Methodological Report on the Consumption Aggregate and Poverty Lines

based on the

Barbados Survey of Living Conditions 2016

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For the Inter-American Development Bank

contractual ID: 00123458, vendor ID: 0020018085

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1. INTRODUCTION

This report corresponds to the third Report/Deliverable assigned to the consultant Carlos Eduardo Sobrado (vendor ID: 0020018085) from IDB contract 00123458.

There are three sections in this document: first, a description of the consumption aggregate, its components, variables, and transformation; second, the construction of poverty lines; and third, basic poverty results are presented. The main source of information for the work is the 2016 Barbados Survey of Living Conditions (BSLC-2016). Secondary sources are the caloric requirements for people, the food caloric content tables, the 2010 poverty estimates and report, and the Consumer Price Index (CPI).

2. MEASURING CONSUMPTION USING THE BSLC-2106
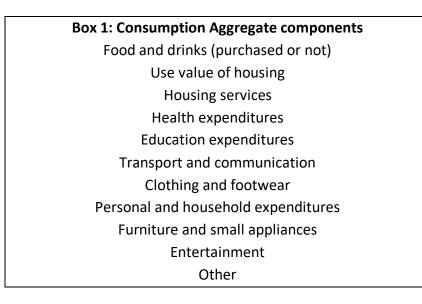
JUSTIFICATION

Consumption is one of the best welfare indicators. It is preferred over income, because consumption tends to fluctuate less between months and over the years. For example, people smooth their consumption over time by saving money (e.g., bank account), resources (e.g., cattle, crops), or investing (e.g., housing, land), and by using those saving when needed. Also, respondents tend to provide more accurate information on consumption than income. And while consumption is an objective measure of welfare, indicators based on multiple variables combined use subjective definitions, including which variables are to be included and the respective weights assigned to their components.

WHAT IS INCLUDED IN THE CONSUMPTION AGGREGATE?

Consumption should include all goods and services that increase a household wellbeing. While consumption and expenditure are similar, important differences exist in cases when (i) a household consumes a good or service without having any expenditure: food received as a gift, social program, or school lunch; (ii) the expenditure and consumption take place at a different time: the purchase of a bag of rice a month ago consumed during last week; (iii) the consumption is the product of a family business: crops or cattle with many expenditures over long periods of time allocated to several activities; (iv) the durable goods improve the wellbeing of the household during many years: a stove purchased a few years ago does not require new expenditures but keeps improving the household welfare today; also, the benefits derived from a new stove this year are less than the original purchase price. In other words, only part of a durable good is used each year but the expenditure is reported only one time.

The BSLC-2016 has the information to construct the consumption aggregate. The consumption aggregate includes food and drinks (purchased or non-purchased), use value of housing, housing services, health and education expenditures, transport and communications, clothing and footwear, personal and household expenditures, furniture and small appliances, entertainment, and other (See Box 1).

The BSLC-2016 does not have enough information to estimate the use value of durable goods. Using the purchase value for big ticket items does not solve the problem and increases the bias for households reporting new items. Excluding the durable goods would underestimate the consumption aggregate value but reduces the bias for individual households and is expected to have very limited impact on poverty estimates (see individual components for a more detailed explanation).

Box 1: Consumption Aggregate components
Food and drinks (purchased or not)
Use value of housing
Housing services
Health expenditures
Education expenditures
Transport and communication
Clothing and footwear
Personal and household expenditures
Furniture and small appliances
Entertainment
Other

VARIABLE CLEANING AND UNITS

Variable cleaning

All the variables used in the consumption aggregate were reviewed to identify values out of range, outliers, and missing values. An action was taken for every case, with the purpose of reducing the bias introduced by the problem and provide a reasonable estimate.

Answers with values not included in the questionnaire list were values out of range. The "out of range" values were changed to those that were valid depending on other answers given by the household or, if no other option was available, the most common answer was used.

Outliers are observations with values too different from the rest to be true. The four characteristics used to determine outliers were: (i) standard deviations from the mean; (ii) a clear jump in values between the outliers and the next observation (based on inspection of plotted values in a graph); (iii) values outside the known distribution (e.g., internet connection or tv cable fees); and (iv) total number of outliers being a small percentage of the observations.

The value of some variables is expected to increase with the number of household members, as in the case of food purchases. Other variables do not change much regardless of household size[1]; for example, purchase value of electric iron. To help determine the sensibility of non-food expenses to the household size, a regression between the average value paid (dependent variable) and the household size (independent variable) was estimated[2]. For all variables with values sensible to the household size, the reported amounts were divided by the number of members before estimating the number of standard deviations from the mean[3].

Each individual outlier was more than 6 standard deviations away from the mean and the total number of outliers for each variable was less than half a percentage point of the reported values (< 0.5%).

Missing values are observations where a household member reported having purchased or consumed a good or service but did not provide its value. Outliers and missing values were estimated together. The average value for the specific item was used to replace the outlier or the missing value. For variables sensible to household size, the per capita value was used for the estimation and then transformed back to the total household expenditure. A record of every estimation was kept having an exact value of the consumption aggregate estimated share.

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[1] Household size is the number of household members.

[2] The regression was run for the following groups of goods and services: Cleaning and other HH? Supplies; Personal care and stationary; Health insurance; Communications; Other Services; Clothes adults; Clothes children; Clothes other; Jewelry and watches; Radio and other electronics; Furniture and cutlery; Vehicle maintenance; Vehicle insurance, registration, license, etc.; Entertainment; Other; 1101 House rent - private owner; 1102 House rent – government; 1104 House insurance; 1201 Electricity; 1202 Kerosene; 1203 Natural gas; 1204 Bottled gas; 1205 Water supply; 1206 Matches, Other light and fuel; 1801 Internet, Phone and TV fees; 2801 Flat-screen TV, Small appliances; 3404 Bicycle-purchase; and 3806 Weddings.

[3] Health and education expenditures were reported for each household member and processed for each person. Variables divided by the household size before the analysis were those in module 11-Personal expenses, and module 14: 14.A-Food, 14.B.13-Washing soaps and detergents, 14.B.14-Other cleaning and scouring material, 14.B.15-Other household supplies, 14.B.16-Personal care, 14.B.19-Stationary and drawing materials, and individual codes (from module 14): electricity (1201), natural gas (1203), water supply (1205), mobile phone fee (1802), and other communication expenses (1803, 1804).

Variable units

Before adding the individual components, all variables were transformed to the same units: monthly and per capita (per person). Each question has a recollection period (e.g., during the last X number of days or months have you spent any…). The recollection periods used in the consumption questions included 7 days, 30 days, 3 months, and 12 months. The food section (14.A) included the question: "how often they buy the products?" and the answer ranged from every day to every 95 days.

All values reported were transformed to monthly units by multiplying for the appropriate factor: the values for 7-day questions were multiplied by 52 and divided by 12, for 30-day questions were not changed, for 3-month questions were divided by 3, and for 12-month questions were divided by 12. For food items, the values were multiplied by 365 and divided by the frequency reported.

Consumption values were first estimated using the file's organization, which reflects the design of the questionnaire. Some questions were asked for individual family members, others for the entire household. Regardless of the organization, the individual consumption variables were added up for all household members. After creating the 11 groups listed in Box 1, the per capita values were estimated by dividing the household consumption by the number of household members.

INDIVIDUAL COMPONENTS IN THE CONSUMPTION AGGREGATE

Having several components in the consumption aggregate helps organize the work and interpret the results. The only division that is necessary to estimate the poverty lines, is between the "food" and the "non-food" components[4]. Other groups reflect the questionnaire design and the preferences of the analyst. Welfare level and poverty status for each household use the total consumption aggregate and do not change with the grouping. The individual components of the consumption aggregate are included in the STATA data file "f1 agregate.dta" (or the SPSS data file "f1 agregate.sav") and the variable names are listed after each component.

Food and drinks

The food variable (food_pc) includes food or snacks at school (module 3-Education, question 3.21m), food bought and consumed away from home (module 11-Personal expenses, items 3901

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[4] Food includes food and all types of drinks.

to 3998), and consumption of food and beverages at home (module 14.A-Food and drinks at home, all items from code 0101 to 1098).

Use value of house

Use value of house (house_pc) includes the monthly rent paid (module 14b-Non-food, items 1101, and 1102). For non-renters, the use value of the house was estimated using the prediction from a multivariable regression.

Using the households reporting rent, a regression between the natural logarithm of the rent paid (dependent variable), and several house characteristics (independent variables) was estimated. Almost all variables from the housing section of the questionnaire were used (module 13). Discrete variables were transformed into Dummy variables by grouping classifications related to higher rent values. The final model included only nine variables encompassing ownership type, floor and roofing material, access to pipe water inside the house, having clothes dryer, having a solar heater, and the household size. Two other variables in the model were not significant at p ≤ 5%: having a dish washer and household head gender.

The model was significant with a $p \le 0.1\%$ and the adjusted R squared was 0.403. **Table 1** has the detailed description of the variables as well as the estimated beta, t value, and significance level. Annex 1 has the complete regression results.

Table 1: Rent paid regression results, Barbados BSLC-2016

	Beta	t	Sig.
(Constant)	5.193	28.086	.000
Owned with mortgage or private rented (q13_02 = 1 or 4)	.770	9.931	.000
Masonry floor (q13_10 = 1)	.160	2.377	.018
Good roof: metal, ceramic, cement or shingles (q13_11 = 1 or 2 or 3 or 4)	.126	2.221	.027
Pipe water in dwelling (q13_15 = 1)	.324	2.034	.043
Have clothes dryer (q13_22f > 0)	.395	3.207	.001
Have solar heater (q13_22i > 0)	.387	5.965	.000
Number of household members	.041	2.377	.018
Have dish washer (q13_22g > 0)	.444	1.378	.169
Household head is male	-.093	-1.685	.093

Dependent variable is the natural log of actual monthly rent paid

Using the beta values from **Table 1**, the natural logarithm "rent" was estimated. The actual estimated rent is the exponential value of the prediction ($e^{predicted}$) [5]. The estimated rent was used as the house use value for the households without rent, and the actual rent was used for households paying rent.

Housing services

The Housing services (h_services_pc) variable includes services related directly to the house. It includes all the variables from Module 14.B.12: electricity; kerosene; natural gas; bottle gas; water supply; matches and other energy expenditures (items 1201 to 1210); and internet, phone and TV fees (item 1801 in module 14.B.18).

Education expenditures

The Education expenditures (education_pc) variable includes "school bus" from module 11-Personal expenditures, item 4202; and from module 3-Education, questions 3.21a-Admision fees, 3.21b-Annual/session fees, 3.21c-Registration fees, 3.21d-Examinatin fees, 3.21e-Tuition fees, 3.21g-Text books, note books, 3.21h Exercise books, stationary, 3.21i-Uniform dress, footwear, 3.21j-Private tutoring, 3.21k-Accomodations expenses, 3.21l- Transport cost, 3.21n-Donation (education related), and 3.21o-Other education expenses.

Health expenditures

The Health expenditures (health_pc) variable includes insurance expenditures (module 14b-Non-food, item 1701 to 1703) and health expenditures from module 5-Health, questions: 5.21-Private medical services, 5.23-Other medical care services (x-rays, blood test, electrocardiogram, hospitalization, and other type of lab tests, etc.), 5.25-Other medical products (like prescription glasses, thermometer, blood pressure monitor, orthotics, cervical collars, etc.), and 5.28-Public or private medicines.

Transport and communication

The Transport and communication (communication_pc) variable includes values from module 11-Personal expenditures, section 41-Moving expenses (items 4101-4298), magazines (item 4304), newspaper, journals and periodicals (item 4305), and section 44-Communications (items 4401, and 4402); and from module 14b-Non-food expenses, mobile phone fees (item 1802) other

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[5] The number **e** is a mathematical constant that is the base of the natural logarithm: the unique number whose natural logarithm is equal to one. It is approximately equal to **2.71828**, and is the limit of $(1 + 1/n)^n$ as n approaches infinity.

communication expenditures (items 1803 and 1804), section 33-Maintenance and parts for motor vehicles (items 3301 to 3307), vehicle insurance (item 3403), and section 35-Licenses (items 3501 to 3504).

Clothes and fabrics

The Clothes and fabrics (clothing_pc) variable includes module 14b-Non-food expenses, clothing sections 21, 22, 23 and 24 (items 2101 to 2421), fabrics for females (item 2501), fabrics for males (item 2502), hand bag (item 2503), belts (item 2508), and other clothing and accessories (items 2508 to 2512), and section 31-Household linens (items 3101 to 3104).

Personal expenditures

The Personal expenditures (personal_pc) variable includes module 14b-Non-food expenses, section 13-Washing soaps and detergents (items 1301 to 1309), section 14-Other cleaning and scouring material (items, 1401 to 1409), section 15-Other household supplies (items 1501 to 1508), section 16-Personal care (items 1601 to 1621), and section 19-Stationary and drawing materials (items 1901 to 1903).

Small appliances, furniture and other small durables

This category (furniture_pc) includes variables in module 14b-Non-food expenses, gold jewelry (item 2504) , silver jewelry (item 2505), watches for females (item 2506), watches for males (item 2507), section 28-RadioTV, Hi-Fi equipment and supplies (items 2801 to 2810), section 29-Furniture and soft furnishings (items 2901 to 2917), blenders (item 3001), electric iron (item 3005), room fans (item 3009), vacuum cleaners (item 3010), other household appliances (item 312), Section 32-Glassware, cutlery and crockery (items 3201 to 3203) and bicycle purchase (item 3404).

Entertainment

The Entertainment (entertainment_pc) variable includes values from module 11-Personal expenditures, section 43 (items 4301, to 4303, and 4306 to 4308)[6] and from module 14b-Non-food expenses, gym fees (item 2005), section 36-Other travel expenses (items 3601-3602), and toys (item 3701).

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[6] Excludes magazines (4304) and newspapers (4305).

Other services and tobacco

The Other services and tobacco (other_tobacco_pc) variable includes vales from module 11-Personal expenses, section 40-Tobacco (items 4001, to 4098) and from module 14b-Non-food expenses, other house expenses (item 1105), and section 20-Other services, (items 2001 to 2004, and 2006 to 2008).

TOTAL CONSUMPTION AGGREGATE AND ELIMINATED HOUSEHOLDS

The total consumption aggregate is the sum of the eleven individual components described in the previous section. Estimated values for each component were aggregated and compared to the total consumption[7]. The objective was to identify households with too many estimations in their consumption. A cutoff value was designated and households with estimates above 30% were considered unreliable.

One hundred and forty-six households (out of 2,508) had over 30% of estimations and were eliminated from the sample. The main source of estimations are missing values from the Food section and correspond to consumption that included items not bought during the last seven days. To account for the reduction in the number of households, the sample weights were modified. To keep the total value of all the weights, if a household was eliminated, its weight was distributed equally among other households within the same Primary Sampling Unit.

Average per capita consumption in 2016 was BBD. 1,064/month. The richest ten percent of the population has an average per capita consumption of BBD. 2,593/month while the poorest ten percent has an average per capita consumption of BBD. 244/month (**Table 2**).

Table 2 Average per capita consumption in BBD, Barbados, 2016

	Decile										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Avg.**
BBD/month/person	244	492	624	743	854	985	1,140	1,319	1,639	2,593	1,064

3. POVERTY LINES

Two poverty lines were constructed for the Barbados BSLC-2016: the extreme poverty line (also known as the indigence line) and the overall poverty line. To compute both poverty lines, a household level consumption aggregate is used -- for the extreme poverty estimation, the cost per calorie paid by each household and the average caloric requirement for the country are

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[7] Estimated values are computed for outliers and missing observations.

needed; for the overall poverty line estimation, the food and non-food components of the consumption aggregate are required.

The consumption aggregate and its food and non-food components were estimated using the BSLC-2016 as explained in the previous section. The cost per calorie paid by each household is computed with the information in module "14.A-Consumption of food and beverages in the past 7 days" and with the caloric content of each food type. The average caloric requirement for Barbados was estimated as a weighted average of the specific requirement for each age and gender group.

Average caloric requirement for Barbados

The minimum caloric needs for the average person in Barbados is computed using the World Health Organization's caloric requirements for a moderate physical activity person. The requirements are provided for each group according to their gender and age in years (<1, 1-3, 4-6, 7-9, 10-13, 14-17, 18-30, 31-60, and 61 and older). The requirement average is weighted by the population share according to the 2010 Barbadian population and housing census. The weighted average was estimated at 2,096.5 kilocalories per day. Individual values and estimates are presented in Annex 2, Table A2.1.

The additional caloric requirement for pregnant and lactating women was taking into consideration by estimating it for the entire country and dividing the result by the counted population in the 2010 census (226,193 persons). The resulting value was 7.1 kilocalories per day. Individual values and estimates are presented in Annex 2, Table A2.2.

The final average daily requirement for Barbados: 2,096.5 (population) + 7.1 (pregnant and lactating) = **2,104** Kilocalories per day**.**

Cost per Kilocalorie for each household

Module "14.A-Consumption of food and beverages in the past 7 days" provides the quantities (in grams or milliliters) and amount (in BBD) for each food item consumed at home by the households. The caloric content and edible portion for each food type, was obtained from tables prepared by the Nutrition Institute of Central America and Panama (INCAP 1996). The tables include water content, energy (Kilocalories), grams of protein, fat, carbohydrates and ashes, vitamins and minerals content, as well as the edible fraction for each food and drink item. The selected energy contents and edible portion are presented in Annex 2, including the equivalence between milliliters and grams for liquids.

To estimate the "*total calories consumed by each household*", first, all quantities reported in Module 14.A were transformed into grams (using the "grams in 1 milliliter" equibalance, Annex

2); second, the resulting quantities were multiplied by the edible portion share (Annex 2); and third, these results were multiplied again by the caloric requirement and then divided by 100 (Annex 2)[8]. Finally, all the calories provided by the food items were added for each household.

The "*total amount paid by each household*" is the sum of all amounts paid for each food item. The food items used for the calorie contents and the total expenditures are the same. If, for example, there was no caloric information on a specific food item reported by one household, that food item would be excluded from both the caloric and the expenditure estimates.

The cost per calorie paid by each household is the "*total amount paid by each household*" divided by the "*total calories consumed by each household*".

Estimating the extreme poverty line

The extreme poverty line is the cost of buying the minimum caloric requirement of 2,104 kilocalories per day.

For the extreme poverty line to be relevant for the poor, only poor households are selected to determine the cost of 2,104 kilocalories per day. Also, because the extreme poverty line should reflect the preferences of the poor, the poorest of the poor are excluded to make sure the selected households have real choices on what to eat.

Since it is not known a priory who is poor and who is not, the first estimates are done with an educated guess of how many poor are in the country and, according to the results, the reference group is modified, and a second estimate is done. This process continues until the selected reference group and the estimated poor are similar. Since the process is convergent, a solution is normally found within three to five runs.

For the first run, the first step was to arrange the households from lower to higher per capita consumption, the second step was to select a reference group including the 10-20% lower consumption households[9], and the third step was to estimate the poverty lines.

The second run was the same as the first one, but this time selecting the 10-25% lower consumption households[10]. At the third run, the reference population and the poverty

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[8] The division by 100 is necessary because the caloric requirements in Annex 2 are for 100 grams portions, and the quantities consumed by the households are in grams.
[9] The poorest 9% of households were not used to exclude the poorest of the poor. The 20% was an educated guess based on the latest poverty headcount rate.
[10] Because the first run poverty headcount was close to 26%.

headcount rate were close to each other. The following description includes the final run for the extreme poverty line:

1. Arrange the households from lower to higher per capita consumption.
2. Select the 10-26% lower consumption households.
3. Estimate the cost for those households to buy 2,104 kilocalories per day

The cost of 2,104 kilocalories for households in the 10-26 poorest percentile was **BBD. 295.75** per month per person.

Estimating the total poverty line

The overall poverty line is the extreme poverty line plus an amount to account for basic non-food consumption. To estimate the non-food part of the total poverty line, a second reference group is selected. The second reference group includes households with total consumption close to the extreme poverty line[11]. These are households that would need to use all their resources to buy enough food to barely satisfy their caloric needs and, hence, would have no resources for non-food goods and services. However, since these households decide not to use all their resources to buy food, they do not meet their minimum caloric requirement, and the non-food goods and services they consume are as the food they purchase. This characteristic, forgoing basic food intake to consume non-food goods and services, is the reason their non-food consumption is also considered essential.

The food share in the consumption aggregate is also known as the Engels coefficient, and the non-food share is known as the Orshansky coefficient. To estimate the total poverty line, the extreme poverty line is divided by the food share of the households in the second reference group.

For the total poverty line, the food part is the same as the extreme poverty line and the Engels and Orshansky coefficients are the same as the second reference group.

The Engels coefficient for the second reference group was 0.464891, and the total poverty line was: BBD. 295.75 / 0. 464892 = **BBD. 636.17**/month/person. The total poverty line has a food component of BBD. 297.28 and a non-food component of BBD. 340.42/month/person.

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[11] Households with total per capita consumption within 10% of the poverty line value:
(0.9 * extreme poverty line) < consumption < (1.1 * extreme poverty line)

4. POVERTY RESULTS

The headcount rate for the extreme poor was estimated at 4.9% of the population and the overall poverty headcount rate at 25.7%. **Table 3** includes the three Foster–Greer–Thorbecke indices for overall and extreme poverty.

Table 3: FGT for extreme and all poor, Barbados 2016

Indicator	Households	Persons
p0 P0 Headcount rate: all poor	17.2%	25.7%
P1 P1 Poverty gap index: all poor	0.056	0.087
p2 P2 Poverty gap squared: all poor	0.030	0.047
p0_ext P0 Headcount rate: extreme poor	3.4%	4.9%
p1_ext P1 Poverty gap index: extreme poor	0.017	0.025
p2_ext P2 Poverty gap squared: extreme poor	0.011	0.017

Several housing characteristics improve for households with higher consumption. For example, only 42.7% of households in the poorest quintile had masonry walls and increases up to 75.0% of households in the richest quintile. The same can be observed on the foundations, floor and roof materials, the toilet facilities, and the number of persons per bedroom (**Table 4**).

Table 4: Housing conditions by quintile and poverty level, Barbados BSLC-2016

Housing conditions		Population Quintile (5 groups)						Poverty level		
		Q1	Q2	Q3	Q4	Q5	Total	Ext. Poor	Poor	Not-poor
Outer walls	Masonry	42.7%	48.5%	53.6%	65.3%	75.0%	**60.8%**	37.5%	42.7%	**64.1%**
	Wood	40.5%	30.3%	27.1%	19.4%	14.6%	**23.5%**	36.7%	39.1%	**23.5%**
Foun-dations	Fully enclosed masonry	67.4%	75.5%	77.9%	84.8%	88.5%	**81.2%**	73.4%	68.1%	**81.2%**
	Pillars/columns/loose rock	15.6%	10.6%	9.8%	10.8%	7.6%	**10.1%**	12.5%	14.2%	**10.1%**
Floor	Masonry	46.7%	54.1%	57.7%	68.1%	77.4%	**64.4%**	42.9%	45.9%	**64.4%**
	Wood	42.2%	33.2%	29.5%	22.1%	15.7%	**25.6%**	43.1%	43.0%	**25.6%**
Roofing	Metal	44.8%	46.9%	50.0%	55.7%	55.6%	**52.0%**	35.4%	45.3%	**52.0%**
	Other corrugated sheets	52.5%	50.9%	46.3%	38.5%	35.9%	**42.8%**	58.3%	52.4%	**42.8%**
Toilet	WC (all flush toilets)	83.0%	87.2%	86.0%	90.0%	89.8%	**87.9%**	87.0%	82.6%	**87.9%**
	Pit - latrine and other	11.2%	5.0%	4.2%	2.9%	1.7%	**4.0%**	4.7%	9.8%	**4.0%**
# of persons per bedroom		1.59	1.3	1.2	1.1	0.9	**1.1**	152.2%	153.4%	**105.5%**

Highlighted rows indicate good quality materials or conditions that improve with higher per capita consumption

As expected, the household size decreases with the consumption level. The poorest quintile had households with 4.0 persons (in average) and decreases down to 1.7 persons for the richest

quintile. Extreme/All Poor households average 3.7/3.8 persons and the non-poor only 2.3 (**Table 5**).

Table 5: Household size by quintile and poverty, Barbados 2016

	# members
Q1	4.0
Q2	3.3
Q3	2.7
Q4	2.3
Q5	1.7
Extreme Poor	3.7
All poor	3.8
Non-Poor	2.3
Average	2.6

5. ANNEXES

ANNEX 1 Rent paid regression results

ANOVA [a]

Model		Sum of Squares	Degrees of freedom	Mean Square	F	Sig.
1	Regression	78.261	9	8.696	30.265	.000[b]
	Residual	109.467	381	.287		
	Total	187.728	390			

a. Dependent Variable: ln_house12 Natural logarithm of rent paid

b. Predictors: (Constant), hhh_gender Household head gender, solar_heater_1, hh_size # of household members, piped_water, roof_good, dish_washer_1, dwelling_10or4, dryer_1, floor_masonry

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Model Summary [b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.646[a]	.417	.403	.53602

a. Predictors: (Constant), hhh_gender Household head gender, solar_heater_1, hh_size # of household members, piped_water, roof_good, dish_washer_1, dwelling_10or4, dryer_1, floor_masonry
b. Dependent Variable: ln_house12 Natural logarithm of rent paid

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Coefficients [a]

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	5.193	.185		28.086	.000
Owned with mortgage or private rented	.770	.077	.408	9.931	.000
Masonry floor	.160	.067	.105	2.377	.018
Good roof: metal, ceramic, cement or shingles	.126	.057	.091	2.221	.027
Pipe water into dwelling	.324	.159	.081	2.034	.043
Have clothes dryer	.395	.123	.131	3.207	.001
Have dish washer	.444	.322	.056	1.378	.169
Have solar heater	.387	.065	.265	5.965	.000
Number of household members	.041	.017	.094	2.377	.018
Household head is male	-.093	.055	-.067	-1.685	.093

a. Dependent Variable: ln_house12 Natural logarithm of rent paid

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ANNEX 2 Average calorie requirement in Barbados 2016

The reported numbers are based on the counted population. The census bureau estimated an undercount of 49,115 = 17.8%.

Table A2.1 Average caloric requirement in Barbados, without accounting for pregnant or lactating women

Age groups	Population (from 2010 census)			Population structure			Caloric requirements from WHO		Average requirements (Kcal/day): caloric requirement X Population structure		
	Total	Male	Female	Total	Male	Female	Male	Female	Total	Male	Female
Total	226,193	108,223	117,970	100.0%	47.8%	52.2%			2,096.5	1,100	996
<1	2,117	1,056	1,061	0.9%	0.5%	0.5%	621	573	6	3	3
1-3	9,392	4,886	4,506	4.2%	2.2%	2.0%	1,249	1,154	50	27	23
4-6	8,784	4,449	4,335	3.9%	2.0%	1.9%	1,401	1,242	51	28	24
7-9	9,460	4,890	4,570	4.2%	2.2%	2.0%	1,747	1,627	71	38	33
10-13	12,404	6,332	6,072	5.5%	2.8%	2.7%	2,396	2,193	126	67	59
14-17	11,785	5,904	5,881	5.2%	2.6%	2.6%	3,122	2,283	141	81	59
18-30	39,890	19,636	20,254	17.6%	8.7%	9.0%	2,527	2,053	403	219	184
31-60	95,278	45,172	50,106	42.1%	20.0%	22.2%	2,472	2,005	938	494	444
61 y +	37,083	15,898	21,185	16.4%	7.0%	9.4%	2,044	1,788	311	144	167

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Table A2.2 Additional requirement by pregnant and lactating women

	# of persons	Additional Kcal/ person	Additional Kcal	Additional Kcal/ population
Total			1,615,873.3	7.1
Pregnant women	1,919	285	546,788.3	2.42
Lactating women	2,117	505	1,069,085.0	4.73

Additional Kcal = (# of pregnant of lactating women) * (Additional kcal/person)

Additional Kcal/population = Additional Kcal / 226,193

Final average requirement for Barbados: **2,096.5** (population) + 7.1 (pregnant and lactating) = **2,104**/day/person

ANNEX 3 Food and drinks caloric content and edible PORTION

Food item from Module 14.A	Kilocalories in 100 grams	Edible portion	Grams in 1 milliliter
0101 Biscuits - unsweetened	330	1.00	1.00
0102 Bread - white, sliced	267	1.00	1.00
0103 Macaroni	371	1.00	1.00
0104 Rice - packaged	360	1.00	1.00
0105 Biscuits - sweetened	478	1.00	1.00
0106 Bread - bran, sliced	277	1.00	1.00
0107 Bread - coconut	341	1.00	1.00
0108 Bread - whole wheat	286	1.00	1.00
0109 Buns	274	1.00	1.00
0110 Chow Mein	371	1.00	1.00
0111 Corn flakes	389	1.00	1.00
0112 Cream of wheat	368	1.00	1.00
0115 Quaker oats	378	1.00	1.00
0117 Spaghetti	371	1.00	1.00
0201 Chicken - whole	215	0.64	1.00
0202 Corn beef	123	1.00	1.00
0203 Mutton / Lamb	267	0.77	1.00
0204 Pork - unsalted	216	0.79	1.00
0205 Sausages - not canned	186	0.98	1.00
0206 Bacon	576	1.00	1.00
0207 Beef	244	0.64	1.00
0208 Chicken - backs, necks, etc.	187	0.73	1.00
0209 Chicken nuggets	211	0.79	1.00
0210 Chicken wings	211	0.79	1.00
0211 Ham - sliced	162	1.00	1.00
0212 Hamburgers	244	1.00	1.00
0213 Luncheon meat - canned	250	1.00	1.00
0214 Meat - fresh, chilled or frozen	267	0.77	1.00
0217 Turkey wings	118	0.77	1.00
0301 Dolphin - fresh, chilled or frozen	130	1.00	1.00
0302 Flying fish - fresh, chilled or frozen	134	0.75	1.00
0303 Tuna	288	1.00	1.00
0304 Bill fish	134	0.75	1.00
0305 King fish	134	0.75	1.00
0307 Salmon - prepared, preserved	138	1.00	1.00
0308 Salted fish	409	1.00	1.00
0309 Sardines	208	1.00	1.00
0310 Red snapper	134	0.75	1.00
0401 Milk - evaporated	321	1.00	1.00
0402 Milk - fresh, pasteurized	65	1.00	1.04
0403 Cheese	264	1.00	1.00
0404 Eggs	148	0.88	1.00
0406 Ice cream	192	1.00	1.00
0407 Milk - flavored	72	1.00	1.04
0408 Milk - sweetened, condensed	321	1.00	1.00
0501 Corn oil for cooking	884	1.00	0.94
0502 Other vegetable oil	884	1.00	0.94
0503 Table butter	465	1.00	1.00
0505 Peanut butter	588	1.00	1.00
0506 Margarine	719	1.00	1.00
0507 Other oils and fats - vegetal	884	1.00	1.00
0601 Oranges - fresh, dried	42	0.64	1.00
0602 English apples - fresh	59	0.92	1.00
0603 Grapes - fresh, dried	63	0.58	1.00

Food item from Module 14.A	Kilocalories in 100 grams	Edible portion	Grams in 1 milliliter
0604 Bananas	97	0.61	1.00
0605 Plantains	122	0.69	1.00
0608 Nuts	572	1.00	1.00
0612 Limes	0	0.60	1.00
0614 Mangos	59	0.53	1.00
0615 Pineapples	52	0.59	1.00
0616 Melons	35	0.51	1.00
0617 Watermelons	22	0.49	1.00
0619 Papayas	32	0.75	1.00
0620 Breadfruits	40	0.60	1.00
0701 Potatoes not sweat - fresh or chilled	79	1.00	1.00
0702 Carrots - fresh or chilled	41	1.00	1.00
0703 Onions - fresh or chilled	45	0.91	1.00
0704 Tomatoes - fresh or chilled	21	1.00	1.00
0705 String beans - fresh or chilled	118	0.33	1.00
0706 Cabbage - fresh or chilled	28	0.79	1.00
0707 Beets - fresh or chilled	44	0.63	1.00
0709 Broccoli	28	0.59	1.00
0710 Canned corn	108	1.00	1.00
0711 Cucumbers - fresh or chilled	15	0.77	1.00
0713 Garlic - fresh or chilled	134	0.94	1.00
0714 Lettuce	15	0.79	1.00
0715 Okra - fresh or chilled	38	0.86	1.00
0716 Pumpkins - fresh or chilled	24	0.97	1.00
0718 Pigeon Peas - dried, skinned, split	69	1.00	1.00
0719 Other Peas - dried, skinned, split	69	1.00	1.00
0720 Sweet peppers - fresh or chilled	31	1.00	1.00
0721 Sweet potatoes	116	0.78	1.00
0722 Yams	121	0.68	1.00
0723 Avocado	154	0.54	1.00
0725 Cassava	121	0.68	1.00
0801 Brown sugar	376	1.00	1.00
0802 Mayonnaise	390	1.00	1.00
0804 Tomato Ketchup and Tomato Sauce	35	1.00	1.00
0901 Aerated beverages (e.g. Coca Cola)	41	1.00	1.00
0902 Milo	384	1.00	1.00
0903 Orange juice	146	1.00	1.11
0904 Tea	308	1.00	1.00
0905 Mineral water	0	1.00	1.00
0906 Flavored water	0	1.00	1.00
0907 Bottled water	0	1.00	1.00
0908 Chocolate drinks	361	1.00	1.04
0909 Coffee - instant	241	1.00	1.00
0911 Flavored or colored sugar syrups	382	1.00	1.11
0914 Other fruit juices	382	1.00	0.97
0916 Malt Beverages	384	1.00	1.00
1001 Beer	41	1.01	1.01
1002 Wine	72	0.99	0.99
1004 Rum	231	0.94	0.94
1007 Other spirits	250	0.94	0.94