignored. Two different equations have been estimated separately for Rodrigues and Mauritius. However, the too small sample for Rodrigues leads to insignificant estimates. Therefore, we decided to use the same equation for the whole country, correcting for differences between Rodrigues and Mauritius by using different ZF_j and different values of the independent variables in the equation. Moreover, spatial price differences have been omitted as they are too small to yield well-determined estimates.

The obtained estimates of the food equation are shown in Section 3.2.

The nutritional poverty line Z_j for strata j is the solution of the food demand equation where the food share is made equal to the food threshold divided by the unknown variable Z. Moreover, the latter takes the place of x_i. To be explicit: the poverty line, Z_j is obtained by solving in Z the following equation, separately for each strata j:

$ZF_j/Z = a_j + \beta \ln(Z) + g [\ln(Z)]^2$, where a_j accounts for the different mean values of the other independent variables in Mauritius and Rodrigues (j = 1,2).

In practice, the solution Z is numerically obtained using a specifically written program

iterating the bisection method or any method of Newton. The nutritional poverty line Z corresponds to households that actually meet their nutritional requirements, according to the estimated food equation.

Dealing with living standards instead of income follows exactly the same route, with poverty thresholds and nutritional poverty lines expressed in terms of adult-equivalent total expenditure instead of individual income.

Poverty measures

Our estimates are much based on the Foster-Greer-Thorbecke poverty measures (Foster, Greer and Thorbecke, 1984). We especially focus on P_0, the *head-count index*, which corresponds to the percentage of the poor, and on P_2, the poverty severity index that accounts for the inequality among the poor.

$$FGT_\alpha = \int_0^z (1 - y/z)^\alpha \, d\mu(y) \quad (3)$$

where F is the cumulative density function (cdf) of the individual living standard (y) distribution and z is the poverty line.

$$FGT_a = \int_0^z (1 - y/z)^a \, d\mu(y) \quad (3)$$

.

Another useful poverty indicator is P_1 , the poverty gap measure, which shows the share in the total value of the living standards that should be theoretically reallocated to eliminate poverty:

$$FGT_a = \int_0^z (1 - y/z)^a \, d\mu(y) \quad (3)$$

.

So, the P_α is the head-count ratio if $\alpha = 0$, the poverty gap index if $\alpha = 1$, and the poverty severity index if $\alpha = 2$. The FGT poverty measures satisfy the transfer axiom if and only if $\alpha > 1$, and the transfer sensitivity axiom if and only if $\alpha > 2$. All these measures satisfy the focus axiom and are decomposable. The definition of these axioms are as follows for any poverty index P(y, z).

Focus Axiom: The poverty index P(y,z) is independent of the income distribution above z.

Monotonicity Axiom: P(y,z) is increasing if one poor has a drop in income.

Transfer Axiom: P(y,z) increases if income is transferred from a poor person to someone more wealthy.

Transfer-sensitivity Axiom: The increase in P(y,z) in the previous Transfer Axiom is inversely related to the income level of the donator. Sub-group consistency: If an income distribution is partitioned in two sub-groups y' and y", then an increase in P(y",z) with P(y',z) constant, increases P(y,z).

The Watts poverty index, introduced by Watts (1968), is

$$W = \int_0^z -\ln(y/z)d\mu(y) \quad (4)$$

The Watts index satisfies the monotonicity, transfer and transfer sensitivity axioms, and is decomposable. P_2 and W provide less intuitive statistics than P_0, but they account for the severity of poverty among the poor, which is not the case for P_0 and P_1.

Thus, poverty is estimated using four classical indicators that can all be seen as means of individual poverty functions. Indeed, our poverty measures can all be written as

$$W = \int_0^z -\ln(y/z)\, d\mu(y) \quad (4)$$

where *k* is the kernel function describing the poverty severity for living standard *y* with poverty line *z*, and *F* is the cdf of living standards of individuals. The individual poverty functions, k(y, z), are therefore the following ones:

(1) For P_0: I(y < z), which is the dummy variable identifying the poor. As mentioned above, variable y is the individual living standard and z is the poverty line. I(y < z) is equal to 1for y < z, and equal to 0 otherwise.

(2) For P_1: I(y< z) × ((z-y)/z).

(3) For P_2: $I(y < z) \times ((z-y)/z)^2$.

(4) For W: $- I(y< z) \times \ln(y/z)$.

Therefore, the sampling estimator of poverty measures will be a sampling estimator of special types of means when considering individual incomes. We discuss such estimators in the next section.

Poverty Estimators

The basic sampling estimator of the above generic poverty measure P is the following, based on ratios of the classical Horwitz-Thompson sampling estimator of the mean:

$$\hat{P} = \frac{\sum_{s=1}^{n} W_s \, HHS_s \, k(y_s, z)}{\sum_{s=1}^{n} HHS_s \, W_s} \quad ,$$

where W_s is the sampling weight of surveyed household s ($s = 1,...,n$), HHS_s is its household size, y_s is the household living standard and z is the poverty line. As mentioned before, different poverty lines are used for households belonging to Mauritius and Rodrigues.

Note that, in the formula of P, using the cumulative distribution function of personal living standards while only household are observed is what implies to weigh the

function k(y, z) in the integral by the household size. This is the introduction of household size weighing that justifies the use of sampling ratio estimators instead of sampling mean estimators.

Another formula consistent with theoretical analyses by Ebert and Moyes (2003) would imply to weigh using adult-equivalence scales instead of household size. This would amount for calculating poverty rates to count equivalence scales instead of counting persons. Despite the theoretical arguments in favour of this approach, it is little employed because users are more familiar with counting persons.

2.6. Sampling error estimators

For the purpose of sampling error estimation, the data generating processes from household surveys can be described by sampling weights, cluster sampling and stratification. Sampling weights are equal to the inverse of the household probability of being sampled for the survey. Omitting or using wrong sampling weights for poverty estimates would yield biases results, although perhaps not very severely as many observed households have similar sampling weights. In the HBS no clustering was used.

An additional stage of data cleaning was necessary to ensure that all the variables involved in the description of the sampling scheme were devoid of any mistake. This is now the case, which allows us to estimate sampling errors. We recommend this type of data cleaning operations to be carried out early in household surveys, even before the collection is completed. This would avoid delays in the analyses when such mistakes

are met. The files used for this report with all corrections made are dated of 20 January 2009.

We now discuss the HBS sampling scheme, as described in HBS documents.

The strata correspond to separate and independent sampling processes for sub-populations of psu's at the first stage and sub-populations of households at the second stage. Since the individual strata are more homogenous than the population as a whole, the sampling errors should be reduced by using strata.

The sampling scheme of the HBS 2006/07, as designed by CSO, is such that 6,720 households were selected. The national sample is made of two separate sub-samples, one of 6,240 households for the island of Mauritius and another of 480 households for Rodrigues.

Each sub-sample was selected through a two-stage design with probability proportional to size. At the first stage, clusters of Primary Sampling Units (PSU's) were drawn with probability close to proportional to size; this was followed by the drawing of households within the selected PSU's.

The data collected from the 2000 Housing and Population Censuses was the basis of the primary sampling frame used for the HBS. The initial Census PSU's were split to obtain PSU's including about 100 households. This yielded a list of some 3,050 PSU's with their respective number of households, which is the basis of the PSU

drawing for HBS. A list of households with their socio-economic characteristics used for their stratification was established for each selected PSU in HBS. These two lists are the basis of the sampling process.

The PSU's in the list were stratified into districts and PSU-RDI class (Relative Development Index). Within each strata, a sample of PSU's was selected with probability proportional to the number of households in each PSU.

The Relative Development Index is a composite index that measures the relative achievement of sub-regions, with four discrete development levels.

Eight households were selected by systematic random sampling after stratification of the household list by household size, religion and consumption expenditure class. The samples were drawn by the Senior Supervisors assisted by the Supervisors.

Howes and Lanjouw (1998) show that accounting for the sampling design can substantially change the estimated standard errors for poverty measures. Consequently, our estimators for the sampling standard errors account for the sample design. In particular, we control for the two stages of sampling, the stratification at the first stage, and small sample corrections at the two stages.

In the initial description of the sampling scheme, systematic sampling is said to have been used at the second stage. The systematic sampling is indicated to have been

stratified by household size, religion and consumption expenditure class.

We tried to capture these features by introducing stratification in the calculation of sampling errors at the second stage. However, this led to empty second-stage strata, even when only using two household size strata divided at the median. So, we have to accept that despite initial intentions the whole extend of the planned stratification at the second stage systematic sampling was not fully implemented. This situation implies that we do not introduce any correction for second stage stratification in the estimators of sampling errors that should therefore slightly overestimate actual sampling errors.

The poverty indicator of a sub-population is estimated by a ratio of the type

$$\overline{y}_{x'} = \frac{z'}{x'}$$

where ' denotes the Horwitz-Thompson estimator for a total (sum of values for the variable of interest weighted by the inverse of inclusion probability). With these new notations, variable *p* is the sum of the poverty contributions in the sub-population and x is the size of the sub-population. The variance associated with the sampling error is then approximated by:

$$V(\overline{y}_{x'}) = [V(z') \; 2\,\overline{y}_{x'}\, Cov(z',x') + (\overline{y}_{x'})^2 V(x')] / (x')^2$$

obtained from a Taylor expansion at the first order of a function f(p/x) around (E y', Ex') and because E p' differs from 0 and x' does not cancel, where the appropriate

expectancies are estimated by x' and $\overline{y_{x'}}$.

The previous formula is based on the score variable for the ratio estimator, which is $S_j = (x' p_j - p' x_j)/(x')^2$ for an observation j. Then, the Horwitz-Thompsons estimator (that is the weighed estimator) of the score variable can be used for deriving the linearized sampling variance of the ratio estimator and yields the result.

V(x') and V(p') can then be estimated by using the usual formulae for two-stage sampling with stratification at the first stage and small sample correction at the two stages. For example,

$$x_{\alpha'} = \sum_h \frac{M_h}{m_{h\alpha}} \sum_{i=1}^{m_{h\alpha}} \frac{N_{hi}}{n_{hi}} \sum_{j=1}^{n_{hi}} \frac{Q_{hij}}{q_{hij}} \sum_{k=1}^{q_{hij}} x_{hijk}$$

where h is the index of the psu strata, n_h is the number of drawn psu's in strata h, f_h is the sampling rate of psus's for strata h, H is the total number of strata, i is the index of the drawn psu in strata h, f_{hi} is the sampling rate of households in psu (h, i), m_{hi} is the number of drawn households in psu (h, i).

A similar formula can be easily written for V(x'). Finally,

$$x_{\alpha'} = \sum_h \frac{M_h}{m_{h\alpha}} \sum_{i=1}^{m_{h\alpha}} \frac{N_{hi}}{n_{hi}} \sum_{j=1}^{n_{hi}} \frac{Q_{hij}}{q_{hij}} \sum_{k=1}^{q_{hij}} x_{hijk}$$

3. Nutritional Poverty Line: Estimation Results

3.1. The food thresholds

The living standard variable is the value of total expenditure divided by the equivalence scale corresponding to moderate activity. Its first vingtile is of 1491 Rupees a year per adult-equivalent for the whole Republic. This is the threshold that defines the Reference Group for the whole Republic. Adjusted for food price differences between the islands, the threshold defining the Reference Group becomes of 1492 Rupees for Mauritius and 1442 Rupees for Rodrigues. In that sense, that is the national RG that is still used in each Island, and to find it implies to correct for food price differences across island. Indeed, at the time of the survey, the food price index in Rodrigues is 0.9763 times that of Mauritius. Weighed by population sizes, the food price index of Mauritius relative to the whole Republic is 1.001, an almost negligible difference. However, it is 0.967 in Rodrigues, worthwhile correcting for it.

The following statistics, calculated for the Representative Group only, weighed by the sampling scheme, are used to calculate the food threshold, respectively for the whole Republic, for Mauritius and for Rodrigues. The statistics (means and medians) for the

whole Republic are just shown as an indication of what would yield the neglecting differences across islands. They are not in actual poverty analyses.

		Daily Food Consumption Value (in Rupee)	*Daily Calories*	*Household Size*	*Moderate Activity Equivalence Scale*
Republic	Mean	**89.41**	**6387**	4.91	**4.07**
Republic	Med.	**82.43**	**5738**	5	**3.72**
Mauritius	Mean	**90.70**	**6168**	4.94	**4.10**
Mauritius	Med.	**83.20**	**5654**	5	**3.8**
Rodrigues	Mean	**81.96**	**7536**	4.72	**3.85**
Rodrigues	Med.	**69.53**	**6683**	5	**3.68**

The resulting poverty thresholds are:

* For the Republic:

Zfmean = (2700 * 89.41 /6387)*(4.07/4.91) = 31.3 a day per adult-equivalent.

Zfmedian = (2700 * 82.43/5738)*(3.72/5) = 28.9 a day per adult-equivalent.

Although medians have robustness properties that means do not have, we prefer to use the food threshold estimate based on means that better account for the discreteness of the household composition.

* For Mauritius:

Zfmmean = (2700 * 90.7 /6168) *(4.11/4.94) = 33.0 a day per adult-equivalent.

Zfmmedian = (2700 * 83.2/5654) *(3.8/5) = 30.2 a day per adult-equivalent.

* 3. For Rodrigues:

Zfrmean = (2700 * 81.96/7536) * (3.85/4.72) = 23.9

Zfrmedian4= (2700 * 69.53/6683) *(3.68/5) = 20.7.

So, translating the calories benchmarks into monetary values yields the following food thresholds. Note that these thresholds should not be directly used to calculate, for example, rates of malnourished households. This is not their aim. They are only intermediate figures in the calculus of the poverty line. They account for differences in consumption basket composition and in equivalence scale levels by strata.

Food thresholds:

Strata	By day	By month
Republic (national)	***31.3*** Rupees	***952*** Rupees
Mauritius (regional)	***33.0*** Rupees	***1004*** Rupees
Rodrigues (regional)	***23.9*** Rupees	***729*** Rupees

3.2. The estimated food demand equation

The results of the estimated food equation are reported in the next table. They correspond to Huber robust regression estimates that help protect us against outliers in error terms. Other estimation methods have also been used (results not shown to save space) including OLS, 2SLS and quantile regressions. The latter ones were judged to provide less safe estimated and have been discarded.

Robust regression Number of obs = 6048

Dependent variable: Food budget share

Independent variable	*Coefficient*	*Standard Error*	*P-value*
Log total expenditure	.113	.0544	0.038
Squared Log total expenditure	-.0147	.00302	0.000
Children 1-3	.0219	.00312	0.000
Children 4-10	.0213	.00220	0.000
Children 11-16	.0197	.00225	0.000

Adults 17-21	.0148	.00263	0.000
Adults 22-59	.0230	.00166	0.000
Elderlies 60 and over	.0434	.00264	0.000
District 1	-.0235	.00685	0.001
District 2	-.0271	.00692	0.000
District 3	-.0161	.00717	0.025
District 4	-.0223	.00681	0.001
District 5	-.0112	.00712	0.114
District 6	.00799	.00803	0.320
District 7	-.0306	.00599	0.000
District 8	-.0277	.00788	0.000
District 9	-.0166	.00812	0.041
Education of the head (years)	-.00196	.000326	0.000
Intercept	.571	.244	0.020

A few high outliers for total expenditure have been eliminated, which explains the slightly lower sample size.

For the extrapolation of the nutritional poverty line, we calculate the effects of all independent variables on the food demand share, except for the effects of total expenditure. A summary of these effects is then calculated at the mean sample location, for the whole Republic, and for each island. This summary constitutes the intercept of the equation used for the extrapolation of the nutritional poverty line.

3.3. The estimated nutritional poverty lines

The extrapolation algorithm yields the following nutritional poverty lines.

For Mauritius: 1524 Rupees a month

For Rodrigues: 1000 Rupees a month

The unit is Rupees per adult-equivalent per month.

We now move to the estimation results of diverse measures of poverty. Let us have a few words about sampling error estimates, shown in parentheses in the tables. In all cases, the sampling standard error is necessarily substantial as what we want to estimate is a very small poverty amount. In this situation, the poverty statistics, which are estimates of means, correspond to kernel functions equal to zero for the huge majority of households. Then, its standard error is necessarily large as it is hard to estimate a very small proportion.

Moreover, we found that introducing stratification has reduced sampling variance, while only sufficiently so to about compensate for accuracy loss caused by the division of the sampling scheme in two stages.

The differences with the preliminary results circulated in a note are relatively limited, with nonetheless slightly smaller poverty differences between Mauritius and Rodrigues than in the preliminary results.

Households below the Nutritional Poverty Line

One first approach to poverty assessment is merely to count the number of households with living standards under the poverty line, and to compare the result with the total number of households in the population. As shown in the tables in the appendix our estimate of this ratio for the whole country is of 4.14 percent. So, clearly the proportion of households potentially affected by nutritional problems is quite small in Mauritius.

More tables of proportions of households below the nutritional poverty line are shown in the appendix. However, poverty is better assessed by counting persons rather than households. We proceed to this in the next Section.

5. The Main Nutritional Poverty Estimates

5.1. Nutritional poverty rates

Note that all results of nutritional poverty correspond to using nutritional equivalence scales. Obviously, different statistics will be obtained when using the general equivalence scales to be derived from the Living Condition Survey.

*The overall **head-count index is estimated at** $P_0 = 5.53$ percent with a sampling standard error of 0.379 percent.*

Because poor households have more frequently many children; the proportion of poor persons in Mauritius is larger than the proportion of poor households. However, it remains small. Obviously, nutritional poverty is not a major issue in Mauritius.

Moreover, this conclusion is supported by the standard error: with such levels of standard errors, the possible sampling errors in such survey would not make nutritional poverty looking negligible, nor looking sizeable. In all our estimations results, sampling errors would generally not change our comment of the results, and we do not discuss them anymore. Of course, specialists may want to have a close look at standard errors to assess the accuracy of estimates. When needed, we regrouped classes of cross-variables in the tables in order to present more significant results. The reader interested in standard errors can find them in parentheses in all the tables.

5.2. Other nutritional poverty indicators

As mentioned before, other poverty measures can be used to measure poverty. This is notably important because head-count index, while easy to grasp and communicate, does not distinguish between slightly poor people and extremely poor people. It is therefore only a rough indicator of actual poverty.

The nutritional poverty gap is estimated at 1.07 percent. The nutritional poverty severity index is worth 0.341 percent. Finally, the estimate of the nutritional Watts index is 1.33 percent. Although the values of these indicators are less intuitive, they are all quite small and confirm the results with the head-count index. With all indicators, nutritional poverty is low in Mauritius.

We now decompose the obtained nutritional poverty estimates across various household categories. This constitutes the nutritional poverty profiles discussed in the next Section. The tables are shown in the appendix.

Nutritional poverty Profiles

By island

Obviously, nutritional poverty in Rodrigues (poverty rate of 10.3 percent) is much higher than in the island of Mauritius (poverty rate of 5.4 percent), as shown by all nutritional poverty measures. For all the four poverty measures, nutritionally poor households in Rodrigues are about twice as poor as the ones in Mauritius island. This rejoins usual local knowledge about the characteristics of the two islands.

6.2. By Urban/Rural

Rural areas have a higher level of nutritional poverty (poverty rate of 6.3 percent) than urban areas (poverty rate of 4.1 percent). However, due to the small geographical size of the country, the gap between nutritional poverty in the two areas is much smaller than in most countries.

6.3. By district

When disaggregating nutritional poverty measures across districts, we reach the limit of what can be done with the surveyed household sample. Indeed, the impact of sampling errors becomes relatively more serious at this disaggregation level. However, we shall still attempt to compare districts, keeping in mind that these comparisons are more suggestions than safe and well-established estimation results.

There are four districts with higher estimated nutritional poverty rates: Rodrigues, the highest with 10.3 percent of poor persons, Flacq, Savanne and Moka. It is suspected that the high nutritional poverty rate in Moka may be due to high sampling errors. So, as explained above, figures at district level must be interpreted with caution.

On the opposite, nutritional poverty rates are relatively low in Pamplemousses, Plaines Wilhems and Rivière du Rempart. The other districts, including Port-Louis occupy intermediary positions.

The same rough nomenclature applies when considering other nutritional poverty measures, with often Port-Louis nutritional poverty close to that of the poorest four districts. However, as said before the apparent poverty indicators at district levels are not significantly different at 5 percent level. This table is therefore mostly shown for illustration of the importance of sampling errors. Note that for general poverty, corresponding to much larger population of poor persons, we expect more accurate estimates allowing us to distinguish between poverty levels across districts.

6.4. By RDI

Using various development indicators, CSO divided the country into four regional development area, characterised by an index from one to four (RDI). As expected, all nutritional poverty measures inversely vary with the level of the RDI of the location where households are observed. This result supports not only the use of RDI for poverty analyses, but also as stratification variable in HBS. There is a clear negative correlation

between the quality of the economic and social environment and the living standard of the extreme poor.

By gender of the household head (HHH)

As often the case, households led by female heads are characterised by higher nutritional poverty, whatever the used poverty measure. About 8.9 percent of persons found in households led by female heads are so poor that they cannot feed themselves properly.

By age of the HHH

Nutritional poverty is relatively high for households led by young heads and old heads, consistently with household life cycles. Heads under 38 years are nutritionally poor in 6.33 percent of the cases, heads in the age group 38 to 45 years in 6.73 percent and older heads (over 61 years) in 6.3 percent of the cases. The poverty rate reaches a minimum for heads in the age group 53 to 61 years (3.9 percent), and is also low for heads of age between 46 and 52.

By activity of the HHH

Activity of the head is a variable for which nutritional poverty can vary substantially across categories. 'Housewives' and 'Other' are the categories of heads with the higher nutritional poverty levels, whatever the used nutritional poverty measure, with respectively nutritional poverty rates of 11.8 percent and 13.4 percent. As these categories respectively mostly cover widows and abandoned women, and unemployed

heads, special care should be taken of these categories when designing anti-poverty policies. Retired heads are also characterised by higher than average nutritional poverty (nutritional poverty rate of 6.0 percent). In contrast, 'Employees' and 'Self-Employed' heads have lower nutritional poverty than the average. These results are consistent with the generation of income through economic activity. What is interesting here is that inactive or unemployed categories can often be found in dire straits as compared to the bulk of the Mauritian population.

By sector of the HHH

The activity sector of the head is as well a sensitive variable as far as nutritional poverty is concerned. In Mauritius, poverty is slightly higher in households whose head is in the private sector (5.7 percent of head-count index) than in households whose head is in the public sector (5.3 percent). However, we are dealing here only with employed heads, of which poverty is not the worst anyway. Moreover, the differences between the two categories are not very significant. Furthermore, the meaning of the two categories is too general to derive precise policy conclusions about them. In particular, this suggests using more accurate definition of activity sectors in HBS in the future. Also, when LCS, HBS and SRM data will be merged, we shall avail ourselves of more precise variables describing sectors and activities of the head. It will then be time to derive more fruitful poverty analyses of productive sectors in Mauritius.

By household size

Nutritional poverty variation with household size can be described by a U-shape curve.

Single person households have small poverty levels, although a little more than two-person households. However, starting from two-person households and adding members, thus increasing the household size, progressively raises nutritional poverty. Households with over six members suffer from substantial nutritional poverty levels for Mauritius, with 14.5 percent of them into nutritional poverty. Clearly, anti-poverty policies should pay special attention to large households in Mauritius.

By education of the HHH

Nutritional poverty inversely varies with the education level of the head. Households whose heads have no education or only primary education have a probability to be in nutritional poverty close to nine and eight percent respectively. Interestingly, having primary education does not provide significant advantage over no education for staying out of nutritional poverty.

On the other hand, households whose head has a tertiary education level are out of nutritional poverty. Indeed, the standard errors show that the nutritional poverty estimates for these households are non significantly different from zero.

By building type

The type of building where households live is correlated with their nutritional poverty status. Household living in detached and semi-detached houses have nutritional poverty level not too far from the average, while other households are characterised by higher nutritional poverty. This is because households living in shacks and slums are included in the category ‘Other’.

By house tenure type

Interestingly poverty rates respectively for households owning, renting or occupying for free their accommodation are not significantly different. However, when using more satisfactory poverty measures accounting for poverty severity such as P_2 or the Watts index, we discover that nutritional poverty is actually lower among households renting their accommodation.

By marital status of the head

Households with single heads are the ones with lower nutritional poverty, followed by households with married heads. Both categories are characterised by lower levels of nutritional poverty than average households. In contrast, households led by divorced, separated or widowed heads have higher nutritional poverty levels. This suggests designing social policies to support these latter households.

7. Conclusion

In this document, we reported poverty statistics describing the nutritional poverty profile of Mauritius for 2006/07. However, this is only the first stage of a series of studies. In particular, general poverty line estimates will be produced from Living Condition Survey data. These estimates will complement the nutritional poverty lines and lead to general poverty profiles for the years when HBS data are available.

Ultimately, these poverty statistics and other ones will be useful to estimate the number and the proportion of the poor benefiting from social aid and other social programs. The government will also be able to assess the number and the proportion of the poor missed by a given social program, and the share of the social budget wasted by servicing non-target populations. From this statistical series, more sophisticated indicators of social programs can then be investigated.

Thus, monitoring poverty using a modern battery of poverty line indicators will show where the weaknesses of the current social programs are. It will also provide hints about actions to be taken to alleviate these weaknesses.

Moreover, alternative social program designs will be testable by using the same methodology. In particular, it will be possible to calibrate proxy-means tests for the access to diverse social programs.

Finally, the impact on the poor of aggregating and rationalizing social programs will be assessable with these methods.

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Table 1: Nutritional poverty estimates (%)

	%
Head-Count Index	5.53 (0.379)
Poverty Gap Measure	1.07 (0.102)
Poverty Severity Measure	0.341 (0.0466)
Watts Poverty Measure	1.33 (0.139)

Table 2: Nutritional poverty estimates by Island (%)

	Island of Mauritius	Island of Rodrigues
Head-count Index	5.37 (0.388)	10.3 (1.65)
Poverty Gap Measure	1.04 (0.105)	2.25 (0.436)
Poverty Severity Measure	0.325 (0.0478)	0.795 (0.190)
Watts Poverty Measure	1.28 (0.142)	2.85 (0.576)

Table 3: Nutritional poverty estimates by urban/rural region (%)

Region	Head-Count Index	Poverty Gap Measure	Poverty Severity Measure	Watts Poverty Measure
Urban	4.07 (0.572)	0.827 (0.171)	0.264 (0.0766)	1.02 (0.228)
Rural	6.30 (0.497)	1.21 (0.128)	0.381 (0.0587)	1.49 (0.175)

Table 4: Nutritional poverty estimates by district (%)

District	Head-Count Index	Poverty Gap Measure	Poverty Severity Measure	Watts Poverty Measure
Port-Louis	6.29 (1.27)	1.32 (0.436)	0.454 (0.214)	1.65 (0.600)
Pamplemousses	4.56 (1.03)	0.662 (0.189)	0.178 (0.0602)	0.785 (0.228)

Riv. du Rempart	4.49 (1.08)	0.958 (0.300)	0.332 (0.151)	1.21 (0.423)
Flacq	8.86 (1.35)	1.47 (0.302)	0.442 (0.179)	1.84 (0.480)
Grand Port	6.60 (1.50)	1.29 (0.429)	0.479 (0.224)	1.69 (0.632)
Savanne	7.06 (1.73)	1.46 (0.496)	0.442 (0.203)	1.76 (0.639)
Plaine Wilhems	3.24 (0.559)	0.572 (0.130)	0.159 (0.0473)	0.687 (0.163)
Moka	7.02 (2.04)	1.75 (0.612)	0.541 (0.219)	2.11 (0.758)
Black River	4.83 (1.51)	1.16 (0.427)	0.359 (0.149)	1.40 (0.524)
Rodrigues	10.3 (1.65)	2.25 (0.436)	0.795 (0.190)	2.85 (0.576)

Table 5: Nutritional poverty estimates by activity status of head (%)

Activity status of head	Head-Count Index	Poverty Gap Measure	Poverty Severity Measure	Watts Poverty Measure
Employee	4.48 (0.421)	0.804 (0.108)	0.241 (0.0439)	0.974 (0.139)
Self Employed	5.43 (0.741)	0.928 (0.154)	0.238 (0.0509)	1.08 (0.186)
Housewife	11.8 (2.05)	2.35 (0.513)	0.655 (0.184)	2.78 (0.633)
Retired	5.97 (1.14)	1.27 (0.374)	0.444 (0.188)	1.62 (0.522)
Other	13.4 (3.01)	4.23 (1.34)	2.01 (0.878)	6.10 (2.26)

Table 6: Nutritional poverty estimates by sector of employment of head (%)

Employment sector	Head-Count Index	Poverty Gap Measure	Poverty Severity Measure	Watts Poverty Measure
Public Sector	5.30 (0.597)	1.18 (0.187)	0.421 (0.0966)	1.52 (0.271)

Private Sector	5.68 (0.461)	1.01 (0.112)	0.289 (0.0440)	1.21 (0.143)

Table 7: Nutritional poverty estimates by sex of head (%)

Sex of head	Head-Count Index	Poverty Gap Measure	Poverty Severity Measure	Watts Poverty Measure
Male	5.00 (0.381)	0.962 (0.104)	0.306 (0.0493)	1.19 (0.144)
Female	8.93 (1.17)	1.79 (0.296)	0.559 (0.127)	2.19 (0.390)

Table 8: Nutritional poverty estimates by educational level of head (%)

Educational level of head	Head-Count Index	Poverty Gap Measure	Poverty Severity Measure	Watts Poverty Measure
No education	9.12 (0.893)	1.89 (0.280)	0.676 (0.152)	2.43 (0.414)
Primary	8.05 (0.828)	1.44 (0.191)	0.391 (0.0669)	1.71 (0.236)
Secondary	3.02 (0.461)	0.621 (0.125)	0.198 (0.0522)	0.759 (0.163)
Tertiary	0.336 (0.239)	0.0264 (0.0211)	0.00235 (0.0021)	0.0276 (0.0222)

Table 9: Nutritional poverty estimates by household size (%)

Household Size	Head-Count Index	Poverty Gap Measure	Poverty Severity Measure	Watts Poverty Measure
1	1.35 (0.539)	0.496 (0.247)	0.304 (0.190)	0.901 (0.517)

2	1.01 (0.307)	0.151 (0.0551)	0.0302 (0.0125)	0.169 (0.0623)
3	2.56 (0.439)	0.421 (0.0859)	0.111 (0.0305)	0.497 (0.107)
4	3.88 (0.476)	0.645 (0.0949)	0.161 (0.0292)	0.749 (0.113)
5	5.20 (0.709)	0.872 (0.142)	0.225 (0.0487)	1.02 (0.174)
6 and over	14.5 (1.46)	3.24 (0.452)	1.18 (0.228)	4.16 (0.641)

Table 10: Nutritional poverty estimates by quintile age of head (%)

Age of head (years)	Head-Count Index	Poverty Gap Measure	Poverty Severity Measure	Watts Poverty Measure
Up to 37	6.33 (0.800)	1.29 (0.219)	0.425 (0.112)	1.63 (0.321)
38 - 45	6.73 (0.744)	1.16 (0.168)	0.316 (0.0576)	1.37 (0.205)
46 - 52	4.37 (0.673)	0.907 (0.189)	0.323 (0.0920)	1.15 (0.261)
53 - 61	3.90 (0.684)	0.687 (0.173)	0.192 (0.0706)	0.816 (0.222)
Over 61	6.32 (1.03)	1.38 (0.337)	0.486 (0.178)	1.77 (0.486)

Table 11: Nutritional poverty estimates by type of building (%)

Type of Building	Head-Count Index	Poverty Gap Measure	Poverty Severity Measure	Watts Poverty Measure
Detached	5.65 (0.449)	1.13 (0.125)	0.378 (0.0610)	1.42 (0.176)
Semi-detached	4.83 (0.701)	0.794 (0.153)	0.203 (0.0494)	0.924 (0.184)
Other	7.21 (1.68)	1.63 (0.457)	0.479 (0.164)	1.95 (0.565)

Table 12: Nutritional poverty estimates by tenure (%)

Tenure	Head-Count Index	Poverty Gap Measure	Poverty Severity Measure	Watts Poverty Measure
Owned	5.46 (0.418)	1.07 (0.115)	0.343 (0.0531)	1.32 (0.157)
Free	5.82 (1.02)	1.28 (0.295)	0.422 (0.134)	1.59 (0.399)
Rented	5.85 (1.51)	0.838 (0.254)	0.186 (0.0703)	0.952 (0.296)

Table 13: Nutritional poverty estimates by marital status of head (%)

Marital Status	Head-Count Index	Poverty Gap Measure	Poverty Severity Measure	Watts Poverty Measure
Married	5.16 (0.402)	0.980 (0.107)	0.296 (0.0462)	1.19 (0.142)
Widowed	7.65 (1.29)	1.38 (0.262)	0.367 (0.0862)	1.65 (0.321)
Divorced/Separated	10.2 (2.32)	2.23 (0.672)	0.929 (0.383)	2.99 (1.00)
Single	3.46 (1.73)	1.36 (0.893)	0.793 (0.649)	2.21 (1.63)

Table 14: Nutritional poverty estimates by Relative development Index (RDI) (%)

RDI	Head-Count Index	Poverty Gap Measure	Poverty Severity Measure	Watts Poverty Measure
RDI1	9.02 (0.873)	1.89 (0.258)	0.653 (0.127)	2.39 (0.364)
RDI2	5.94 (0.671)	1.08 (0.164)	0.310 (0.0647)	1.30 (0.210)
RDI3	2.76 (0.549)	0.468 (0.117)	0.127 (0.0398)	0.555 (0.143)
RDI4	0.617 (0.283)	0.101 (0.0506)	0.0184 (0.00993)	0.112 (0.0563)

	Mauritius	Rodrigues		

Table 1b: Percentage of households below the nutritional poverty line by island

	Mauritius	Rodrigues
Number of households selected in HBS 2006/07	6,240	480
Percentage of households below the nutritional poverty line	4.00 (0.278)	8.48 (1.33)

Table 2b: Percentage of households below the nutritional poverty line by urban/rural region

Region	%
Urban	2.93 (0.387)
Rural	4.79 (0.367)

Table 3b: Percentage of households below the nutritional poverty line by island

	%
Republic of Mauritius	4.14 (0.272)
Island of Mauritius	4.00 (0.278)
Island of Rodrigues	8.48 (1.33)

Table 4b: Percentage of households below the nutritional poverty line by district

District	%
Port Louis	3.87 (0.731)
Pamplemousses	3.67 (0.777)
Riv. du Rempart	3.49 (0.807)
Flacq	6.89 (1.06)
Grand Port	4.86 (1.07)

Savanne	5.07 (1.21)
Plaine Wilhems	2.66 (0.431)
Moka	4.74 (1.31)
Black River	3.62 (1.14)
Rodrigues	8.48 (1.33)

Table 5b: Percentage of households below the nutritional poverty line by activity status of head

Activity status of head	**%**
Employee	3.46 (0.312)
Self Employed	4.51 (0.591)
Housewife	6.80 (1.13)
Retired	3.47 (0.597)
Other	10.5 (2.23)

Table 6b: Percentage of households below the nutritional poverty line by sector of employment of head

Employment sector	**%**

Public Sector	3.67 (0.385)
Private Sector	4.47 (0.352)

Table 7b: Percentage of households below the nutritional poverty line by the sex of head

Sex of head	%
Male	3.88 (0.287)
Female	5.34 (0.668)

Table 8b: Percentage of households below the nutritional poverty line by the educational level of head

Educational level of head	%
No Education	6.64 (0.615)
Primary	5.73 (0.566)
Secondary	2.54 (0.368)
Tertiary	0.242 (0.169)

Table 9b: Percentage of households below the nutritional poverty line by household size

Household Size	%
1	1.35 (0.539)
2	1.01 (0.307)
3	2.56 (0.439)

4	3.88 (0.476)
5	5.20 (0.709)
6 and over	13.7 (1.37)

Table 10b: Percentage of households below the nutritional poverty line by type of building

Type of building	%
Detached	4.18 (0.315)
Semi-detached	3.62 (0.495)
Other	5.90 (1.36)

Table 11b: Percentage of households below the nutritional poverty line by tenure

Tenure	%
Owned	4.16 (0.302)
Free	4.53 (0.757)
Rented	3.28 (0.788)

Table 12b: Percentage of households below the nutritional poverty line by marital status of head

Marital status of head	%
Married	4.03 (0.302)
Widowed	4.67 (0.732)
Divorced or Separated	6.57 (1.49)
Single	1.86 (0.870)

Table 13b: Percentage of households below the nutritional poverty line by Relative Development Index (RDI) (%)

RDI	%
RDI1	6.60 (0.620)
RDI2	4.63 (0.507)
RDI3	2.22 (0.412)
RDI4	0.554 (0.244)

Table 14b: Percentage of households below the nutritional poverty line by quintile of age of head

Age of head (years)	%
Up to 37	5.14 (0.634)
38 - 45	5.45 (0.581)
46 - 52	3.40 (0.492)
53 - 61	2.66 (0.445)
Over 61	3.80 (0.556)

Persons met during the mission

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Mr N. Soobratty	Principal Assistant Secretary	MSS
Mrs. J. Sooben	Principal Assistant Secretary	MSS
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This paper will examine the effect of poverty on the nutritional state of the Namibian child. Namibia is a country with a population of 2.3. million people which is growing at a rate of 2.6 percent per annum [1] (NSA, 2016).Â Two documents are catalytic in providing a general view of Namibiaâ€™s nutritional status; the Food and Nutrition Guidelines for Namibia and Food and Nutrition Policy for Namibia and The Nutrition Country Profile, a research conducted by Food and Agricultural Organisation (FAO). In Namibia, there is a widespread of undernutrition among children less than five years of age, a chronic rate of unemployment standing at 28.7 and 15.3 percent in the years 1993/1994, 2003/2004 and 2009/2010 respectively. This is 40.5 and 43.6 percentage points fewer than in 1993/1994. 27. â€œA Nutritional Poverty Profile in Mauritius 2006-07,â€ UNDP Mauritius, Port-Louis, January 2009. 26. â€œA Reorganization of the Social Register of Mauritius,â€ UNDP Mauritius, Port-Louis, December 2008. 25. â€œA Note on Nutritional Poverty Estimates in Mauritius,â€ UNDP Mauritius, Port-Louis, November 2008. 24. â€œMethodology and Statistical Results.Â 20. â€œPoverty Analysis of the Integrated Household Survey CSD in The Gambia,â€ CBEMP, Banjul, The Gambia, June 2006. 19. â€œLiving Standard Analysis of the Integrated Household Survey CSD in The Gambia,â€ CBEMP, Banjul, The Gambia, May 2006. 18. â€œThe Consumption of Gambian Households in the Integrated Household Survey CSD in The Gambia,â€ CBEMP, Banjul, The Gambia, May 2006. A Nutritional Poverty Profile in Mauritius 2006-07 Christophe Muller United Nations Development Programme Consultant Revised August 2009 Acknowledgments I am grateful to numerous executives and agents from the Ministry of Social Security, the Central Statistical Office, the Ministry of Finance and Economic Empowerment, the UNDP and the EU for their collaboration during my missions of October-November 2008 and February 2009 in.Â I also thank experts at the Ministry of Social Security and at the Central Statistical Office for their contributions at various stages of the analysis, notably Mrs. Naseem Ramjane, Mrs. Yasmin Cassimally and Mrs. Meera Ganoo, the members of the SRM Core Team and the UNDP local consultants.