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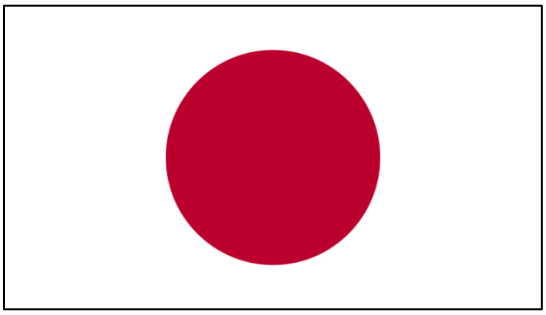

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Baseline Economic and Health Status of the Rural Population in the Gabú region of Guinea-Bissau[1]

Philippe Auffret,[2] Ahmed Bahiaoui,[3] and Maria Rua[4]

Abstract

Background: The relative impact and interaction of cash transfers and nutrition-related measures to monitor and enhance children's growth are unknown.
Objectives: The objective of this paper is to describe and analyze indicators for a baseline population that will benefit from a two-year cash transfer and nutrition randomized control trial in the Gabú region of Guinea-Bissau.
Methods: The overall intervention is a randomized controlled trial with crossover design of three levels of cash transfer (no transfer, lower amount, higher amount) and nutrition-related accompanying measures, and two levels of growth monitoring of children (no growth monitoring, growth monitoring) in 1,980 households in 88 villages in the Gabú region of Guinea-Bissau. Socioeconomic and health surveys were conducted and indicators were derived to assess the impact of the intervention. The socioeconomic survey included demographic information, consumption and expenditures, and housing condition indicators including access to water, sanitation, electricity and cooking source, household assets, and health and education indicators. The health survey collected anthropometric measurements of children below five years of age at the date of the survey, including weight, height, and mid-upper arm circumference (MUAC). Economic and health indicators were derived, including z-scores for weight for age (WAZ), height for age (HAZ), weight for height (WHZ), and mid-upper arm circumference (MUACZ) using World Health Organization reference data.
Results: The average daily consumption per capita of the baseline population is CFAF 657.4, equivalent to $2.89 PPP.[1] Forty-two percent of individuals are below the World Bank international poverty line of $1.90 per day in 2011 PPP equivalent. Households have few assets. The enrollment rate among children aged 6–15 years of age is low (57 percent). Children lag the normal growth standard. The anthropometric assessment shows that 37 percent of children below five years of age have at least one indicator of deficiency (HAZ, WAZ, WHZ, or MUACZ < -2). Households were assigned to six groups of intervention with no statistically significant difference between groups.
Conclusions: The baseline population shows very low standards of living. It is reasonable to expect that cash transfers, combined with nutrition-related measures to monitor and enhance children's growth, would improve household indicators. The full impact evaluation will allow an assessment of the relative impacts of these measures and guide the design of future interventions.

Keywords: Guinea-Bissau, Gabú, cash transfers, children, nutrition

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Introduction

Nutritional issues are at the heart of questions about poverty, and the elimination of malnutrition is a critical development objective. Malnutrition is responsible for roughly half of the 10 million deaths each year among children under age 5 in developing economies (Wagstaff and Watanabe 2000). There is overwhelming evidence that malnourished survivors are sicker, weaker, and have a lower cognitive ability than those who are better nourished.

Cash transfer programs in developing countries have expanded considerably since the 1980s (Grosh and others 2008). Their main objective is to increase the real disposable income of poor households to break the intergenerational poverty cycle. The theory is that cash transfers provide households with heterogeneous needs the flexibility to convert cash into long-run welfare improvements, including improved nutrition for their members. However, policy makers often express concern that cash transfers reduce incentives to work, increase spending on demerit goods with negative effects on consumers (including alcohol and tobacco), increase natality and marriages in polygamic societies, and generate conflicts within households and between beneficiaries and non-beneficiaries within the larger community. Bastagli and others (2016) reviewed a large number of cash transfer programs and conclude that they have yielded significant effects on reducing the incidence of poverty, increasing school attendance, and improving the access and use of health services.[2]

Cash transfer programs are often complemented by additional measures that seek to improve education and health outcomes. For example, cash transfers can be conditional on children's immunization or school attendance. In other instances, training on nutrition can be provided in parallel to the transfers to enhance their impact on nutrition.

The overall intervention considered in this paper is a randomized controlled trial with crossover design, featuring three levels of cash transfer (no cash transfer, low cash transfer, and high cash transfer) under the form of eight quarterly transfers over a period of two years and nutrition-related accompanying measures, and two levels of child growth monitoring (no growth monitoring, growth monitoring) in the Gabú region of Guinea-Bissau. The accompanying measures seek to raise health and nutrition awareness among households, focusing on children under age five and women of childbearing age. These measures seek to generate social and behavioral changes to improve key family practices related to nutrition and maternal and child health. The cash transfer amounts are calibrated to represent approximately 20 percent (low transfers) and 30 percent (high transfers) of food consumption per capita. The growth monitoring interventions are quarterly visits of households by trained nurses and community health workers who take anthropometric measurements of children under age two and provide advice to improve children's nutritional status.

This paper describes the baseline characteristics of the economic, health, and nutrition characteristics of the population selected to participate in this randomized controlled trial. Follow-up papers will analyze the impacts on households, and particularly on children's nutrition of the three levels of cash transfers and the two levels of growth monitoring interventions. Identifying the most effective interventions may improve long-term nutrition and health, but also lead to considerable savings. To our knowledge, this study will be the first randomized experiment examining the interaction between cash transfers and growth monitoring measures.

Methods

Study location and participants

Guinea-Bissau is a fragile state characterized by political instability, weak institutions, low growth, and high levels of poverty. It is a small country on the West African coast located between Senegal and Guinea, with an estimated population of 1.9 million inhabitants in 2019.[3] It is the 18th poorest country in the world, with an estimated gross

national income per capita of $750 in 2018,[4] and with 63 percent of the population living below the $1.90 poverty line in 2018.[5] Guinea-Bissau ranks 178 of 189 countries on the 2018 Human Development Index (UNDP 2019). The country has the fifth-highest under-five mortality rate worldwide, at 82 per 1,000 live births (UN World Population Prospects).[5]

Guinea-Bissau is rich in natural resources (fisheries, forestry, and agriculture) and biodiversity with a terrain of mostly low coastal plain with swamps and mangroves. The economy is dominated by agriculture and heavily reliant on the production and export of raw cashew nuts, which also constitutes the main source of income for more than two-thirds of households, and virtually all small family farms. Raw cashews nuts account for 90 percent of exports and 45 percent of gross domestic product. More than two-thirds of households rely on this crop for their income, exposing them to international price fluctuations and adverse weather conditions. Guinea-Bissau is also host to a large variety of ethnic groups, languages, and religions. Today only 14 percent of the population speaks Portuguese, while almost half the population (44 percent) speaks Crioulo, a Portuguese-based creole language. The remainder speaks a variety of African native languages. The main religions are African traditional religions and Islam with a Christian minority.

The study was conducted in 88 Fula and Mandinga villages located in the Gabú and Pitche sectors of the Gabú region of Guinea-Bissau. Gabú is Guinea-Bissau's poorest region. In 2010, the poverty rate in Gabú was 83 percent compared to a national poverty rate of 69 percent.[6] Gabú also has the highest incidence of wasting and the third-highest incidence of stunting among children under age five.[7] The under-five mortality rate is 159 per 1,000 live births.[8] The villages included in the study were selected from the 163 villages (*tabancas*) within 30 kilometers (km) of the city of Gabú.[9] Eighteen villages with fewer than seven households and 28 villages with more than 51 households were excluded; another 26 villages selected on a random basis were excluded to limit the total number of villages. Ninety-one villages with 2,400 households were eventually selected to participate in the study. Each village had between six and 126 households. Three villages with 45 households decided to opt out of the program, mainly due to fear of reprisal as the result of a fear of association of the program with another project which sought to fight female genital mutilation (FGM), a highly sensitive issue in the Gabú region where the prevalence of FGM in women aged 15 to 49 years old is estimated at 96.3 percent.[10,11] Ninety-nine households did not consent to participate in the study, while another 215 households did not meet the participatory criteria that anthropometric measurements are taken on 80 percent of their children. Of the remaining 2,041 households, the 61 richest (based on food consumption per capita) were excluded, to obtain the final 1,980 households that were enrolled in the program.

Surveys

The study was conducted in collaboration with the Project Coordination Unit (PCU), the entity created in 2005 responsible for the implementation of successive projects financed by the International Development Agency (IDA), including the *Rural Community Development Project* and the *Safety Nets and Basic Services Project* with coinvestigators from IDA.

The baseline data was collected during cross-sectional socioeconomic and health surveys of 1,980 households. Households were defined as a group of people, related or not, who live together, in the same house or traditional dwellings (*morança*), recognize the authority of the same household head, share their livelihoods, and usually share meals. For example, a household

[5] Available at: https://population.un.org/wpp/Publications/Files/WPP2019_DataBooklet.pdf.

head who lives with several wives and their children constitutes a single household. However, if the wives cook and eat separately and do not share food expenses, they are considered as separate households. The socioeconomic data collection was done in January, February, and March 2019, and covered 1,980 households in 88 villages. PCU enumerators collected the data.[12] Baseline assessments included demographic information, consumption and expenditures, housing condition indicators including access to water, sanitation, electricity, and cooking source, household assets, and indicators related to health and education. Demographic and economic data included age, gender, and household size. Food consumption is based on a seven-day recall consumption module of both quantities and prices of 88 food items grouped in ten categories consumed inside the home as well as a seven-day recall consumption module of food consumed outside the home. The questionnaire also asked for the cash and in-kind transfers made to and received from other households during the last 12 months and selected assets owned by the households (bed, mattress, motorcycle, and so on).

Households were asked to report child enrollment at school, education-related expenditures during the previous school year for each enrolled child, and children who were not enrolled for lack of financial resources. They were also asked whether at least one household member had been sick during the three months preceding the survey, as well as whether the sick were treated, the costs of treatment, and whether a lack of treatment was due to a lack of financial resources. The survey was designed and implemented using the *Survey Solutions* software on *Samsung Galaxy Tab* tablets. All interviews were done at the houses of the participants by trained enumerators. The health survey was conducted in March and April 2019 and collected anthropometric measurements of children below age five years at the date of the survey, including weight, height, and mid-upper arm circumference (MUAC).[13] Anthropometric data were measured according to World Health Organization guidelines. Measurements were taken by trained health personnel including anthropometrists from Assistência Médica Voluntária (AMEV), a health professionals nongovernmental organization that has no role in study design or provision of cash transfers or other benefits. Each staff specialized in the measurement of either weight, height, or MUAC. Non-fasting weight was measured to the nearest 0.1 kilograms (kg) by a calibrated digital scale with children wearing light clothing and no shoes using *Seca 874* high capacity digital floor scales that have an integrated leveling system and a mother-child function to weigh babies under age two. For children over age two, or taller than 87 centimeters (cm), height was measured without shoes to the nearest 0.1 cm using the portable stadiometer *Seca 213* augmented with a wooden horizontal floor and a wooden vertical support for the measuring rod, designed by a master carpenter. For babies under two years old, or smaller than 87 cm, or for children whose height could not be collected on the vertical stadiometer,[14] body length was measured in a lying position on a *Seca 417* measuring board. MUAC was measured using regular MUAC tapes. Health personnel were accompanied by enumerators logging the data into *Samsung Galaxy Tab* tablets using a survey tool developed in *Survey Solutions*.

Ethical approval

Permission to conduct the study and all the measurements was obtained from the Medical Ethics Committee Enumerators held a meeting at the level of each village and also with each individual household to explain the consent form. These meetings were conducted in the village language (fula or mandinga). The consent form is in Portuguese as required by the National Ethics Committee. Participation was voluntary, and consent forms were obtained from each participating household.

Indicators

The indicators are reported in Table 1. Annual consumption per capita is the sum of food and non-food consumption; this figure is derived by

annualizing total food and non-food consumption and dividing by the number of household members. Households are divided into quintiles of consumption, where the first quintile (Q1) includes the 20 percent of households with the lowest consumption per capita and the fifth quintile (Q5) the 20 percent of households with the highest consumption per capita. Variables that are not normally distributed like food consumption per capita, the amount of cash transfers made to or received from family and friends, household expenditures on education per enrolled student, or health expenditure per sick person were also log transformed for analysis. Anthropometric indicators were calculated including weight for age (underweight), weight for height (wasting or thinness), height for age (stunting), and MUAC (malnourishment) for boys and girls below the age of two and between two and five years of age. Z-scores for weight for age (WAZ), height for age (HAZ), weight for height (WHZ), and mid-upper arm circumference (MUACZ) were calculated using World Health Organization reference data. Following WHO standards, WHZ is not calculated for children shorter than 45 cm or taller than 120 cm, and MUACZ is not calculated for infants below three months of age. Underweight (WAZ < -2) is a measure of insufficient weight compared to the healthy optimum. Stunting (HAZ < −2) is a measure of chronic nutritional deprivation, which often results in delayed mental development, poor school performance, and reduced intellectual ability. It is often related to environmental and socioeconomic factors. Wasting (WHZ < −2) is a measure of acute undernutrition. It is often a consequence of insufficient food intake or a high incidence of infectious disease, especially diarrhea. It is reversible following suitable interventions. MUAC is the circumference of the left upper arm, measured at the mid-point between the tip of the shoulder and the tip of the elbow. Besides being a good assessment of nutritional status, MUAC is also a measure that reflects wasting and risk of death (Gibson 2005) that is less sensitive than weight to day-to-day changes in hydration (Mwangome and others 2011). The major determinants of MUAC—arm muscle and subcutaneous fat—are both important determinants of survival in starvation. MUAC is less affected than weight- and height-based indicators by the localized accumulation of fluid common in famine, and is a more sensitive index of tissue atrophy than low body weight. It is also relatively independent of height and body shape. Children having biologically-implausible z-scores[15] were excluded from the anthropometric analysis.[16] Normally distributed variables are described by their means, while their standard deviations (SD) are in parenthesis. As a consequence, the true mean of each variable is within the reported mean +/- 2 SD with 95 percent confidence.

Results

Table 1 reports baseline indicators. The baseline includes 1,980 households representing 19,535 individuals with an average household size of 9.9 persons. Household size decreases considerably with consumption per capita, from 12.9 in the poorest quintile (Q1) to 7.3 in the richest quintile (Q5). The mean age of 22 years monotonically increases with consumption per capita due to the combined presence of more children and fewer elderly among the poorest households. Mean food consumption per capita is CFAF 165,214 (about $726 PPP) dramatically increases across quintiles from CFAF 82,024 in the poorest quintile to CFAF 279,693 in the highest quintile. The composition of food and non-food consumption is detailed in the annex in Table A1. Around half of households (50.4 percent) make cash or in-kind transfers to family and friends, and approximately the same percentage (48.4 percent) receive such transfers. The percentages of households that make transfers monotonically increase with income per capita, from 36.1 percent in the poorest quintile to 64.1 percent in the highest quintile. Transfers made to friends and families represent 3.6 percent of consumption. The percentage is particularly high in the lowest quintile (5.1 percent) and decreases to 3.3 percent in the richest quintile. The percentages of households who receive transfers

also monotonically increase with income per capita, from 34.6 percent in the poorest quintile to 59.1 percent in the highest quintile. Transfers received from friends and families represent 9.4 percent of consumption and are highest in the lowest quintile (11.3 percent). The amount of transfers received from friends and families is higher than that made to friends and families, indicating a positive flow of transfers from outside the communities.

Corrugated zinc is used for the roof of 84.2 percent of houses, and thatch is used in 15.4 percent. There is a higher proportion of houses with a thatch roof in the richest quintile, which is surprising as corrugated zing is considered as an upgraded roof type compared to thatch. Walls are made of clay in 94.6 percent of houses. The proportion of households with walls made of clay decreases with income per capita, while those made of cement tend to increase. The floor is made of earth in two-thirds (66.2 percent) of houses, and 28.5 percent have a cement floor. A shared bathroom or latrine is used by 84.8 percent of households. Households drink water from boreholes (58.5 percent), wells (23.7 percent), and water fountains (13.1 percent).[17] Households in the richest quintile tend to rely more on wells and less on fountains. The main source of light is a torch, and wood is used for cooking in almost all households. The mean numbers of mattresses per person and beds per person are 0.45 and 0.31, respectively, and both monotonically increase with consumption per capita. The mean number of mobile phones per person over age 15 is 0.45; this figure increases monotonically with consumption per capita, from 0.38 in the poorest quintile to 0.53 in the richest one. The school enrollment rate of children between the age of six and 15 is 56.8 percent, ranging from 54.7 percent for households in the lowest quintile to 60.0 percent in the highest quintile. Of those children who are not enrolled, 18.8 percent are not enrolled due to a lack of financial resources. Unsurprisingly, the percentage of children not enrolled for financial reasons monotonically decreases with consumption per capita, from 23.2 percent in the poorest quintile to 12.9 percent in the richest quintile. The health indicators show that 11.3 percent of those surveyed had been sick during the three months preceding the survey. Of these, 87.9 percent received treatment, while 12.1 percent were not treated. About half (52.0 percent) of the treatments were provided in a hospital and 25.1 percent in health centers. The recourse to traditional medicine was limited (7.4 percent). However, individuals from the poorest quintile tend to rely less on hospitals and more on traditional medicine than those in the richest quintile. Among those who did not get treatment, 62.4 percent responded that it was due to a lack of financial resources. Individuals in the poorest household quintile reported a lower occurrence of sickness than those in the highest quintile (7.1 percent versus 17.2 percent), but a lower percentage among the sick received a treatment (85.0 percent versus 90.8 percent) and a higher percentage of the sick were not treated for lack of financial resources (54.5 percent versus 43.5 percent).

The anthropometric assessment of 1,519 children below two years of age (six children with biologically-implausible z-scores were excluded) revealed that 17.8 percent were underweight (WAZ < -2), 27.7 percent were stunted (HAZ < -2), 7.0 percent were wasted (WHZ < -2), and 4.3 percent were malnourished (MUACZ < -2) (Table 2). Stunting, underweight, wasting, and malnourishment were significantly more common in boys who have lower mean WAZ, HAZ, WHZ, and MUACZ than girls in this age group. Whereas 41.2 percent of boys had at least one indicator of deficiency (HAZ, WAZ, WAZ, or MUACZ < -2), the rate was 31.5 percent for girls

The percentage of children below two years of age who are stunted, underweight, malnourished, and wasted is higher in the poorest quintile than in the highest one. For example, the rate of stunting is 28.1 percent in the poorest quintile, while it is 19.9 percent in the richest one. However, these deficiency rates do not decrease monotonously across quintiles.

Table 1: Baseline socioeconomic indicators, by quintile

Variables	Total Population	Quintile 1 (Poorest)	Quintile 2	Quintile 3	Quintile 4	Quintile 5 (Richest)
Households	**1,980**	**396**	**396**	**396**	**396**	**396**
Size	9.87	12.93	10.8	9.88	8.41	7.31
Individuals	**19,535**	**5,121**	**4,278**	**3,911**	**3,332**	**2,893**
Male (% of individuals)	9,486 (48.6%)	2,505 (48.9%)	2,109 (49.3%)	1,906 (48.7%)	1,596 (47.9%)	1,370 (47.4%)
Female (% of individuals)	10,049 (51.4%)	2,616 (51.1%)	2,169 (50.7%)	2,005 (51.3%)	1,736 (52.1%)	1,523 (52.6%)
Age (years)	21.0	20.1	20.9	21.1	21.8	22.1
Number of children below 15 years of age (% of individuals)	9,528 (48.8%)	2,610 (51.0%)	2,113 (49.4%)	1,910 (48.8%)	1,573 (47.2%)	1,322 (45.7%)
Number of elderly above 60 years of age (% of individuals)	852 (4.4%)	201 (3.9%)	185 (4.3%)	171 (4.4%)	156 (4.7%)	139 (4.8%)
Economic Indicators						
Annual consumption per capita (CFAF), of which	239,934	113,890	168,857	214,286	275,446	427,192
Annual food consumption per capita (CFAF)	165,214	82,182	121,047	150,802	190,232	281,805
Annual non-food consumption per capita (CFAF)	74,721	31,708	47,810	63,484	85,215	145,387
Annual consumption per capita (Log of), of which	12.28 (0.47)	11.61 (0.25)	12.03 (0.07)	12.27 (0.07)	12.52 (0.08)	12.94 (0.23)
Annual food consumption per capita (Log of)	11.90 (0.48)	11.28 (0.29)	11.69 (0.18)	11.91 (0.19)	12.14 (0.19)	12.51 (0.29)
Annual non-food consumption per capita (Log of)	10.98 (0.70)	10.23 (0.54)	10.70 (0.42)	10.97 (0.44)	11.27 (0.44)	11.74 (0.54)
Number of households who make cash or in-kind transfers to friends or family (% of households)	997 (50.4%)	143 (36.1%)	187 (47.2%)	204 (51.5%)	209 (52.8%)	254 (64.1%)
Amount of cash or in-kind transfers made to friends and family during the last 12 months (CFAF) (% of annual consumption)	8,669 (3.6%)	5,770 (5.1%)	6,937 (4.1%)	8,450 (3.9%)	8,262 (3.0%)	13,925 (3.3%)
Amount of cash or in-kind transfers made to friends and family during the last 12 months (Log of)	9.05 (1.24)	9.06 (1.16)	8.94 (1.28)	9.05 (1.17)	9.01 (1.25)	9.17 (1.29)
Number of households who receive cash or in-kind transfers from friends or family during the last 12 months (% of households)	959 (48.4%)	137 (34.6%)	185 (46.7%)	201 (50.8%)	202 (51.0%)	234 (59.1%)
Amount of cash or in-kind transfers received from friends and family during the last 12 months (CFAF) (% of annual consumption)	22,647 (9.4%)	12,857 (11.3%)	18,208 (10.8%)	21,940 (10.2%)	26,426 (9.6%)	33,805 (7.9%)
Amount of cash or in-kind transfers received from friends and family during the last 12 months (Log of)	9.92 (1.47)	9.76 (1.33)	9.75 (1.57)	9.95 (1.33)	9.93 (1.48)	10.13 (1.54)
Amount of net cash or in-kind transfers received from friends and family during the last 12 months (CFAF) (% of annual consumption)	13,979 (5.8%)	7,088 (6.2%)	11,271 (6.7%)	13,490 (6.3%)	18,165 (6.6%)	19,880 (4.7%)

Housing conditions						
Roof type:						
Corrugated zinc	84.2%	85.9%	85.9%	85.6%	82.3%	81.3%
Thatch	15.4%	14.1%	14.1%	13.9%	17.2%	17.7%
Tile or concrete	0.3%	0.0%	0.0%	0.5%	0.3%	0.8%
Plastic	0.1%	0.0%	0.0%	0.0%	0.3%	0.3%
Walls type:						
Clay	94.6%	97.2%	94.7%	95.7%	94.2%	91.2%
Woven mat	2.2%	1.0%	3.0%	1.5%	2.3%	3.3%
Woven mat and clay	2.0%	1.5%	1.5%	2.0%	2.0%	2.8%
Cement	1.2%	0.3%	0.8%	0.8%	1.5%	2.8%
Floor type:						
Earthen floor	66.2%	71.7%	73.2%	64.9%	61.9%	59.1%
Cement	28.5%	23.5%	22.2%	30.1%	31.3%	35.6%
Clay	5.1%	4.8%	4.5%	5.1%	6.1%	4.8%
Mosaic	0.3%	0.0%	0.0%	0.0%	0.8%	0.5%
Sanitation type:						
Shared bathroom or latrine	84.8%	84.3%	83.3%	85.1%	84.6%	86.9%
Private bathroom or latrine	11.2%	13.9%	12.4%	9.6%	9.8%	10.1%
In the open	4.0%	1.8%	4.3%	5.3%	5.6%	3.0%
Drinking water source:						
Boreholes	58.5%	57.3%	56.6%	64.1%	58.3%	56.1%
Wells	23.7%	17.7%	21.0%	20.7%	26.8%	32.3%
Public or shared water fountains	13.1%	18.9%	16.7%	11.6%	10.6%	7.6%
Piped water	2.6%	4.5%	2.3%	1.3%	2.8%	2.3%
Surface water	2.1%	1.5%	3.5%	2.3%	1.5%	1.8%
Illumination source:						
Torchlight	51.6%	51.5%	52.5%	52.5%	50.8%	50.5%
Electricity based	46.1%	43.2%	45.7%	46.2%	48.2%	47.0%
Candles	2.0%	4.3%	1.5%	1.3%	0.8%	2.0%
Oil of gas light	0.4%	1.0%	0.3%	0.0%	0.3%	0.5%
Cooking energy source:						
Wood	99.3%	99.5%	99.2%	99.7%	99.5%	98.7%
Charcoal	0.6%	0.5%	0.5%	0.3%	0.5%	1.0%
Gas or electricity	0.1%	0.0%	0.3%	0.0%	0.0%	0.3%

Household assets (number)						
Mattresses per person	0.45	0.38	0.41	0.45	0.46	0.53
Beds per person	0.31	0.25	0.29	0.31	0.33	0.37
Mobile phones per person (over age 15)	0.46	0.36	0.4	0.48	0.49	0.57
Motorcycle	0.37	0.33	0.33	0.35	0.41	0.4
Cooking stove	0.01	0.01	0.01	0.00	0.01	0.02
Computer	0.02	0.02	0.02	0.02	0.03	0.03
Education indicators						
Number of households with at least one child enrolled at school (% of households)	1,326 (67.0%)	283 (71.5%)	265 (66.9%)	271 (68.4%)	267 (67.4%)	240 (60.6%)
Number of children enrolled at school	3,988	1,039	853	813	710	573
Number of households who reported education expenditures in previous academic year	374	63	68	79	82	82
Education expenditures per enrolled child (CFAF)	9,095	4,611	5,973	8,435	10,138	17,319
Education expenditures per enrolled child (Log of)	9.62 (0.98)	9.40 (0.82)	9.48 (0.82)	9.60 (0.97)	9.61 (0.97)	9.95 (1.17)
Number of children aged 6–15 years	5,085	1,371	1,102	1,041	851	720
Children 6–15 enrolled in school (% of children 6–15)	2,884 (56.8%)	750 (54.7%)	606 (55.2%)	595 (57.2%)	503 (59.1%)	430 (60.0%)
Children 6–15 non-enrolled in school (% of children 6–15), of whom:	2,193 (43.2%)	621 (45.3%)	492 (44.8%)	445 (42.8%)	348 (40.9%)	287 (40.0%)
Non-enrolled for financial reasons (% of children 6–15 year not enrolled in school)	413 (18.8%)	144 (23.2%)	90 (18.3%)	87 (19.6%)	55 (15.8%)	37 (12.9%)
Health indicators						
Number of households who report that at least one member had been sick during the last 3 months (% of households)	913 (46.1%)	163 (41.2%)	170 (42.9%)	180 (45.5%)	199 (50.3%)	201 (50.8%)
Number of households who report health expenditures	807	140	146	154	181	186
Health expenditures per sick person (CFAF)	10,083	8,497	8,002	12,296	10,004	11,228
Health expenditures per sick person (Log of)	8.64 (1.22)	8.58 (1.18)	8.48 (1.13)	8.71 (1.35)	8.58 (1.32)	8.80 (1.09)
Number of individuals with a reported sickness during the last 3 months (% of individuals)	2,206 (11.3%)	366 (7.1%)	418 (9.8%)	435 (11.1%)	489 (14.7%)	498 (17.2%)
Number of individuals who treated their sickness (% of individuals reporting a sickness),	1,940 (87.9%)	311 (85.0%)	350 (83.7%)	387 (89.0%)	440 (90.0%)	452 (90.8%)
Treatment type:						
Hospital	52.0%	52.1%	47.7%	48.3%	53.0%	57.5%
Health center	25.1%	21.9%	28.0%	24.8%	29.1%	21.5%
Self-medication	9.2%	8.4%	11.7%	10.6%	6.4%	9.5%
Traditional medicine	7.4%	10.0%	7.4%	9.6%	4.5%	6.6%
Private clinic	2.2%	2.3%	0.6%	3.1%	3.2%	1.5%
Pharmacy	1.9%	2.3%	1.7%	1.6%	2.5%	1.5%
Health community worker	1.7%	2.9%	2.6%	1.6%	0.9%	1.1%
Other	0.5%	0.3%	0.3%	0.5%	0.5%	0.7%
Individuals with an untreated sickness (% of individuals who reported a sickness), of whom:	266 (12.1%)	55 (15.0%)	68 (16.3%)	48 (11.0%)	49 (10.0%)	46 (9.2%)
Individuals untreated for financial reasons (% of individuals with untreated sickness)	166 (62.4%)	30 (54.5%)	55 (80.9%)	27 (56.3%)	34 (69.4%)	20 (43.5%)

Table 2: Baseline anthropometric indicators of children below 2 years of age, by quintile

Measurements and deficiencies	Total Population	Quintile 1 (Poorest)	Quintile 2	Quintile 3	Quintile 4	Quintile 5 (Richest)
Anthropometric measurements						
Number of children aged 0–23 months[1]	1,479	409	350	273	241	206
Age (months)	11.9	12.0	11.8	11.9	12.1	12.0
Weight (kg)	7.95	7.89	7.98	7.88	8.05	7.97
Height (cm)	70.16	70.04	70.26	70.08	70.29	70.2
MUAC[2] (cm)	14.18	14.13	14.18	14.15	14.26	14.28
WAZ	-0.94 (1.21)	-1.04 (1.24)	-0.94 (1.24)	-0.91 (1.10)	-0.89 (1.28)	-0.81 (1.16)
HAZ	-1.14 (1.49)	-1.25 (1.53)	-1.12 (1.51)	-1.05 (1.46)	-1.20 (1.40)	-1.03 (1.47)
WHZ[3]	-0.41 (1.12)	-0.45 (1.09)	-0.42 (1.12)	-0.47 (1.04)	-0.30 (1.22)	-0.37 (1.13)
MUACZ[2]	-0.27 (1.00)	-0.30 (1.00)	-0.25 (0.97)	-0.33 (0.95)	-0.23 (1.12)	-0.23 (0.96)
Prevalence of deficiency states:						
Stunting, HAZ < -2, of whom	27.7%	28.1%	30.6%	26.4%	31.1%	19.9%
Moderate Stunting, -3 ≤ HAZ < -2	19.6%	16.1%	22.6%	21.6%	24.1%	13.6%
Severe Stunting, HAZ < -3	8.1%	12.0%	8.0%	4.8%	7.1%	6.3%
Underweight, WAZ < -2, of whom	17.8%	20.0%	18.9%	14.7%	19.1%	14.6%
Moderate Underweight, -3 ≤ WAZ < -2	13.5%	14.4%	14.0%	11.4%	14.9%	11.7%
Severe Underweight, WAZ < -3	4.4%	5.6%	4.9%	3.3%	4.1%	2.9%
Overweight, WAZ > 2, of whom	1.2%	1.5%	0.9%	0.4%	2.1%	1.5%
Moderate Overweight, 3 ≥ WAZ >2	0.9%	1.2%	0.9%	0.4%	1.2%	1.0%
Severe Overweight, WAZ > 3	0.3%	0.2%	0.0%	0.0%	0.8%	0.5%
Malnourishment, MUACZ < -2, of whom	4.3%	5.1%	3.6%	3.6%	5.0%	3.7%
Moderate Malnourishment, -3 ≤ MUACZ < -2	3.9%	4.5%	3.6%	3.6%	4.0%	3.7%
Severe Malnourishment, MUACZ < -3	0.3%	0.6%	0.0%	0.0%	1.0%	0.0%
Wasting, WHZ < -2, of whom	7.0%	7.6%	6.8%	6.0%	6.8%	7.5%
Moderate Wasting, -3 ≤ WHZ < -2	5.5%	5.8%	5.3%	4.9%	5.5%	6.0%
Severe Wasting, WHZ < -3	1.5%	1.8%	1.5%	1.1%	1.3%	1.5%
At least one deficiency	36.2%	37.9%	36.5%	35.7%	39.3%	28.7%
Boys						
Number of boys aged 0–23 months	733	198	176	131	125	103
Age (months)	11.8	11.6	11.9	11.8	12.5	11.2
Weight (kg)	8.08	7.94	8.14	8.1	8.38	7.83
Height (cm)	70.44	69.85	70.82	70.8	71.32	69.41
MUAC (cm)	14.28	14.23	14.28	14.17	14.41	14.37
WAZ	-1.06 (1.23)	-1.19 (1.26)	-1.06 (1.24)	-1.02 (1.19)	-0.97 (1.26)	-0.96 (1.14)
HAZ	-1.28 (1.52)	-1.47 (1.46)	-1.23 (1.47)	-1.11 (1.69)	-1.32 (1.44)	-1.14 (1.53)
WHZ	-0.48 (1.16)	-0.49 (1.12)	-0.54 (1.24)	-0.56 (1.09)	-0.29 (1.19)	-0.48 (1.12)
MUACZ	-0.38 (1.03)	-0.39 (1.01)	-0.37 (1.04)	-0.49 (0.98)	-0.28 (1.20)	-0.34 (0.90)
Prevalence of deficiency states:						
Stunting, HAZ < -2, of whom	31.9%	31.3%	35.2%	31.3%	36.0%	23.3%
Moderate Stunting, -3 ≤ HAZ < -2	22.4%	16.7%	26.1%	25.2%	29.6%	14.6%
Severe Stunting, HAZ < -3	9.5%	14.6%	9.1%	6.1%	6.4%	8.7%
Underweight, WAZ < -2, of whom	21.7%	26.8%	23.9%	16.0%	21.6%	15.5%

Moderate Underweight, -3 ≤ WAZ < -2	16.8%	20.2%	19.3%	10.7%	17.6%	12.6%
Severe Underweight, WAZ < -3	4.9%	6.6%	4.5%	5.3%	4.0%	2.9%
Overweight, WAZ > 2, of whom	1.1%	0.5%	1.1%	0.8%	1.6%	1.9%
Moderate Overweight, 3 ≥ WAZ >2	1.0%	0.5%	1.1%	0.8%	0.8%	1.9%
Severe Overweight, WAZ > 3	0.1%	0.0%	0.0%	0.0%	0.8%	0.0%
Malnourishment, MUACZ < -2, of whom	5.8%	7.2%	5.3%	5.5%	5.7%	4.0%
Moderate Malnourishment, -3 ≤ MUACZ < -2	5.3%	6.0%	5.3%	5.5%	4.8%	4.0%
Severe Malnourishment, MUACZ < -3	0.5%	1.2%	0.0%	0.0%	1.0%	0.0%
Wasting, WHZ < -2, of whom	7.4%	8.8%	8.8%	6.3%	5.7%	6.0%
Moderate Wasting, -3 ≤ WHZ < -2	5.9%	7.3%	6.4%	4.7%	4.9%	5.0%
Severe Wasting, WHZ < -3	1.5%	1.6%	2.3%	1.6%	0.8%	1.0%
At least one deficiency	41.2%	40.0%	44.9%	41.3%	43.3%	33.3%
Girls						
Number of girls aged 0–23 months	746	211	174	142	116	103
Age (months)	12.1	12.3	11.7	11.9	11.8	12.9
Weight (kg)	7.82	7.84	7.81	7.68	7.69	8.11
Height (cm)	69.89	70.22	69.69	69.41	69.17	70.98
MUAC (cm)	14.09	14.03	14.08	14.13	14.09	14.21
WAZ	-0.82 (1.19)	-0.91 (1.21)	-0.83 (1.24)	-0.80 (1.00)	-0.80 (1.29)	-0.65 (1.17)
HAZ	-1.02 (1.44)	-1.05 (1.57)	-1.02 (1.54)	-0.99 (1.21)	-1.06 (1.36)	-0.91 (1.41)
WHZ	-0.35 (1.07)	-0.41 (1.06)	-0.29 (0.96)	-0.40 (0.99)	-0.30 (1.26)	-0.27 (1.14)
MUACZ	-0.18 (0.95)	-0.23 (0.98)	-0.13 (0.88)	-0.18 (0.90)	-0.19 (1.04)	-0.13 (1.00)
Prevalence of deficiency states:						
Stunting, HAZ < -2, of whom	23.6%	25.1%	25.9%	21.8%	25.9%	16.5%
Moderate Stunting, -3 ≤ HAZ < -2	16.9%	15.6%	19.0%	18.3%	18.1%	12.6%
Severe Stunting, HAZ < -3	6.7%	9.5%	6.9%	3.5%	7.8%	3.9%
Underweight, WAZ < -2, of whom	14.1%	13.7%	13.8%	13.4%	16.4%	13.6%
Moderate Underweight, -3 ≤ WAZ < -2	10.2%	9.0%	8.6%	12.0%	12.1%	10.7%
Severe Underweight, WAZ < -3	3.9%	4.7%	5.2%	1.4%	4.3%	2.9%
Overweight, WAZ > 2, of whom	1.3%	2.4%	0.6%	0.0%	2.6%	1.0%
Moderate Overweight, 3 ≥ WAZ >2	0.9%	1.9%	0.6%	0.0%	1.7%	0.0%
Severe Overweight, WAZ > 3	0.4%	0.5%	0.0%	0.0%	0.9%	1.0%
Malnourishment, MUACZ < -2, of whom	2.8%	3.2%	1.9%	1.7%	4.1%	3.4%
Moderate Malnourishment, -3 ≤ MUACZ < -2	2.7%	3.2%	1.9%	1.7%	3.1%	3.4%
Severe Malnourishment, MUACZ < -3	0.2%	0.0%	0.0%	0.0%	1.0%	0.0%
Wasting, WHZ < -2, of whom	6.5%	6.4%	4.7%	5.8%	8.0%	9.0%
Moderate Wasting, -3 ≤ WHZ < -2	5.1%	4.4%	4.1%	5.1%	6.2%	7.0%
Severe Wasting, WHZ < -3	1.4%	2.0%	0.6%	0.7%	1.8%	2.0%
At least one deficiency	31.5%	36.1%	28.3%	30.4%	35.1%	24.7%

1/ Six children aged 0–23 months old were excluded from the analysis for having at least one biologically-implausible z-value (defined as HAZ<-6 or >6, WAZ<-6 or >5, WHZ<-5 or >5 or MUACZ<-5 or >5).

2/ MUAC and MUACZ do not include children aged two months or below (N=235)

3/ Weight-for-Height z-score does not include children shorter than 45 cm or taller than 120 cm (N=42).

Table 3: Baseline anthropometric indicators of children 24-59 months, by quintile

Measurements and deficiencies	Total Population	Quintile 1 (Poorest)	Quintile 2	Quintile 3	Quintile 4	Quintile 5 (Richest)
Anthropometric measurements						
Number of children aged 24–59 months[1]	2,199	602	508	433	367	289
Age (months)	41.6	41.3	42.5	41.2	41.8	41.1
Weight (kg)	13.13	13.13	13.14	13.05	13.38	12.97
Height (cm)	93.51	93.33	93.93	93.03	94.28	92.86
MUAC (cm)	15.05	15.07	14.96	15.05	15.06	15.12
WAZ	-1.16 (1.06)	-1.14 (1.11)	-1.23 (1.01)	-1.18 (1.06)	-1.04 (1.06)	-1.20 (1.04)
HAZ	-1.35 (1.35)	-1.36 (1.44)	-1.37 (1.31)	-1.43 (1.31)	-1.19 (1.42)	-1.42 (1.20)
WHZ[2]	-0.55 (0.96)	-0.52 (0.96)	-0.64 (1.00)	-0.52 (0.98)	-0.52 (0.88)	-0.55 (0.95)
MUACZ	-0.70 (0.90)	-0.67 (0.93)	-0.80 (0.88)	-0.68 (0.91)	-0.69 (0.81)	-0.63 (0.94)
Prevalence of deficiency states:						
Stunting, HAZ < -2, of whom	31.2%	32.6%	32.7%	31.4%	25.1%	33.2%
Moderate Stunting, -3 ≤ HAZ < -2	21.6%	21.6%	22.3%	21.2%	17.2%	26.6%
Severe Stunting, HAZ < -3	9.6%	11.0%	10.5%	10.2%	7.9%	6.6%
Underweight, WAZ < -2, of whom	19.5%	19.9%	20.9%	19.4%	15.8%	21.1%
Moderate Underweight, -3 ≤ WAZ < -2	15.3%	15.4%	16.7%	14.3%	12.8%	17.0%
Severe Underweight, WAZ < -3	4.2%	4.5%	4.1%	5.1%	3.0%	4.2%
Overweight, WAZ > 2, of whom	0.2%	0.3%	0.2%	0.0%	0.3%	0.3%
Moderate Overweight, 3 ≥ WAZ >2	0.2%	0.3%	0.2%	0.0%	0.3%	0.3%
Severe Overweight, WAZ > 3	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Malnourishment, MUACZ < -2, of whom	7.1%	7.5%	7.3%	7.4%	5.7%	7.3%
Moderate Malnourishment, -3 ≤ MUACZ < -2	6.4%	6.5%	6.3%	6.9%	5.4%	6.9%
Severe Malnourishment, MUACZ < -3	0.7%	1.0%	1.0%	0.5%	0.3%	0.3%
Wasting, WHZ < -2, of whom	6.3%	6.5%	8.1%	6.0%	4.1%	6.3%
Moderate Wasting, -3 ≤ WHZ < -2	5.5%	5.7%	6.7%	5.3%	3.8%	5.6%
Severe Wasting, WHZ < -3	0.8%	0.8%	1.4%	0.7%	0.3%	0.7%
At least one deficiency	37.8%	38.1%	41.6%	37.4%	30.3%	40.6%
Boys						
Number of boys aged 2 –59 months	1,141	319	276	231	181	134
Age (months)	41.5	41.7	41.9	40.9	41.6	41.3
Weight (kg)	13.36	13.32	13.36	13.27	13.71	13.15
Height (cm)	93.97	93.81	94.18	93.41	95.19	93.25
MUAC (cm)	15.09	15.08	15.07	15.08	15.12	15.13
WAZ	-1.14 (1.04)	-1.19 (1.12)	-1.16 (1.00)	-1.13 (0.98)	-0.94 (1.05)	-1.25 (1.00)
HAZ	-1.35 (1.34)	-1.41 (1.49)	-1.35 (1.25)	-1.42 (1.24)	-1.04 (1.41)	-1.49 (1.17)
WHZ	-0.55 (0.97)	-0.56 (0.99)	-0.58 (1.01)	-0.49 (0.95)	-0.52 (0.93)	-0.60 (0.98)
MUACZ	-0.68 (0.88)	-0.70 (0.93)	-0.70 (0.85)	-0.67 (0.84)	-0.65 (0.83)	-0.65 (0.93)
Prevalence of deficiency states:						
Stunting, HAZ < -2, of whom	31.3%	35.7%	33.3%	28.6%	19.9%	36.6%
Moderate Stunting, -3 ≤ HAZ < -2	22.1%	23.2%	23.9%	18.6%	14.9%	31.3%
Severe Stunting, HAZ < -3	9.2%	12.5%	9.4%	10.0%	5.0%	5.2%
Underweight, WAZ < -2, of whom	18.7%	21.0%	19.6%	16.9%	11.6%	23.9%

Moderate Underweight, -3 ≤ WAZ < -2	15.0%	15.4%	16.7%	13.4%	9.4%	20.9%
Severe Underweight, WAZ < -3	3.7%	5.6%	2.9%	3.5%	2.2%	3.0%
Overweight, WAZ > 2, of whom	0.2%	0.0%	0.4%	0.0%	0.6%	0.0%
Moderate Overweight, 3 ≥ WAZ >2	0.2%	0.0%	0.4%	0.0%	0.6%	0.0%
Severe Overweight, WAZ > 3	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Malnourishment, MUACZ < -2, of whom	7.0%	9.1%	5.4%	6.5%	6.1%	7.5%
Moderate Malnourishment, -3 ≤ MUACZ < -2	6.5%	7.8%	5.1%	6.5%	5.5%	7.5%
Severe Malnourishment, MUACZ < -3	0.5%	1.3%	0.4%	0.0%	0.6%	0.0%
Wasting, WHZ < -2, of whom	6.5%	8.2%	6.2%	4.3%	5.0%	9.0%
Moderate Wasting, -3 ≤ WHZ < -2	5.4%	6.9%	4.7%	3.9%	4.4%	7.5%
Severe Wasting, WHZ < -3	1.1%	1.3%	1.4%	0.4%	0.6%	1.5%
At least one deficiency	36.6%	40.1%	39.1%	33.8%	26.0%	42.5%
Girls						
Number of girls aged 24–59 months	1,058	283	232	202	186	155
Age (months)	41.8	40.9	43.2	41.6	42.1	41.0
Weight (kg)	12.89	12.91	12.88	12.79	13.06	12.82
Height (cm)	93.01	92.79	93.64	92.6	93.39	92.52
MUAC (cm)	15	15.07	14.82	15.03	15	15.1
WAZ	-1.19 (1.08)	-1.09 (1.10)	-1.32 (1.02)	-1.24 (1.14)	-1.15 (1.07)	-1.15 (1.08)
HAZ	-1.36 (1.37)	-1.29 (1.38)	-1.40 (1.38)	-1.44 (1.39)	-1.33 (1.43)	-1.36 (1.22)
WHZ	-0.56 (0.94)	-0.48 (0.92)	-0.72 (0.99)	-0.55 (1.01)	-0.52 (0.84)	-0.51 (0.92)
MUACZ	-0.72 (0.92)	-0.64 (0.92)	-0.92 (0.89)	-0.70 (0.99)	-0.73 (0.80)	-0.61 (0.95)
Prevalence of deficiency states:						
Stunting, HAZ < -2, of whom	31.1%	29.0%	32.0%	34.7%	30.1%	30.3%
Moderate Stunting, -3 ≤ HAZ < -2	21.1%	19.8%	20.3%	24.3%	19.4%	22.6%
Severe Stunting, HAZ < -3	10.0%	9.2%	11.7%	10.4%	10.8%	7.7%
Underweight, WAZ < -2, of whom	20.4%	18.7%	22.4%	22.3%	19.9%	18.7%
Moderate Underweight, -3 ≤ WAZ < -2	15.6%	15.5%	16.8%	15.3%	16.1%	13.5%
Severe Underweight, WAZ < -3	4.8%	3.2%	5.6%	6.9%	3.8%	5.2%
Overweight, WAZ > 2, of whom	0.3%	0.7%	0.0%	0.0%	0.0%	0.6%
Moderate Overweight, 3 ≥ WAZ >2	0.3%	0.7%	0.0%	0.0%	0.0%	0.6%
Severe Overweight, WAZ > 3	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Malnourishment, MUACZ < -2, of whom	7.2%	5.7%	9.5%	8.4%	5.4%	7.1%
Moderate Malnourishment, -3 ≤ MUACZ < -2	6.3%	4.9%	7.8%	7.4%	5.4%	6.5%
Severe Malnourishment, MUACZ < -3	0.9%	0.7%	1.7%	1.0%	0.0%	0.6%
Wasting, WHZ < -2, of whom	6.2%	4.6%	10.4%	7.9%	3.2%	3.9%
Moderate Wasting, -3 ≤ WHZ < -2	5.6%	4.3%	9.1%	6.9%	3.2%	3.9%
Severe Wasting, WHZ < -3	0.6%	0.4%	1.3%	1.0%	0.0%	0.0%
At least one deficiency	39.1%	35.8%	44.6%	41.6%	34.6%	39.0%

1/ Ten children aged 24–59 months old were excluded from the analysis for having at least one biologically-implausible z-value (defined as HAZ<-6 or >6, WAZ<-6 or >5, WHZ<-5 or >5, or MUACZ<-5 or >5).
2/ Weight-for-Height z-score does not include children shorter than 45 cm or taller than 120c m (N=4).

Table 4.

Prevalence rate among children (0–5 years)

Age (years)	Age (months)	Number	Underweight	Stunting	Wasting	Malnourished	Any deficiency
0–1	0–5	344	15.1%	20.9%	3.3%	4.6%	25.5%
	6–11	332	14.8%	22.3%	9.1%	5.4%	30.8%
1–2	12–23	803	20.3%	32.9%	7.5%	3.7%	37.9%
2–3	24–35	772	20.7%	36.9%	6.9%	7.4%	42.0%
3–4	36–47	726	18.9%	30.9%	5.9%	6.5%	37.2%
4–5	48–59	701	18.8%	25.3%	6.2%	7.4%	33.1%
	Total	3678	18.8%	29.8%	6.6%	6.1%	36.7%

Prevalence rate among boys (0–5 years)

Age (years)	Age (months)	Number	Underweight	Stunting	Wasting	Malnourished	Any deficiency
0–1	0–5	184	15.2%	23.9%	3.6%	1.8%	28.3%
	6–11	161	22.4%	24.2%	10.7%	8.1%	35.2%
1–2	12–23	388	24.5%	38.9%	7.7%	5.4%	43.8%
2–3	24–35	393	22.1%	38.7%	7.6%	7.4%	43.5%
3–4	36–47	398	14.6%	27.9%	5.5%	5.8%	31.9%
4–5	48–59	350	19.4%	26.9%	6.3%	8.0%	33.7%
	Total	1874	19.9%	31.5%	6.8%	6.6%	37.7%

Prevalence rate among girls (0–5 years)

Age (years)	Age (months)	Number	Underweight	Stunting	Wasting	Malnourished	Any deficiency
0–1	0–5	160	15.0%	17.5%	2.9%	7.5%	22.4%
	6–11	171	7.6%	20.5%	7.7%	2.9%	26.6%
1–2	12–23	415	16.4%	27.2%	7.2%	2.2%	32.4%
2–3	24–35	379	19.3%	35.1%	6.1%	7.4%	40.4%
3–4	36–47	328	24.1%	34.5%	6.4%	7.3%	43.6%
4–5	48–59	351	18.2%	23.7%	6.1%	6.8%	32.6%
	Total	1804	17.8%	28.0%	5.5%	6.3%	35.5%

The annex includes tables with the same anthropometric indicators for children by age phases: Table A2 includes children under six months, Table A3 includes children between six and 11 months, and Table A4 includes those who are between 12 months and two years. The accompanying measures, including growth monitoring, recommend differentiated advice for these age phases: exclusive breastfeeding for children under five months; the introduction of complementary feeding for children between six and 11 months; and progressive incorporation into the family diet for children 12–23 months.

Indicators for the 2,199 children between two and five years of age (ten children with biologically-implausible z-scores were excluded) were broadly similar to those for children below age two: 19.5 percent were underweight (WAZ < -2), 31.2 percent were stunted (HAZ < -2), 6.3 percent were wasted (WHZ < -2) and 7.1 percent were malnourished (MUACZ<-2) (Table 3). Rates of underweight, stunting, wasting, and malnourishment were also broadly identical in boys and girls between two and five years of age. Surprisingly, the percentages of children who are stunted, underweight, malnourished, or wasted are broadly similar between children in the lowest and highest quintiles. However, the percentages who are severely stunted, severely underweight, severely malnourished, or severely wasted are systematically higher among children in the lowest quintile. The relation for severe stunting and severe malnourishment is monotonous across quintiles.

We also observe that the nutrition deficiency rate—as measured by the percentage of children with at least one deficiency—tends to increase until the age of three and to decrease after that (Table 4). The stunting rate increases dramatically from 20.9 percent for children below six months to 36.9 percent for children in the 24–35 month age group. The rates are less favorable among boys. The higher stunting rate among two-year-olds may reflect the cumulative effect of malnutrition from the time they are weaned. This is not a longitudinal study, so the differences may be attributable to specific events like the occurrence of illnesses and may not reflect systematic age-related variations.

Protocol

This three-year study is a randomized controlled trial with crossover design. It compares three levels of cash transfers on one dimension and two levels of children's growth monitoring on the other dimension in 1,980 households in the Gabú region of Guinea-Bissau. Levels of cash transfers were no cash transfers (Groups 1 and 4), eight quarterly transfers of CFAF 8,000 per household member (up to 25 members) (Groups 2 and 5), and eight quarterly transfers of CFAF 12,000 per household member (up to 25 members) (Groups 3 and 6) (Figure 1). Cash transfer beneficiaries (Groups 2, 3, 5, and 6) also benefit from quarterly group meetings and household visits by trained nurses and community health workers who provide education and advice on nutrition and infants' health to pregnant women and mothers of young children. These meetings seek to generate social and behavior changes for improved nutrition and maternal and child health. Growth monitoring consists of quarterly household visits by trained health workers who take anthropometric measurements of all children below the age of two (weight, height, and MUAC), compare the measurements to the age-adjusted norm established by WHO, brief parents on the growth progress of each child, and alert them when cases of stunting, wasting, or obesity are observed, and advise the family on how to improve child nutrition. Growth monitoring is provided to Groups 4, 5, and 6. To ensure economic and demographic uniformity among groups, households were stratified into 20 strata of 99 households each, based on consumption per capita and household size quintiles. Then, households of each stratum were randomly assigned to one of the six groups. Cash transfers and growth monitoring activities began in August 2019. The program is expected to be implemented

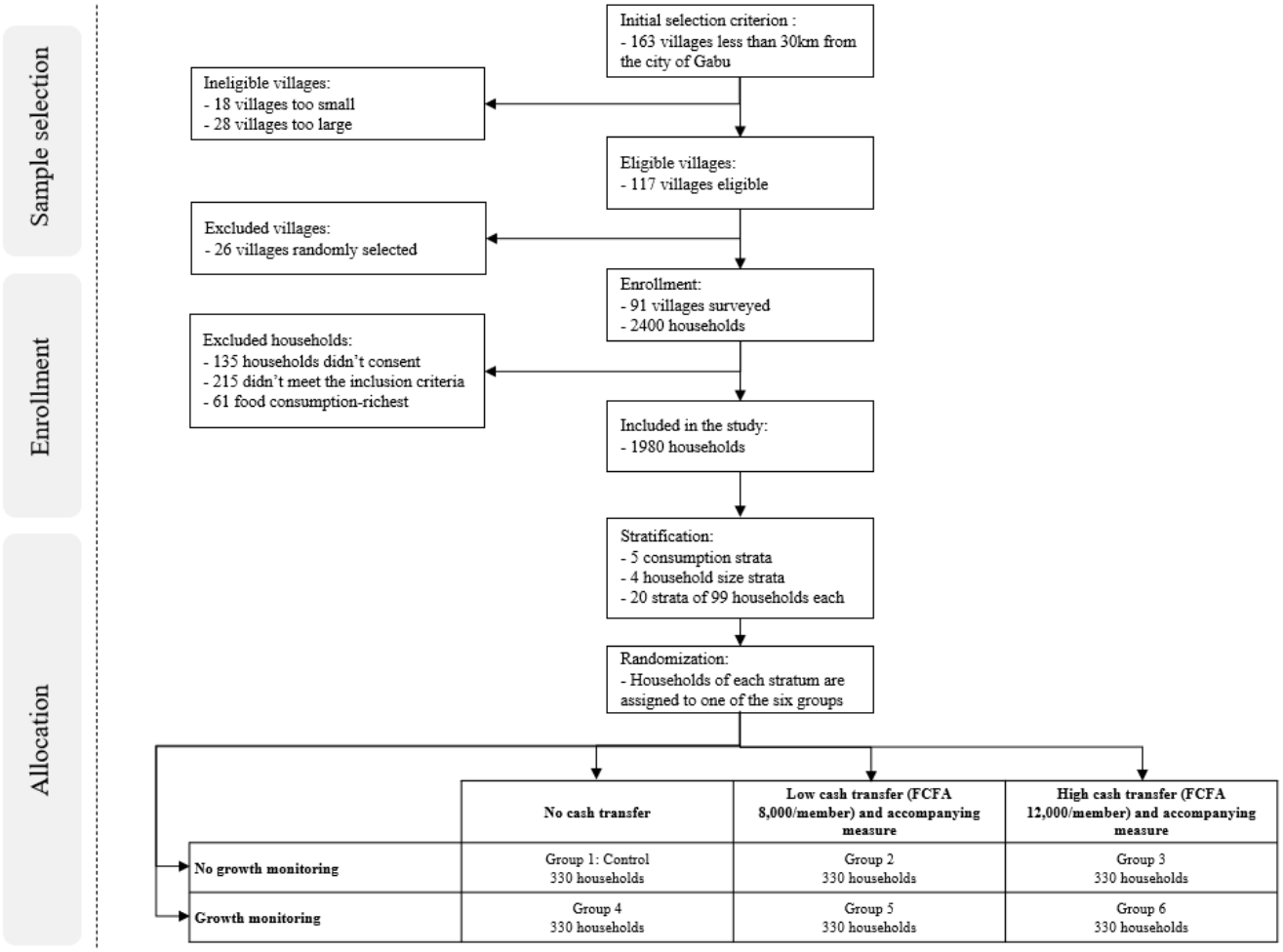
during a period of two years with a total of eight interventions.

Results

We assess baseline balance between our six intervention arms (Groups) using an Analysis of Variance (ANOVA) test for continuous variables, or a Pearson Chi-square test of independence for binary and categorical variables.

Figure 1: CONSORT diagram of the Randomized Controlled Trial with crossover design, comparing three levels of cash transfers on one dimension and two levels of children's growth monitoring on the other dimension]

The null hypothesis for both tests is that "All treatment arms are sampled from the same distribution." We consider a 95 percent confidence level for rejection corresponding to α=0.05. However, due to the large number of indicators, we expect some indicators to show an imbalance. We use the Benjamini-Hochberg procedure (Benjamini and Hochberg 1995) to control for the false discovery rate (FDR) by calculating for each table the q-values that will act as critical values for the rejection of the null hypothesis.[18] We choose a FDR of q=0.05. Table 5 reports the distributions of socioeconomic variables in different groups and the resulting p-values and q-values. Similarly, Tables 6 and 7 report distributions of anthropometric outcomes in children aged below two years old and children aged two to five years old within each group, as well as the p-values and q-values associated with rejecting the null hypotheses.



The baseline socioeconomic characteristics of the households in each group are presented in Table 5. There are no significant differences between groups in household size, age, or gender balance (p-values from 0.56 to 0.78). There are also no significant differences in total consumption (p-values of 0.80) and food and non-food consumption (p-values of 0.94 and 0.32, respectively), the amount of transfers made to or received from friends and family (p-values of 0.63 and 0.26, respectively), and education and health expenditures (p-values of 0.40 and 0.37, respectively). Housing conditions and assets are also balanced between groups, except for the number of beds per household member (p-value of 0.024). However, the statistical significance of the differences of this variable does not persist after controlling the FDR. There is no significant difference in school enrollment among children between six and 15 years of age (p-value of 0.37). Although the non-enrollment of children for financial reasons is not balanced across groups (p-value of 0.038), the statistically significant difference does not persist after controlling the FDR. Also, there is no significant difference between groups in the number of households that reported that one member had been sick in the last three months. The ability to treat the sick, as well as the type of treatment, are similar between groups (p-values of 0.92 and 0.41) as well as the inability to treat the sickness for lack of financial resources (p-value of 0.96). Consumption of food and non-food items is balanced between all groups (Table A5). There is no statistically significant difference between amounts spent on food consumption (p-values range from 0.27 to 0.96) or non-food consumption (p-values from 0.054 to 0.99).

The baseline anthropometric characteristics of children below two years of age are shown in Table 6. There are no significant differences between groups in mean z-scores or prevalence of deficiency rates. The z-score distributions for WAZ, HAZ, WHZ, and MUACZ are not significantly different between the six intervention groups (p-values from 0.16 to 0.53). There is also no significant difference between groups in prevalence of deficiency states (p-values from 0.32 to 0.92).

The baseline anthropometric characteristics of children in the 24–59 month age group are shown in Table 7. Here, also, there are no significant differences between groups in mean z-scores or prevalence of deficiency rates. The z-score distributions for WAZ, HAZ, WHZ, and MUACZ are not significantly different between the six intervention groups (p-values from 0.33 to 0.72). There is also no significant difference between groups in prevalence of deficiency states.

The groups are well balanced. Only two indicators have an unadjusted p-value of 0.05 or less, and these differences do not remain significant after controlling for the FDR. However, we intend to use more robust estimation techniques when assessing the impact of the interventions on these variables, including using an Analysis of Covariance (ANCOVA) approach, or a Difference-in-Differences (DiD) approach.

Discussion

Undernutrition and malnutrition in childhood have lasting impacts on health, education, quality of life, and economic development. We examined the baseline population of a three-year randomized controlled trial with crossover design which will compare the impact of three levels of cash transfer (no cash, CFAF 8,000 per person, and CFAF 12,000 per person) and two levels of child growth monitoring (no growth monitoring, growth monitoring) on 1,980 households in the Gabú region of Guinea-Bissau.

The baseline population is extremely poor, as evidenced by the very low level of food consumption. The diet of the population in rural

Table 5: Baseline socioeconomic indicators, by group

Variables	Total Population	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	P-value[1]	Q-value[2]
Households	**1,980**	**330**	**330**	**330**	**330**	**330**	**330**		
Size	9.87	9.85	9.89	9.48	10.11	9.67	10.21	0.56	0.027
Individuals	**19,535**	**3,249**	**3,263**	**3,130**	**3,335**	**3,190**	**3,368**		
Male (% of individuals)	9,486 (48.6%)	1,561 (48.0%)	1,583 (48.5%)	1,536 (49.1%)	1,596 (47.9%)	1,544 (48.4%)	1,666 (49.5%)	0.78	0.041
Female (% of individuals)	10,049 (51.4%)	1,688 (52.0%)	1,680 (51.5%)	1,594 (50.9%)	1,739 (52.1%)	1,646 (51.6%)	1,702 (50.5%)		
Age (years)	21.0	20.8	21.3	21.0	21.1	21.4	20.7	0.58	0.029
Number of children below 15 years of age (% of individuals)	9,528 (48.8%)	1,596 (49.1%)	1,569 (48.1%)	1,561 (49.9%)	1,647 (49.4%)	1,514 (47.5%)	1,641 (48.7%)		
Number of elderly above 60 years of age (% of individuals)	852 (4.4%)	139 (4.3%)	135 (4.1%)	142 (4.5%)	150 (4.5%)	145 (4.5%)	141 (4.2%)		
Economic Indicators									
Annual consumption per capita (CFAF), of which	239,934	251,731	239,928	233,547	241,579	235,230	237,589		
Annual food consumption per capita (CFAF)	165,214	170,977	164,859	164,887	165,972	161,436	163,151		
Annual non-food consumption per capita (CFAF)	74,721	80,755	75,069	68,660	75,608	73,794	74,438		
Annual consumption per capita (Log of), of which	12.28 (0.47)	12.31 (0.51)	12.29 (0.46)	12.26 (0.46)	12.27 (0.50)	12.26 (0.46)	12.28 (0.45)	0.80	0.043
Annual food consumption per capita (Log of)	11.90 (0.48)	11.92 (0.50)	11.91 (0.46)	11.91 (0.47)	11.90 (0.49)	11.89 (0.47)	11.90 (0.46)	0.94	0.048
Annual non-food consumption per capita (Log of)	10.98 (0.70)	11.04 (0.74)	11.01 (0.68)	10.93 (0.66)	10.97 (0.74)	10.95 (0.70)	11.00 (0.66)	0.32	0.014
Number of households who make cash or in-kind transfers to friends or family (% of households)	997 (50.4%)	159 (48.2%)	169 (51.2%)	152 (46.1%)	171 (51.8%)	164 (49.7%)	182 (55.2%)		
Amount of cash or in-kind transfers made to friends and family during the last 12 months (CFAF) (% of annual consumption)	8,669 (3.6%)	9,262 (3.7%)	8,152 (3.4%)	8,172 (3.5%)	8,941 (3.7%)	7,656 (3.3%)	9,829 (4.1%)		
Amount of cash or in-kind transfers made to friends and family during the last 12 months (Log of)	9.05 (1.24)	9.14 (1.26)	8.94 (1.26)	9.12 (1.24)	8.99 (1.28)	9.01 (1.20)	9.11 (1.20)	0.63	0.034
Number of households who receive cash or in-kind transfers from friends or family during the last 12 months (% of households)	959 (48.4%)	157 (47.6%)	163 (49.4%)	162 (49.1%)	158 (47.9%)	156 (47.3%)	163 (49.4%)		
Amount of cash or in-kind transfers received from friends and family during the last 12 months (CFAF) (% of annual consumption)	22,647 (9.4%)	26,475 (10.5%)	22,328 (9.3%)	21,789 (9.3%)	21,934 (9.1%)	19,826 (8.4%)	23,533 (9.9%)		
Amount of cash or in-kind transfers received from friends and family during the last 12 months (Log of)	9.92 (1.47)	10.05 (1.46)	9.76 (1.69)	9.94 (1.42)	9.76 (1.50)	10.03 (1.31)	10.00 (1.39)	0.26	0.011
Amount of cash or in-kind net transfers received from friends and family during the last 12 months (CFAF) (% of annual consumption)	13,979 (5.8%)	17,212 (6.8%)	14,176 (5.9%)	13,617 (5.8%)	12,992 (5.4%)	12,170 (5.2%)	13,704 (5.8%)		
Housing conditions									
Roof type:								0.31	0.013
Corrugated zinc	84.2%	88.2%	83.6%	83.0%	82.1%	81.2%	87.0%		
Thatch	15.4%	11.5%	16.4%	16.4%	17.3%	18.2%	12.7%		
Tile or concrete	0.3%	0.3%	0.0%	0.6%	0.3%	0.6%	0.0%		
Plastic	0.1%	0.0%	0.0%	0.0%	0.3%	0.0%	0.3%		
Walls type:								0.65	0.038
Clay	94.6%	95.8%	94.2%	96.7%	94.5%	93.0%	93.3%		
Woven mat	2.2%	1.5%	2.1%	1.2%	2.1%	3.6%	2.7%		
Woven mat and clay	2.0%	1.2%	2.4%	1.5%	2.1%	1.5%	3.0%		
Cement	1.2%	1.5%	1.2%	0.6%	1.2%	1.8%	0.9%		
Floor type:								0.14	0.007
Earthen floor	66.2%	63.0%	63.3%	71.5%	67.3%	68.5%	63.3%		
Cement	28.5%	32.7%	32.4%	23.3%	24.8%	26.7%	31.2%		

Clay	5.1%	4.2%	3.9%	4.8%	7.3%	4.5%	5.5%		
Mosaic	0.3%	0.0%	0.3%	0.3%	0.6%	0.3%	0.0%		
Sanitation type:								0.074	0.005
Shared bathroom or latrine	84.8%	83.3%	88.2%	85.2%	82.7%	83.6%	86.1%		
Private bathroom or latrine	11.2%	13.6%	8.5%	9.7%	14.2%	10.0%	10.9%		
In the open	4.0%	3.0%	3.3%	5.2%	3.0%	6.4%	3.0%		
Drinking water source:								0.54	0.025
Boreholes	58.5%	60.9%	58.5%	58.5%	55.8%	54.2%	63.0%		
Wells	23.7%	22.4%	22.7%	26.7%	25.8%	25.5%	19.1%		
Public or shared water fountains	13.1%	12.4%	15.2%	10.0%	13.9%	14.2%	12.7%		
Piped water	2.6%	2.7%	2.7%	2.4%	2.7%	2.7%	2.4%		
Surface water	2.1%	1.5%	0.9%	2.4%	1.8%	3.3%	2.7%		
Illumination source:								0.61	0.030
Torchlight	51.6%	48.8%	51.5%	53.3%	52.4%	53.3%	50.0%		
Electricity based	46.1%	48.8%	46.4%	45.2%	44.2%	43.0%	48.8%		
Candles	2.0%	1.8%	2.1%	1.2%	2.4%	3.0%	1.2%		
Oil of gas light	0.4%	0.6%	0.0%	0.3%	0.9%	0.6%	0.0%		
Cooking energy source:								0.65	0.036
Wood	99.3%	99.1%	99.7%	99.7%	99.1%	99.4%	99.1%		
Charcoal	0.6%	0.9%	0.0%	0.3%	0.6%	0.6%	0.9%		
Gas or Electricity	0.1%	0.0%	0.3%	0.0%	0.3%	0.0%	0.0%		
Household assets (number)									
Mattresses per person	0.45	0.46	0.45	0.44	0.43	0.44	0.45	0.21	0.009
Beds per person	0.31	0.33	0.32	0.29	0.3	0.29	0.32	0.024	0.002
Mobile phones per person (over age 15)	0.46	0.48	0.46	0.46	0.46	0.45	0.45	0.88	0.045
Motorcycle	0.37	0.41	0.37	0.36	0.36	0.32	0.38	0.46	0.023
Cooking stove	0.01	0.01	0.01	0.00	0.01	0.00	0.01	0.67	0.039
Computer	0.02	0.01	0.02	0.04	0.02	0.03	0.02	0.61	0.032
Education indicators									
Number of households with at least one child enrolled at school (% of households)	1,326 (67.0%)	227 (68.8%)	212 (64.2%)	216 (65.5%)	221 (67.0%)	229 (69.4%)	221 (67.0%)		
Number of children enrolled at school	3,988	691	694	637	652	639	675		
Number of households who reported education expenditures in previous academic year	374	65	52	68	52	71	66		
Education expenditures per enrolled child (CFAF)	9,095	11,880	7,562	8,718	5,927	12,498	7,966		
Education expenditures per enrolled child (Log of)	9.62 (0.98)	9.80 (1.10)	9.62 (1.08)	9.50 (0.94)	9.49 (0.89)	9.73 (1.02)	9.58 (0.85)	0.40	0.020
Number of children aged 6–15 years	5,085	853	874	845	876	780	857		
Children 6–15 enrolled in school (% of children 6–15)	2,884 (56.8%)	495 (58.1%)	513 (58.8%)	467 (55.3%)	475 (54.3%)	450 (57.8%)	484 (56.6%)		
Children 6–15 non-enrolled in school (% of children 6–15), of whom	2,193 (43.2%)	357 (41.9%)	359 (41.2%)	377 (44.7%)	400 (45.7%)	329 (42.2%)	371 (43.4%)	0.37	0.016
Not enrolled for financial reasons (% of children 6–15 years non-enrolled in school)	413 (18.8%)	71 (19.9%)	83 (23.1%)	55 (14.6%)	66 (16.5%)	70 (21.3%)	68 (18.3%)	0.038	0.004
Health indicators									
Number of households who report that at least one member had been sick during the last three months (% of households)	913 (46.1%)	142 (43.0%)	152 (46.1%)	144 (43.6%)	159 (48.2%)	157 (47.6%)	159 (48.2%)		
Number of households who report health expenditures	807	130	137	128	142	133	137		
Health expenditures per sick person (CFAF)	10,083	11,332	9,480	7,624	10,887	12,266	8,814		

Health expenditures per sick person (Log of)	8.64 (1.22)	8.75 (1.21)	8.69 (1.10)	8.49 (1.12)	8.66 (1.23)	8.73 (1.20)	8.51 (1.44)	0.37	0.018
Number of individuals with a reported sickness during the last three months (% of individuals)	2,206 (11.3%)	338 (10.4%)	355 (10.9%)	300 (9.6%)	366 (11.0%)	405 (12.7%)	442 (13.1%)		
Number of individuals who treated their sickness (% of individuals reporting a sickness),	1,940 (87.9%)	298 (88.2%)	313 (88.2%)	264 (88.0%)	327 (89.3%)	355 (87.7%)	383 (86.7%)		
Treatment type:								0.41	0.021
Hospital	52.0%	55.7%	53.7%	46.2%	47.7%	55.5%	52.2%		
Health center	25.1%	19.5%	27.2%	30.7%	26.0%	21.4%	26.6%		
Self-medication	9.2%	9.4%	8.9%	11.0%	11.6%	7.6%	7.6%		
Traditional medicine	7.4%	8.7%	5.1%	6.8%	7.0%	9.3%	7.3%		
Private clinic	2.2%	1.3%	1.9%	1.1%	3.4%	2.5%	2.3%		
Pharmacy	1.9%	1.7%	1.9%	1.9%	1.8%	2.3%	1.8%		
Health community worker	1.7%	2.7%	1.3%	1.9%	1.8%	1.1%	1.6%		
Other	0.5%	1.0%	0.0%	0.4%	0.6%	0.3%	0.5%		
Individuals with an untreated sickness (% of individuals who reported a sickness), of whom:	266 (12.1%)	40 (11.8%)	42 (11.8%)	36 (12.0%)	39 (10.7%)	50 (12.3%)	59 (13.3%)	0.92	0.046
Individuals untreated for financial reasons (% of individuals with untreated sickness)	166 (62.4%)	24 (60.0%)	25 (59.5%)	21 (58.3%)	26 (66.7%)	33 (66.0%)	37 (62.7%)	0.96	0.05

1/ P-values for rejecting the null hypothesis of groups being sampled from the same distribution. ANOVA test is used for continuous variables and Chi-square test of independence is used for binary and categorical variables.

2/ Q-values computed using the two-step Benjamini-Hochberg procedure with a false discovery rate of 0.05.

Table 6: Baseline anthropometric indicators of children below 2 years of age, by group

Measurements and deficiencies	Total Population	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	P-value[1]	q-value[2]
Anthropometric measurements									
Number of children aged 0–23 months[3]	1,479	239	242	210	273	250	265		
Age (months)	11.9	11.4	11.4	13.1	12.3	11.5	12.2		
Weight (kg)	7.95	7.71	7.92	8.25	7.92	7.96	7.96		
Height (cm)	70.16	69.15	69.8	71.63	70.29	70.04	70.22		
MUAC[4] (cm)	14.18	14.11	14.17	14.2	14.1	14.33	14.2		
WAZ	-0.94 (1.21)	-0.94 (1.04)	-0.83 (1.25)	-1.04 (1.18)	-1.05 (1.24)	-0.82 (1.35)	-0.94 (1.18)	0.16	0.008
HAZ	-1.14 (1.49)	-1.17 (1.19)	-1.04 (1.56)	-1.26 (1.45)	-1.24 (1.47)	-0.97 (1.70)	-1.19 (1.47)	0.21	0.012
WHZ[5]	-0.41 (1.12)	-0.41 (1.07)	-0.32 (1.27)	-0.54 (1.06)	-0.51 (1.18)	-0.33 (1.03)	-0.37 (1.04)	0.16	0.007
MUACZ[4]	-0.27 (1.00)	-0.27 (0.93)	-0.28 (1.04)	-0.32 (1.03)	-0.35 (0.96)	-0.15 (1.05)	-0.28 (0.97)	0.43	0.022
Prevalence of deficiency states:									
Stunting, HAZ < -2, of whom	27.7%	24.3%	29.3%	28.6%	29.7%	25.6%	28.7%	0.70	0.032
Moderate Stunting, -3 ≤ HAZ < -2	19.6%	18.8%	23.1%	19.5%	20.9%	15.6%	19.6%		
Severe Stunting, HAZ < -3	8.1%	5.4%	6.2%	9.0%	8.8%	10.0%	9.1%		
Underweight, WAZ < -2, of whom	17.8%	15.1%	15.3%	21.9%	20.1%	16.8%	18.1%	0.32	0.017
Moderate Underweight, -3 ≤ WAZ < -2	13.5%	12.1%	10.7%	16.7%	14.3%	11.6%	15.5%		
Severe Underweight, WAZ < -3	4.4%	2.9%	4.5%	5.2%	5.9%	5.2%	2.6%		
Overweight, WAZ > 2, of whom	1.2%	0.4%	2.1%	0.5%	1.1%	2.0%	1.1%	0.42	0.020
Moderate Overweight, 3 ≥ WAZ >2	0.9%	0.0%	1.7%	0.5%	1.1%	1.2%	1.1%		
Severe Overweight, WAZ > 3	0.3%	0.4%	0.4%	0.0%	0.0%	0.8%	0.0%		
Malnourishment, MUACZ < -2, of whom	4.3%	3.5%	4.0%	3.2%	6.1%	4.4%	4.1%	0.74	0.035
Moderate Malnourishment, -3 ≤ MUACZ < -2	3.9%	3.0%	3.5%	2.7%	5.6%	4.4%	4.1%		
Severe Malnourishment, MUACZ < -3	0.3%	0.5%	0.5%	0.5%	0.4%	0.0%	0.0%		
Wasting, WHZ < -2, of whom	7.0%	6.0%	7.7%	7.7%	7.9%	6.3%	6.3%	0.92	0.045
Moderate Wasting, -3 ≤ WHZ < -2	5.5%	4.7%	5.1%	6.7%	4.9%	5.9%	5.9%		
Severe Wasting, WHZ < -3	1.5%	1.3%	2.6%	1.0%	3.0%	0.4%	0.4%		
At least one deficiency	36.2%	31.5%	39.3%	39.8%	38.1%	31.8%	36.7%	0.33	0.018
Boys									
Number of boys aged 0–23 months	733	103	127	122	126	124	131		
Age (months)	11.8	11.4	11.1	12.6	12.5	11.5	11.7		
Weight (kg)	8.08	7.94	7.92	8.27	8.22	8.08	8.02		
Height (cm)	70.44	69.96	69.46	71.39	71.08	70.31	70.39		
MUAC (cm)	14.28	14.24	14.18	14.3	14.18	14.49	14.27		
WAZ	-1.06 (1.23)	-1.08 (1.00)	-0.99 (1.31)	-1.12 (1.22)	-1.10 (1.28)	-1.03 (1.32)	-1.04 (1.19)	0.96	0.050
HAZ	-1.28 (1.52)	-1.28 (1.23)	-1.24 (1.51)	-1.34 (1.48)	-1.37 (1.46)	-1.23 (1.74)	-1.20 (1.61)	0.95	0.047
WHZ	-0.48 (1.16)	-0.53 (1.00)	-0.32 (1.35)	-0.60 (1.04)	-0.50 (1.34)	-0.42 (1.02)	-0.51 (1.09)	0.51	0.027
MUACZ	-0.38 (1.03)	-0.35 (0.95)	-0.43 (1.10)	-0.38 (1.06)	-0.52 (1.07)	-0.17 (1.01)	-0.40 (0.99)	0.27	0.015
Prevalence of deficiency states:									
Stunting, HAZ < -2, of whom	31.9%	26.2%	35.4%	32.0%	31.7%	32.3%	32.8%	0.80	0.038
Moderate Stunting, -3 ≤ HAZ < -2	22.4%	17.5%	27.6%	22.1%	20.6%	21.8%	23.7%		
Severe Stunting, HAZ < -3	9.5%	8.7%	7.9%	9.8%	11.1%	10.5%	9.2%		
Underweight, WAZ < -2, of whom	21.7%	16.5%	20.5%	27.0%	22.2%	19.4%	23.7%	0.48	0.023
Moderate Underweight, -3 ≤ WAZ < -2	16.8%	13.6%	14.2%	20.5%	16.7%	14.5%	20.6%		

Severe Underweight, WAZ < -3	4.9%	2.9%	6.3%	6.6%	5.6%	4.8%	3.1%		
Overweight, WAZ > 2, of whom	1.1%	0.0%	1.6%	0.8%	1.6%	0.8%	1.5%	0.83	0.040
Moderate Overweight, 3 ≥ WAZ >2	1.0%	0.0%	1.6%	0.8%	1.6%	0.0%	1.5%		
Severe Overweight, WAZ > 3	0.1%	0.0%	0.0%	0.0%	0.0%	0.8%	0.0%		
Malnourishment, MUACZ < -2, of whom	5.8%	4.5%	5.9%	2.8%	11.7%	5.0%	4.7%	0.12	0.005
Moderate Malnourishment, -3 ≤ MUACZ < -2	5.3%	4.5%	5.0%	1.9%	10.7%	5.0%	4.7%		
Severe Malnourishment, MUACZ < -3	0.5%	0.0%	1.0%	0.9%	1.0%	0.0%	0.0%		
Wasting, WHZ < -2, of whom	7.4%	6.0%	7.3%	6.6%	9.8%	6.7%	7.8%	0.91	0.043
Moderate Wasting, -3 ≤ WHZ < -2	5.9%	6.0%	4.1%	5.8%	6.5%	5.9%	7.0%		
Severe Wasting, WHZ < -3	1.5%	0.0%	3.3%	0.8%	3.3%	0.8%	0.8%		
At least one deficiency	41.2%	34.9%	44.0%	45.7%	40.8%	36.6%	43.8%	0.58	0.028
Girls									
Number of girls aged 0–23 months	746	136	115	88	147	126	134		
Age (months)	12.1	11.3	11.8	13.8	12.0	11.5	12.6		
Weight (kg)	7.82	7.53	7.91	8.21	7.66	7.85	7.91		
Height (cm)	69.89	68.54	70.17	71.96	69.6	69.78	70.06		
MUAC (cm)	14.09	14	14.15	14.09	14.04	14.18	14.14		
WAZ	-0.82 (1.19)	-0.84 (1.06)	-0.64 (1.16)	-0.92 (1.13)	-1.00 (1.20)	-0.63 (1.36)	-0.85 (1.16)	0.076	0.003
HAZ	-1.02 (1.44)	-1.09 (1.16)	-0.82 (1.58)	-1.14 (1.40)	-1.14 (1.49)	-0.73 (1.64)	-1.17 (1.32)	0.055	0.002
WHZ	-0.35 (1.07)	-0.33 (1.12)	-0.32 (1.17)	-0.45 (1.08)	-0.51 (1.03)	-0.23 (1.04)	-0.23 (0.97)	0.20	0.010
MUACZ	-0.18 (0.95)	-0.21 (0.92)	-0.12 (0.96)	-0.24 (0.98)	-0.20 (0.84)	-0.12 (1.10)	-0.17 (0.95)	0.95	0.048
Prevalence of deficiency states:									
Stunting, HAZ < -2, of whom	23.6%	22.8%	22.6%	23.9%	27.9%	19.0%	24.6%	0.68	0.030
Moderate Stunting, -3 ≤ HAZ < -2	16.9%	19.9%	18.3%	15.9%	21.1%	9.5%	15.7%		
Severe Stunting, HAZ < -3	6.7%	2.9%	4.3%	8.0%	6.8%	9.5%	9.0%		
Underweight, WAZ < -2, of whom	14.1%	14.0%	9.6%	14.8%	18.4%	14.3%	12.7%	0.49	0.025
Moderate Underweight, -3 ≤ WAZ < -2	10.2%	11.0%	7.0%	11.4%	12.2%	8.7%	10.4%		
Severe Underweight, WAZ < -3	3.9%	2.9%	2.6%	3.4%	6.1%	5.6%	2.2%		
Overweight, WAZ > 2, of whom	1.3%	0.7%	2.6%	0.0%	0.7%	3.2%	0.7%	0.22	0.013
Moderate Overweight, 3 ≥ WAZ >2	0.9%	0.0%	1.7%	0.0%	0.7%	2.4%	0.7%		
Severe Overweight, WAZ > 3	0.4%	0.7%	0.9%	0.0%	0.0%	0.8%	0.0%		
Malnourishment, MUACZ < -2, of whom	2.8%	2.6%	2.0%	3.7%	1.6%	3.9%	3.5%	0.87	0.042
Moderate Malnourishment, -3 ≤ MUACZ < -2	2.7%	1.8%	2.0%	3.7%	1.6%	3.9%	3.5%		
Severe Malnourishment, MUACZ < -3	0.2%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%		
Wasting, WHZ < -2, of whom	6.5%	5.9%	8.1%	9.2%	6.3%	5.9%	4.7%	0.80	0.037
Moderate Wasting, -3 ≤ WHZ < -2	5.1%	3.7%	6.3%	8.0%	3.5%	5.9%	4.7%		
Severe Wasting, WHZ < -3	1.4%	2.2%	1.8%	1.1%	2.8%	0.0%	0.0%		
At least one deficiency	31.5%	28.9%	34.4%	32.1%	35.9%	27.0%	30.1%	0.71	0.033

1/ P-values for rejecting the null hypothesis of groups being sampled from the same distribution. ANOVA test is used for continuous variables and Chi-square test of independence is used for binary and categorical variables.

2/ Q-values computed using the 2-step Benjamini-Hochberg procedure with a false discovery rate of 0.05.

3/ Six children aged 0–23 months old were excluded from the analysis for having at least one biologically-implausible z-value (defined as HAZ<-6 or >6, WAZ<-6 or >5, WHZ<-5 or >5, or MUACZ<-5 or >5).

4/ MUAC and MUACZ do not include children aged two months or below (N=235).

5/ Weight-for-Height z-score does not include children shorter than 45 cm or taller than 120 cm (N=42).

Table 7: Baseline anthropometric indicators of children 24-59 months, by group

Measurements and deficiencies	Total Population	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	P-value[1]	Q-value[2]
Anthropometric measurements									
Number of children aged 24–59 months[3]	2,199	347	364	355	378	372	383		
Age (months)	41.6	40.8	40.9	42.0	42.4	40.8	42.8		
Weight (kg)	13.13	13.18	12.96	13.11	13.17	12.99	13.39		
Height (cm)	93.51	93.23	92.86	93.57	93.77	93.05	94.49		
MUAC (cm)	15.05	15.05	15.01	15.01	15.02	15.05	15.14		
WAZ	-1.16 (1.06)	-1.06 (1.12)	-1.20 (1.02)	-1.21 (1.13)	-1.21 (0.99)	-1.18 (1.09)	-1.12 (1.02)	0.33	0.020
HAZ	-1.35 (1.35)	-1.28 (1.42)	-1.41 (1.29)	-1.38 (1.47)	-1.41 (1.26)	-1.35 (1.35)	-1.29 (1.33)	0.65	0.043
WHZ[4]	-0.55 (0.96)	-0.47 (0.98)	-0.57 (0.93)	-0.60 (0.94)	-0.57 (0.97)	-0.59 (0.99)	-0.54 (0.94)	0.52	0.030
MUACZ	-0.70 (0.90)	-0.67 (0.94)	-0.71 (0.84)	-0.74 (0.89)	-0.75 (0.92)	-0.68 (0.96)	-0.66 (0.83)	0.72	0.045
Prevalence of deficiency states:									
Stunting, HAZ < -2, of whom	31.2%	32.7%	31.0%	33.2%	30.4%	31.7%	28.5%	0.77	0.047
Moderate Stunting, -3 ≤ HAZ < -2	21.6%	23.4%	21.7%	21.4%	21.2%	21.5%	20.6%		
Severe Stunting, HAZ < -3	9.6%	9.2%	9.3%	11.8%	9.3%	10.2%	7.8%		
Underweight, WAZ < -2, of whom	19.5%	21.6%	19.2%	22.3%	18.5%	18.5%	17.2%	0.49	0.028
Moderate Underweight, -3 ≤ WAZ < -2	15.3%	18.7%	15.1%	17.2%	14.0%	12.1%	14.9%		
Severe Underweight, WAZ < -3	4.2%	2.9%	4.1%	5.1%	4.5%	6.5%	2.3%		
Overweight, WAZ > 2, of whom	0.2%	0.6%	0.0%	0.3%	0.0%	0.3%	0.3%	0.60	0.037
Moderate Overweight, 3 ≥ WAZ >2	0.2%	0.6%	0.0%	0.3%	0.0%	0.3%	0.3%		
Severe Overweight, WAZ > 3	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%		
Malnourishment, MUACZ < -2, of whom	7.1%	6.9%	6.3%	7.3%	8.7%	8.6%	4.7%	0.26	0.010
Moderate Malnourishment, -3 ≤ MUACZ < -2	6.4%	6.1%	5.5%	7.0%	7.9%	7.8%	4.2%		
Severe Malnourishment, MUACZ < -3	0.7%	0.9%	0.8%	0.3%	0.8%	0.8%	0.5%		
Wasting, WHZ < -2, of whom	6.3%	6.7%	4.7%	5.6%	7.7%	8.9%	4.4%	0.086	0.003
Moderate Wasting, -3 ≤ WHZ < -2	5.5%	6.1%	3.6%	4.5%	6.9%	8.4%	3.7%		
Severe Wasting, WHZ < -3	0.8%	0.6%	1.1%	1.1%	0.8%	0.5%	0.8%		
At least one deficiency	37.8%	39.4%	36.0%	40.3%	37.9%	38.8%	34.7%	0.62	0.040
Boys									
Number of boys aged 24–59 months	1141	191	187	186	190	183	204		
Age (months)	41.5	40.5	40.6	42.3	42.5	40.3	42.8		
Weight (kg)	13.36	13.24	13.03	13.35	13.6	13.22	13.69		
Height (cm)	93.97	93.16	92.93	94.09	94.76	93.65	95.13		
MUAC (cm)	15.09	15.01	14.99	15.12	15.13	15.07	15.2		
WAZ	-1.14 (1.04)	-1.09 (1.06)	-1.28 (1.08)	-1.19 (1.03)	-1.09 (1.01)	-1.14 (1.08)	-1.06 (0.99)	0.29	0.015
HAZ	-1.35 (1.34)	-1.36 (1.44)	-1.49 (1.33)	-1.42 (1.35)	-1.30 (1.31)	-1.28 (1.35)	-1.25 (1.27)	0.47	0.027
WHZ	-0.55 (0.97)	-0.45 (0.97)	-0.64 (1.01)	-0.55 (0.90)	-0.52 (1.04)	-0.62 (1.02)	-0.52 (0.91)	0.40	0.025
MUACZ	-0.68 (0.88)	-0.71 (0.92)	-0.74 (0.84)	-0.67 (0.83)	-0.67 (0.92)	-0.67 (0.94)	-0.62 (0.80)	0.85	0.048
Prevalence of deficiency states:									
Stunting, HAZ < -2, of whom	31.3%	35.6%	34.8%	32.3%	26.8%	31.1%	27.5%	0.31	0.017
Moderate Stunting, -3 ≤ HAZ < -2	22.1%	24.6%	23.5%	21.5%	18.4%	23.5%	21.1%		
Severe Stunting, HAZ < -3	9.2%	11.0%	11.2%	10.8%	8.4%	7.7%	6.4%		
Underweight, WAZ < -2, of whom	18.7%	22.5%	21.9%	18.8%	14.2%	16.4%	18.1%	0.28	0.012

Moderate Underweight, -3 ≤ WAZ < -2	15.0%	19.9%	17.1%	15.1%	10.5%	10.4%	16.7%		
Severe Underweight, WAZ < -3	3.7%	2.6%	4.8%	3.8%	3.7%	6.0%	1.5%		
Overweight, WAZ > 2, of whom	0.2%	0.5%	0.0%	0.0%	0.0%	0.5%	0.0%	0.53	0.032
Moderate Overweight, 3 ≥ WAZ >2	0.2%	0.5%	0.0%	0.0%	0.0%	0.5%	0.0%		
Severe Overweight, WAZ > 3	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%		
Malnourishment, MUACZ < -2, of whom	7.0%	7.3%	6.4%	5.9%	7.9%	8.2%	6.4%	0.94	0.050
Moderate Malnourishment, -3 ≤ MUACZ < -2	6.5%	6.8%	5.3%	5.9%	6.8%	7.7%	6.4%		
Severe Malnourishment, MUACZ < -3	0.5%	0.5%	1.1%	0.0%	1.1%	0.5%	0.0%		
Wasting, WHZ < -2, of whom	6.5%	6.8%	6.4%	3.8%	8.9%	9.8%	3.4%	0.057	0.002
Moderate Wasting, -3 ≤ WHZ < -2	5.4%	5.8%	4.8%	2.7%	7.4%	8.7%	3.4%		
Severe Wasting, WHZ < -3	1.1%	1.0%	1.6%	1.1%	1.6%	1.1%	0.0%		
At least one deficiency	36.6%	40.3%	39.0%	38.2%	33.7%	36.1%	32.8%	0.58	0.035
Girls									
Number of girls aged 24–59 months	1,058	156	177	169	188	189	179		
Age (months)	41.8	41.2	41.1	41.6	42.4	41.3	42.9		
Weight (kg)	12.89	13.11	12.89	12.84	12.74	12.77	13.06		
Height (cm)	93.01	93.32	92.79	93.01	92.77	92.47	93.76		
MUAC (cm)	15	15.09	15.02	14.88	14.91	15.02	15.07		
WAZ	-1.19 (1.08)	-1.03 (1.19)	-1.10 (0.94)	-1.24 (1.22)	-1.33 (0.95)	-1.21 (1.11)	-1.18 (1.06)	0.16	0.007
HAZ	-1.36 (1.37)	-1.18 (1.40)	-1.31 (1.24)	-1.34 (1.59)	-1.53 (1.20)	-1.42 (1.36)	-1.33 (1.40)	0.29	0.013
WHZ	-0.56 (0.94)	-0.48 (0.99)	-0.49 (0.85)	-0.64 (0.99)	-0.61 (0.89)	-0.55 (0.97)	-0.57 (0.96)	0.54	0.033
MUACZ	-0.72 (0.92)	-0.64 (0.95)	-0.68 (0.84)	-0.82 (0.95)	-0.82 (0.92)	-0.69 (0.98)	-0.70 (0.85)	0.31	0.018
Prevalence of deficiency states:									
Stunting, HAZ < -2, of whom	31.1%	29.0%	27.1%	34.3%	34.0%	32.3%	29.6%	0.62	0.038
Moderate Stunting, -3 ≤ HAZ < -2	21.1%	21.9%	19.8%	21.3%	23.9%	19.6%	20.1%		
Severe Stunting, HAZ < -3	10.0%	7.1%	7.3%	13.0%	10.1%	12.7%	9.5%		
Underweight, WAZ < -2, of whom	20.4%	20.5%	16.4%	26.0%	22.9%	20.6%	16.2%	0.17	0.008
Moderate Underweight, -3 ≤ WAZ < -2	15.6%	17.3%	13.0%	19.5%	17.6%	13.8%	12.8%		
Severe Underweight, WAZ < -3	4.8%	3.2%	3.4%	6.5%	5.3%	6.9%	3.4%		
Overweight, WAZ > 2, of whom	0.3%	0.6%	0.0%	0.6%	0.0%	0.0%	0.6%	0.65	0.042
Moderate Overweight, 3 ≥ WAZ >2	0.3%	0.6%	0.0%	0.6%	0.0%	0.0%	0.6%		
Severe Overweight, WAZ > 3	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%		
Malnourishment, MUACZ < -2, of whom	7.2%	6.4%	6.2%	8.9%	9.6%	9.0%	2.8%	0.12	0.005
Moderate Malnourishment, -3 ≤ MUACZ < -2	6.3%	5.1%	5.6%	8.3%	9.0%	7.9%	1.7%		
Severe Malnourishment, MUACZ < -3	0.9%	1.3%	0.6%	0.6%	0.5%	1.1%	1.1%		
Wasting, WHZ < -2, of whom	6.2%	6.5%	2.8%	7.7%	6.4%	8.0%	5.6%	0.38	0.023
Moderate Wasting, -3 ≤ WHZ < -2	5.6%	6.5%	2.3%	6.5%	6.4%	8.0%	3.9%		
Severe Wasting, WHZ < -3	0.6%	0.0%	0.6%	1.2%	0.0%	0.0%	1.7%		
At least one deficiency	39.1%	38.3%	32.8%	42.6%	42.2%	41.5%	36.9%	0.36	0.022

1/ P-values for rejecting the null hypothesis of groups being sampled from the same distribution. ANOVA test is used for continuous variables and Chi-square test of independence is used for binary and categorical variables.

2/ Q-values computed using the 2-step Benjamini-Hochberg procedure with a false discovery rate of 0.05.

3/ Ten children aged 24–59 months old were excluded from the analysis for having at least one biologically-implausible z-value (defined as HAZ<-6 or >6, WAZ<-6 or >5, WHZ<-5 or >5, or MUACZ<-5 or >5).

4/ Weight-for-height z-score does not include children shorter than 45 cm or taller than 120 cm (N=4).

Gabú is generally insufficient in terms of caloric intake and nutrient diversity. Meals are simple, repetitive, not very diversified, and not very nutritious—mainly based on the consumption of rice with limited access to animal proteins and low consumption of fruits and vegetables. Households with access to foods with high nutritional value prefer to sell them to acquire non-food items (Guinea-Bissau, Ministério de Saúde Pública, 2014, page 13).

The baseline population has a moderate to high incidence of malnutrition among children. It is characterized by a medium to high prevalence of underweight children (approximately 20 percent), a medium to high prevalence of stunting (approximately 30 percent), and a poor level of wasting (approximately 8 percent).[19] These findings are consistent with the preliminary outcome of the 2019 SMART survey, which reports an underweight prevalence of 24.6 percent, a stunting rate of 33.1 percent, and a wasting rate of 10.2 percent in the Gabú region (Guinea-Bissau, Ministério de Saúde Pública, 2019, slides 15, 16, and 17).[20] Malnutrition in children is associated with inadequate eating practices, inadequate nutrition, and insufficient access to diversified food related to cultural habits and traditional practices combined with repeated episodes of sickness. It is also related to poor hygiene and sanitation practices and insufficient access to drinking water, affecting health and encouraging the proliferation of diseases such as diarrheal diseases. In addition, community monitoring of children's development and growth— which would allow early detection and treatment of malnutrition—is almost non-existent. Weighing of children is generally only carried out as part of vaccination campaigns (Ndiaye, 2019, p. 8).

Mean WAZ values were negative at baseline in all groups. As a consequence, it is reasonable to expect that households who benefit from cash transfers would increase their food intake at vulnerable times to improve children's WAZ in all groups. This impact is expected to be reinforced by the fact that these households also benefit from accompanying measures that seek to improve nutrition awareness. The impact of growth monitoring of children is also expected to increase their nutrition indicators. The difference in impact on girls and boys remain uncertain.

The accompanying measures, including growth monitoring, recommend differentiated advice for each age phase: exclusive breastfeeding for children 0–5 months; introduction of complementary feeding for children between 6-11 months; and progressive incorporation into the family diet for children 12–23 months. We would expect to see changes in these groups after the interventions.

The cash transfers are expected to provide households with a substantial incremental income. Indeed, the lower transfer amount (CFAF 32,000 per person per annum) represents 19.5 percent of pre-transfers food consumption, while the high transfer amount (CFAF 48,000) represents 29.3 percent. The lower and higher amount represent, respectively, 41.3 percent and 61.9 percent of mean consumption per capita of households from the poorest quintile, which is substantial.

Our study has several limitations. The exclusion of villages that were over 30 kilometers from the city of Gabú makes it impossible to generalize the results to other regions of Guinea-Bissau. Also, the exclusion of very small and large villages may be inherently biased, so that our results may not represent all rural villages in Gabú. We also have no ability to ascertain whether the three villages that opted out of the study, the households that decided not to participate, or the up to 20 percent of children that were not measured had similar parameters to those who were present. However, data from this cross-sectional observational study of 88 villages in the Gabú region of Guinea-Bissau revealed indicators that are consistent with other studies.

The protocol was designed to obtain data for power calculations and examine the interaction of three levels of cash transfers with measures to monitor child growth. The baseline assessment is

the first step for improving the design of future programs.

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Notes

[1] All U.S. dollar values are calculated at purchasing power parity (PPP), using the World Bank PPP conversion factor for private consumption of 227.5 in 2018.
[2] According to "a rigorous review of the evidence on the impact of cash transfer programs."
[3] UN, Department of Economic and Social Affairs, Population Division (2019*). World Population Prospects 2019*, Volume I: Comprehensive Tables
[4] World Bank national accounts data.
[5] Estimate according to the World Bank's *Macro Poverty Outlook Spring 2020*.
[6] Guiné Bissau, Ministério da Economia e Finanças, 2010 (*ILAP2*). Table 21, p. 7.
[7] Guiné Bissau, Ministério da Economia e Finanças, 2014 (*MICS5*). Table NU.2, p. 58.
[8] Guiné Bissau, Ministério da Economia e Finanças, 2014 (*MICS5*). Table CM.2, p. 48.
[9] The radius of 30 km was established as a selection criteria to limit households' distance to banks in the eventuality where households would need to travel to the closest bank situated in the city of Gabú to collect the cash payments (payment modalities were unknown at baseline). This also facilitated the supervision of the study.
[10] Guiné Bissau, Ministério da Economia e Finanças, 2014 (*MICS5*), Table CP.10, p. 236.
[11] Villagers were afraid that the weighting of babies and infants would be an indirect manner to observe whether they had been subject to female genital mutilation.
[12] Annex 2 includes the questionnaire.
[13] MUAC was measured in children older than three months at the time of the survey as per WHO guidelines and born after January 1, 2014.
[14] The number of children who were older than two years old and taller than 87cm who had to be measured horizontally was 50 (about 2.5% of all children measured in the vertical stadiometer).
[15] Biologically-implausible z-scores are defined as HAZ<-6 or >6, WAZ<-6 or >5, WHZ<-5 or >5, or MUACZ<-5 or >5.
[16] The World Health Organization [Internet]. Child growth standards software: WHO Anthro (version 3.2.2) and macros; 2011 [Cited June 4, 2020]. Available from https://www.who.int/childgrowth/software/en/.
[17] Boreholes use PVC pipes which protect the water from bacteria. The survey asked whether wells are protected or not. However, protecting the surface of the well with a cover does not protect it from bacteria living in the soil so that the quality of the water does not really improve in protected wells.
[18] To compute the q-values for a table of N compared variables at a false discovery rate of q, we first rank the variables from the smallest to the highest p-value: the q-value for the smallest p-value is $q_{(1)} = q.\frac{1}{\mathrm{N}}$, the q-value for the second smallest p-value is $q_{(2)} = q.\frac{2}{\mathrm{N}}$, and so forth... We then find the highest rank k such as $p_{(k)} < q_{(k)}$ and reject all null hypotheses associated with variables of ranks $i < k$.
[19] Classification according to standards set in WHO (2010), page 2.
[20] The wasting rate reported in SMART includes children who have an edema (a visible swelling of arms and legs because of severe malnutrition).

ANNEX

Table A1: Composition of food and non-food consumption, by quintile

Variables	Total Population	Quintile 1 (Poorest)	Quintile 2	Quintile 3	Quintile 4	Quintile 5 (Richest)
Food consumption:						
Annual food consumption per capita (CFAF)	165,214	82,182	121,047	150,802	190,232	281,805
Food consumption per capita items (CFAF) (% of food consumption per capita):						
Locally produced rice	8.11%	9.20%	9.44%	9.09%	8.35%	6.54%
Imported normal quality rice	22.96%	27.02%	28.26%	24.62%	21.94%	19.29%
Imported higher quality rice	1.03%	0.40%	0.73%	1.04%	1.29%	1.17%
Other cereals	7.13%	15.47%	7.91%	8.05%	6.01%	4.64%
Grains	3.62%	3.67%	3.90%	3.71%	3.13%	3.77%
Red meat	7.04%	3.94%	4.12%	6.68%	7.20%	9.29%
Chicken	1.80%	0.94%	1.47%	2.00%	2.13%	1.86%
Fish and seafood	7.27%	6.57%	7.00%	7.37%	7.84%	7.16%
Vegetables	5.96%	5.12%	4.87%	5.42%	6.20%	6.80%
Fruits	2.31%	1.88%	2.02%	2.08%	2.19%	2.75%
Oils and fats	6.68%	5.85%	6.33%	6.44%	6.58%	7.27%
Eggs, milk, and animal products	1.86%	0.87%	1.36%	1.66%	1.95%	2.41%
Sugar, salt, and condiments	5.55%	6.09%	5.56%	5.71%	5.52%	5.33%
Coffee, tea, and other drinks	2.61%	2.07%	2.15%	2.24%	2.68%	3.12%
Other foods consumed at home	4.35%	4.18%	4.47%	3.72%	4.48%	4.59%
Foods consumed outside of home	11.70%	6.71%	10.42%	10.15%	12.48%	14.01%
Households who consume the following items (% of households):						
Locally produced rice	30.5%	28.3%	27.3%	31.6%	33.1%	32.3%
Imported normal quality rice	71.2%	64.1%	72.0%	71.5%	72.2%	76.3%
Imported higher quality rice	2.9%	1.3%	2.0%	3.3%	3.5%	4.6%
Other cereals	43.1%	53.5%	40.4%	42.4%	40.4%	38.9%
Grains	80.5%	76.0%	81.3%	81.6%	80.1%	83.6%
Red meat	42.1%	23.7%	28.8%	44.2%	50.8%	62.9%
Chicken	14.7%	7.8%	12.1%	16.4%	17.7%	19.2%
Fish and seafood	90.7%	82.3%	89.9%	92.4%	95.0%	93.9%
Vegetables	97.9%	93.7%	98.5%	98.7%	99.0%	99.8%
Fruits	73.0%	59.3%	70.7%	75.5%	75.8%	83.8%
Oils and fats	98.7%	96.5%	98.2%	99.0%	99.8%	100.0%
Eggs, milk, and animal products	49.0%	26.3%	43.7%	47.7%	61.4%	66.2%
Sugar, salt, and condiments	100.0%	100.0%	99.8%	100.0%	100.0%	100.0%
Coffee, tea, and other drinks	67.5%	55.1%	63.1%	67.7%	72.2%	79.3%
Other foods consumed at home	91.4%	83.8%	92.4%	92.2%	92.7%	96.0%
Foods consumed outside of home	69.8%	55.1%	66.7%	72.7%	75.8%	78.5%
Annual food consumption per capita (Log of)	11.90 (0.48)	11.28 (0.29)	11.69 (0.18)	11.91 (0.19)	12.14 (0.19)	12.51 (0.29)
Food consumption per capita items (Log of):						

Locally produced rice	10.32 (0.98)	9.74 (1.08)	10.33 (0.91)	10.40 (0.84)	10.48 (0.88)	10.59 (1.00)
Imported normal quality rice	10.69 (0.70)	10.29 (0.65)	10.61 (0.69)	10.69 (0.67)	10.80 (0.67)	11.01 (0.64)
Imported higher quality rice	10.73 (0.81)	9.95 (0.89)	10.32 (1.13)	10.65 (0.52)	11.05 (0.48)	10.95 (0.85)
Other cereals	9.81 (0.95)	9.77 (0.88)	9.74 (0.88)	9.83 (1.01)	9.81 (1.01)	9.94 (1.01)
Grains	8.47 (0.94)	7.93 (0.87)	8.29 (0.88)	8.49 (0.84)	8.58 (0.84)	8.98 (0.95)
Red meat	9.95 (0.77)	9.32 (0.68)	9.54 (0.75)	9.84 (0.67)	10.01 (0.64)	10.41 (0.69)
Chicken	9.67 (0.72)	9.04 (0.63)	9.40 (0.65)	9.61 (0.67)	9.86 (0.64)	9.98 (0.67)
Fish and seafood	9.19 (0.79)	8.57 (0.69)	8.95 (0.65)	9.16 (0.68)	9.43 (0.69)	9.73 (0.70)
Vegetables	8.80 (0.94)	8.08 (0.86)	8.43 (0.78)	8.76 (0.76)	9.13 (0.74)	9.53 (0.82)
Fruits	8.04 (1.01)	7.45 (0.95)	7.79 (0.88)	7.95 (0.88)	8.17 (0.98)	8.61 (0.98)
Oils and fats	8.98 (0.84)	8.28 (0.73)	8.74 (0.71)	8.95 (0.70)	9.26 (0.62)	9.63 (0.75)
Eggs, milk, and animal products	8.33 (0.91)	7.64 (0.76)	7.91 (0.78)	8.18 (0.84)	8.41 (0.78)	8.92 (0.82)
Sugar, salt, and condiments	8.93 (0.61)	8.39 (0.51)	8.71 (0.45)	8.95 (0.47)	9.13 (0.48)	9.45 (0.56)
Coffee, tea, and other drinks	8.37 (0.88)	7.82 (0.70)	8.09 (0.76)	8.28 (0.75)	8.57 (0.81)	8.88 (0.95)
Other foods consumed at home	8.54 (0.93)	7.92 (0.85)	8.33 (0.86)	8.42 (0.79)	8.79 (0.84)	9.17 (0.82)
Foods consumed outside of home	9.51 (1.28)	8.63 (1.17)	9.28 (1.22)	9.46 (1.09)	9.81 (1.15)	10.06 (1.32)
Non-food consumption:						
Annual non-food consumption per capita (CFAF)	74,721	31,708	47,810	63,484	85,215	145,387
Non-food consumption per capita items (% of non-food consumption per capita):						
Non-food consumables	40.19%	45.03%	42.60%	40.03%	39.81%	38.64%
Clothing	16.84%	15.15%	16.53%	16.58%	17.20%	17.20%
Leisure and culture	13.39%	13.87%	13.95%	14.98%	14.11%	11.99%
Cleaning and maintenance	5.67%	7.57%	6.58%	5.93%	5.57%	4.90%
Housing expenditures	5.64%	5.03%	4.70%	4.98%	4.95%	6.78%
Other services	4.28%	2.91%	4.23%	3.62%	4.59%	4.71%
Transports	3.81%	1.85%	2.29%	3.21%	3.33%	5.29%
Agricultural inputs	3.40%	2.84%	3.26%	3.24%	3.55%	3.55%
Transfers to other families and friends	1.31%	1.41%	1.38%	1.26%	1.17%	1.36%
Furniture	2.08%	0.87%	1.71%	1.98%	2.19%	2.43%
Education	1.92%	1.88%	1.43%	2.41%	2.06%	1.80%
Health	1.37%	1.59%	1.28%	1.75%	1.40%	1.17%
Insurance	0.10%	0.00%	0.05%	0.04%	0.08%	0.16%
Households who spend on the following items (% of households):						
Non-food consumables	99.6%	99.5%	99.2%	99.5%	99.8%	100.0%
Clothing	93.6%	84.9%	91.2%	95.5%	98.0%	98.5%
Leisure and culture	87.3%	76.5%	84.6%	91.9%	90.4%	93.2%
Cleaning and maintenance	99.3%	98.7%	99.5%	99.2%	99.8%	99.5%
Housing expenditures	65.3%	59.3%	65.2%	63.9%	68.4%	69.4%
Other services	32.6%	24.8%	31.8%	30.6%	35.9%	40.2%
Transports	29.3%	17.4%	25.8%	28.3%	37.1%	37.9%
Agricultural inputs	65.3%	55.8%	63.6%	65.2%	69.7%	72.0%
Transfers to other families and friends	50.4%	36.1%	47.2%	51.5%	52.8%	64.1%
Furniture	33.0%	16.9%	30.3%	35.4%	37.9%	44.4%
Education	18.9%	15.9%	17.2%	20.0%	20.7%	20.7%
Health	40.8%	35.4%	36.9%	38.9%	45.7%	47.0%
Insurance	1.3%	0.0%	1.3%	0.8%	1.5%	3.0%
Annual non-food consumption per capita (Log of)	10.98 (0.70)	10.23 (0.54)	10.70 (0.42)	10.97 (0.44)	11.27 (0.44)	11.74 (0.54)

Non-food consumption items (Log of):						
Non-food consumables	10.03 (0.75)	9.40 (0.62)	9.79 (0.52)	9.99 (0.61)	10.29 (0.55)	10.68 (0.73)
Clothing	8.90 (1.18)	8.08 (1.12)	8.58 (1.03)	8.84 (1.08)	9.19 (1.02)	9.69 (1.04)
Leisure and culture	8.93 (0.96)	8.32 (0.88)	8.68 (0.86)	8.92 (0.88)	9.13 (0.92)	9.50 (0.83)
Cleaning and maintenance	8.07 (0.76)	7.58 (0.69)	7.86 (0.64)	8.04 (0.66)	8.25 (0.68)	8.63 (0.71)
Housing expenditures	7.58 (1.34)	7.06 (1.24)	7.32 (1.19)	7.56 (1.21)	7.68 (1.27)	8.19 (1.48)
Other services	8.29 (1.47)	7.54 (1.31)	8.05 (1.34)	8.13 (1.48)	8.57 (1.44)	8.81 (1.43)
Transports	7.93 (1.54)	7.25 (1.31)	7.21 (1.44)	7.91 (1.41)	7.97 (1.34)	8.71 (1.61)
Agricultural inputs	7.56 (1.24)	6.85 (1.15)	7.24 (1.15)	7.54 (1.07)	7.76 (1.16)	8.19 (1.21)
Transfers to other families and friends	6.87 (1.24)	6.53 (1.12)	6.60 (1.25)	6.74 (1.15)	6.94 (1.22)	7.29 (1.27)
Furniture	7.54 (1.45)	6.70 (1.09)	6.99 (1.48)	7.40 (1.34)	7.67 (1.41)	8.23 (1.35)
Education	8.16 (1.12)	7.80 (0.90)	7.78 (1.02)	8.20 (1.08)	8.26 (1.05)	8.64 (1.27)
Health	7.07 (1.36)	6.60 (1.28)	6.77 (1.22)	7.08 (1.46)	7.15 (1.42)	7.57 (1.21)
Insurance	8.00 (1.21)	. (.)	7.29 (0.90)	7.84 (1.06)	7.73 (1.42)	8.47 (1.18)

Table A2: Baseline anthropometric indicators of children 0-5 months, by quintile

Measurements and deficiencies	Total Population	Quintile 1 (Poorest)	Quintile 2	Quintile 3	Quintile 4	Quintile 5 (Richest)
Anthropometric measurements						
Number of children aged 0 – 5 months	344	91	78	61	60	54
Age (month)	2.3	2.6	2.6	1.8	2.4	1.9
Weight (kg)	4.82	4.98	4.97	4.41	4.99	4.62
Height (cm)	55.63	56.22	56.24	54.57	55.7	54.91
MUAC[1] (cm)	13.73	13.8	13.6	13.33	14.14	13.56
WAZ	-0.83 (1.26)	-0.96 (1.33)	-0.97 (1.39)	-0.72 (0.99)	-0.71 (1.29)	-0.68 (1.17)
HAZ	-1.04 (1.26)	-1.19 (1.39)	-1.17 (1.41)	-0.72 (0.96)	-1.14 (1.28)	-0.84 (1.03)
WHZ[2]	0.01 (1.11)	0.09 (1.01)	-0.03 (1.33)	-0.30 (1.01)	0.36 (0.96)	-0.11 (1.08)
MUACZ[1]	0.06 (1.06)	0.11 (1.05)	-0.06 (1.02)	-0.36 (1.13)	0.40 (1.07)	-0.00 (1.05)
Prevalence of deficiency states:						
Stunting, HAZ < -2, of whom	20.9%	20.9%	26.9%	13.1%	28.3%	13.0%
Moderate Stunting, -3 ≤ HAZ < -2	14.5%	9.9%	20.5%	11.5%	20.0%	11.1%
Severe Stunting, HAZ < -3	6.4%	11.0%	6.4%	1.6%	8.3%	1.9%
Underweight, WAZ < -2, of whom	15.1%	18.7%	17.9%	8.2%	16.7%	11.1%
Moderate Underweight, -3 ≤ WAZ < -2	10.5%	12.1%	10.3%	8.2%	10.0%	11.1%
Severe Underweight, WAZ < -3	4.7%	6.6%	7.7%	0.0%	6.7%	0.0%
Overweight, WAZ > 2, of whom	0.9%	1.1%	1.3%	0.0%	0.0%	1.9%
Moderate Overweight, 3 ≥ WAZ >2	0.9%	1.1%	1.3%	0.0%	0.0%	1.9%
Severe Overweight, WAZ > 3	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Malnourishment, MUACZ < -2, of whom	4.6%	5.9%	3.1%	0.0%	4.8%	10.0%
Moderate Malnourishment, -3 ≤ MUACZ < -2	4.6%	5.9%	3.1%	0.0%	4.8%	10.0%
Severe Malnourishment, MUACZ < -3	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
At least one deficiency	26.6%	20.6%	31.3%	33.3%	28.6%	20.0%
Boys						
Number of boys aged 0 – 5 months	184	51	40	28	33	32
Age (month)	2.3	2.5	2.5	2.1	2.7	1.8
Weight (kg)	4.99	5.01	5.18	4.68	5.34	4.64
Height (cm)	56.13	56.04	56.98	55.37	56.82	55.14
MUAC (cm)	14.06	14.13	14.11	13.28	14.22	14.28
WAZ	-0.86 (1.21)	-1.07 (1.27)	-0.82 (1.37)	-0.71 (1.01)	-0.83 (1.18)	-0.76 (1.13)
HAZ	-1.13 (1.18)	-1.42 (1.20)	-0.98 (1.46)	-0.85 (0.99)	-1.40 (1.03)	-0.82 (0.95)
WHZ	0.06 (1.18)	0.17 (0.98)	-0.10 (1.58)	-0.14 (1.01)	0.48 (0.80)	-0.19 (1.28)
MUACZ	0.15 (1.02)	0.26 (1.00)	0.10 (1.18)	-0.67 (1.03)	0.34 (0.86)	0.39 (0.74)
Prevalence of deficiency states:						
Stunting, HAZ < -2, of whom	23.9%	25.5%	27.5%	21.4%	33.3%	9.4%
Moderate Stunting, -3 ≤ HAZ < -2	19.0%	15.7%	25.0%	21.4%	27.3%	6.3%
Severe Stunting, HAZ < -3	4.9%	9.8%	2.5%	0.0%	6.1%	3.1%
Underweight, WAZ < -2, of whom	15.2%	23.5%	17.5%	7.1%	15.2%	6.3%
Moderate Underweight, -3 ≤ WAZ < -2	11.4%	17.6%	12.5%	7.1%	9.1%	6.3%
Severe Underweight, WAZ < -3	3.8%	5.9%	5.0%	0.0%	6.1%	0.0%
Overweight, WAZ > 2, of whom	1.1%	0.0%	2.5%	0.0%	0.0%	3.1%

Moderate Overweight, 3 ≥ WAZ >2	1.1%	0.0%	2.5%	0.0%	0.0%	3.1%
Severe Overweight, WAZ > 3	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Malnourishment, MUACZ < -2, of whom	1.8%	5.3%	0.0%	0.0%	0.0%	0.0%
Moderate Malnourishment, -3 ≤ MUACZ < -2	1.8%	5.3%	0.0%	0.0%	0.0%	0.0%
Severe Malnourishment, MUACZ < -3	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
At least one deficiency	28.6%	15.8%	42.9%	50.0%	30.8%	0.0%
Girls						
Number of girls aged 0 – 5 months	160	40	38	33	27	22
Age (month)	2.3	2.7	2.7	1.6	2.0	2.2
Weight (kg)	4.62	4.93	4.74	4.18	4.55	4.6
Height (cm)	55.07	56.44	55.46	53.89	54.34	54.58
MUAC (cm)	13.39	13.39	13.22	13.38	14.01	13.08
WAZ	-0.79 (1.31)	-0.82 (1.40)	-1.12 (1.41)	-0.72 (0.98)	-0.56 (1.42)	-0.57 (1.25)
HAZ	-0.93 (1.35)	-0.90 (1.57)	-1.36 (1.35)	-0.62 (0.94)	-0.82 (1.50)	-0.88 (1.15)
WHZ	-0.05 (1.02)	-0.03 (1.06)	0.05 (1.01)	-0.44 (1.01)	0.20 (1.12)	0.02 (0.72)
MUACZ	-0.04 (1.10)	-0.08 (1.11)	-0.18 (0.90)	-0.05 (1.22)	0.48 (1.42)	-0.27 (1.20)
Prevalence of deficiency states:						
Stunting, HAZ < -2, of whom	17.5%	15.0%	26.3%	6.1%	22.2%	18.2%
Moderate Stunting, -3 ≤ HAZ < -2	9.4%	2.5%	15.8%	3.0%	11.1%	18.2%
Severe Stunting, HAZ < -3	8.1%	12.5%	10.5%	3.0%	11.1%	0.0%
Underweight, WAZ < -2, of whom	15.0%	12.5%	18.4%	9.1%	18.5%	18.2%
Moderate Underweight, -3 ≤ WAZ < -2	9.4%	5.0%	7.9%	9.1%	11.1%	18.2%
Severe Underweight, WAZ < -3	5.6%	7.5%	10.5%	0.0%	7.4%	0.0%
Overweight, WAZ > 2, of whom	0.6%	2.5%	0.0%	0.0%	0.0%	0.0%
Moderate Overweight, 3 ≥ WAZ >2	0.6%	2.5%	0.0%	0.0%	0.0%	0.0%
Severe Overweight, WAZ > 3	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Malnourishment, MUACZ < -2, of whom	7.5%	6.7%	5.6%	0.0%	12.5%	16.7%
Moderate Malnourishment, -3 ≤ MUACZ < -2	7.5%	6.7%	5.6%	0.0%	12.5%	16.7%
Severe Malnourishment, MUACZ < -3	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
At least one deficiency	24.5%	26.7%	22.2%	16.7%	25.0%	33.3%

1/ MUAC and MUACZ do not include children aged 2 months or below.

2/ Weight-for-Height Z-score does not include children shorter than 45cm or taller than 120cm.

Table A3: Baseline anthropometric indicators of children 6-11 months, by quintile

Measurements and deficiencies	Total Population	Quintile 1 (Poorest)	Quintile 2	Quintile 3	Quintile 4	Quintile 5 (Richest)
Anthropometric measurements						
Number of children aged 6–11 months[1]	332	99	87	68	45	33
Age (months)	8.6	8.6	8.4	8.2	9.1	9.4
Weight (kg)	7.7	7.55	7.76	7.5	7.8	8.26
Height (cm)	68.53	68.15	68.56	67.89	68.98	70.27
MUAC (cm)	13.99	13.92	14.00	13.87	14.05	14.38
WAZ	-0.85 (1.26)	-0.99 (1.29)	-0.72 (1.27)	-1.00 (1.15)	-0.87 (1.30)	-0.44 (1.18)
HAZ	-0.81 (1.69)	-0.94 (1.68)	-0.67 (1.66)	-0.91 (1.93)	-0.89 (1.38)	-0.50 (1.67)
WHZ[2]	-0.46 (1.18)	-0.57 (1.27)	-0.36 (1.18)	-0.52 (0.96)	-0.50 (1.32)	-0.19 (1.14)
MUACZ	-0.26 (1.06)	-0.32 (1.06)	-0.23 (1.02)	-0.37 (0.98)	-0.26 (1.33)	0.05 (0.91)
Prevalence of deficiency states:						
Stunting, HAZ < -2, of whom	22.3%	23.2%	25.3%	22.1%	22.2%	12.1%
Moderate Stunting, -3 ≤ HAZ < -2	17.2%	17.2%	19.5%	16.2%	17.8%	12.1%
Severe Stunting, HAZ < -3	5.1%	6.1%	5.7%	5.9%	4.4%	0.0%
Underweight, WAZ < -2, of whom	14.8%	16.2%	11.5%	17.6%	17.8%	9.1%
Moderate Underweight, -3 ≤ WAZ < -2	9.0%	10.1%	4.6%	11.8%	11.1%	9.1%
Severe Underweight, WAZ < -3	5.7%	6.1%	6.9%	5.9%	6.7%	0.0%
Overweight, WAZ > 2, of whom	1.2%	1.0%	1.1%	0.0%	2.2%	3.0%
Moderate Overweight, 3 ≥ WAZ >2	0.6%	0.0%	1.1%	0.0%	0.0%	3.0%
Severe Overweight, WAZ > 3	0.6%	1.0%	0.0%	0.0%	2.2%	0.0%
Malnourishment, MUACZ < -2, of whom	5.4%	5.1%	5.7%	5.9%	8.9%	0.0%
Moderate Malnourishment, -3 ≤ MUACZ < -2	4.5%	4.0%	5.7%	5.9%	4.4%	0.0%
Severe Malnourishment, MUACZ < -3	0.9%	1.0%	0.0%	0.0%	4.4%	0.0%
Wasting, WHZ < -2, of whom	9.1%	12.1%	7.1%	8.8%	13.3%	0.0%
Moderate Wasting, -3 ≤ WHZ < -2	6.7%	8.1%	4.8%	8.8%	8.9%	0.0%
Severe Wasting, WHZ < -3	2.4%	4.0%	2.4%	0.0%	4.4%	0.0%
At least one deficiency	32.0%	35.4%	31.0%	30.9%	37.8%	18.8%
Boys						
Number of boys aged 6–11 months	161	45	40	38	22	16
Age (months)	8.7	8.8	8.5	8.1	9.2	9.8
Weight (kg)	7.89	7.71	8	7.71	7.88	8.53
Height (cm)	69.39	69.06	69.53	68.94	68.84	71.83
MUAC (cm)	14.09	13.96	14.10	13.97	14.27	14.47
WAZ	-1.05 (1.34)	-1.28 (1.31)	-0.87 (1.38)	-1.10 (1.38)	-1.17 (1.20)	-0.60 (1.36)
HAZ	-0.92 (1.79)	-1.15 (1.61)	-0.72 (1.75)	-0.82 (2.31)	-1.41 (0.98)	-0.37 (1.82)
WHZ	-0.66 (1.19)	-0.86 (1.25)	-0.53 (1.39)	-0.69 (0.87)	-0.54 (1.28)	-0.49 (1.05)
MUACZ	-0.39 (1.15)	-0.51 (1.08)	-0.37 (1.17)	-0.46 (1.12)	-0.27 (1.44)	-0.09 (1.02)
Prevalence of deficiency states:						
Stunting, HAZ < -2, of whom	24.2%	22.2%	27.5%	23.7%	31.8%	12.5%
Moderate Stunting, -3 ≤ HAZ < -2	17.4%	13.3%	20.0%	13.2%	31.8%	12.5%
Severe Stunting, HAZ < -3	6.8%	8.9%	7.5%	10.5%	0.0%	0.0%
Underweight, WAZ < -2, of whom	22.4%	26.7%	17.5%	21.1%	27.3%	18.8%

Moderate Underweight, -3 ≤ WAZ < -2	13.7%	17.8%	7.5%	10.5%	18.2%	18.8%
Severe Underweight, WAZ < -3	8.7%	8.9%	10.0%	10.5%	9.1%	0.0%
Overweight, WAZ > 2, of whom	1.2%	0.0%	2.5%	0.0%	0.0%	6.3%
Moderate Overweight, 3 ≥ WAZ >2	1.2%	0.0%	2.5%	0.0%	0.0%	6.3%
Severe Overweight, WAZ > 3	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Malnourishment, MUACZ < -2, of whom	8.1%	8.9%	10.0%	7.9%	9.1%	0.0%
Moderate Malnourishment, -3 ≤ MUACZ < -2	6.8%	6.7%	10.0%	7.9%	4.5%	0.0%
Severe Malnourishment, MUACZ < -3	1.2%	2.2%	0.0%	0.0%	4.5%	0.0%
Wasting, WHZ < -2, of whom	10.7%	15.6%	10.5%	7.9%	13.6%	0.0%
Moderate Wasting, -3 ≤ WHZ < -2	7.5%	11.1%	5.3%	7.9%	9.1%	0.0%
Severe Wasting, WHZ < -3	3.1%	4.4%	5.3%	0.0%	4.5%	0.0%
At least one deficiency	36.5%	35.6%	39.5%	31.6%	45.5%	31.3%
Girls						
Number of girls aged 6–11 months	171	54	47	30	23	17
Age (months)	8.5	8.4	8.4	8.3	9.0	9.1
Weight (kg)	7.52	7.41	7.56	7.22	7.73	8.02
Height (cm)	67.71	67.39	67.72	66.55	69.11	68.81
MUAC (cm)	13.9	13.88	13.91	13.73	13.84	14.31
WAZ	-0.66 (1.15)	-0.75 (1.24)	-0.59 (1.18)	-0.87 (0.79)	-0.59 (1.36)	-0.30 (1.00)
HAZ	-0.71 (1.58)	-0.77 (1.74)	-0.63 (1.61)	-1.02 (1.33)	-0.39 (1.53)	-0.63 (1.56)
WHZ	-0.27 (1.15)	-0.32 (1.24)	-0.21 (0.96)	-0.30 (1.03)	-0.46 (1.39)	0.11 (1.19)
MUACZ	-0.14 (0.96)	-0.16 (1.03)	-0.11 (0.87)	-0.25 (0.78)	-0.24 (1.25)	0.18 (0.80)
Prevalence of deficiency states:						
Stunting, HAZ < -2, of whom	20.5%	24.1%	23.4%	20.0%	13.0%	11.8%
Moderate Stunting, -3 ≤ HAZ < -2	17.0%	20.4%	19.1%	20.0%	4.3%	11.8%
Severe Stunting, HAZ < -3	3.5%	3.7%	4.3%	0.0%	8.7%	0.0%
Underweight, WAZ < -2, of whom	7.6%	7.4%	6.4%	13.3%	8.7%	0.0%
Moderate Underweight, -3 ≤ WAZ < -2	4.7%	3.7%	2.1%	13.3%	4.3%	0.0%
Severe Underweight, WAZ < -3	2.9%	3.7%	4.3%	0.0%	4.3%	0.0%
Overweight, WAZ > 2, of whom	1.2%	1.9%	0.0%	0.0%	4.3%	0.0%
Moderate Overweight, 3 ≥ WAZ >2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Severe Overweight, WAZ > 3	1.2%	1.9%	0.0%	0.0%	4.3%	0.0%
Malnourishment, MUACZ < -2, of whom	2.9%	1.9%	2.1%	3.3%	8.7%	0.0%
Moderate Malnourishment, -3 ≤ MUACZ < -2	2.3%	1.9%	2.1%	3.3%	4.3%	0.0%
Severe Malnourishment, MUACZ < -3	0.6%	0.0%	0.0%	0.0%	4.3%	0.0%
Wasting, WHZ < -2, of whom	7.7%	9.3%	4.3%	10.0%	13.0%	0.0%
Moderate Wasting, -3 ≤ WHZ < -2	5.9%	5.6%	4.3%	10.0%	8.7%	0.0%
Severe Wasting, WHZ < -3	1.8%	3.7%	0.0%	0.0%	4.3%	0.0%
At least one deficiency	27.8%	35.2%	23.9%	30.0%	30.4%	6.3%

1/ Two children aged 6–11 months old were excluded from the analysis for having at least one biologically-implausible z-value (defined as HAZ<-6 or >6, WAZ<-6 or >5, WHZ<-5 or >5, or MUACZ<-5 or >5).
2/ Weight-for-height z-score does not include children shorter than 45 cm or taller than 120 cm.

Table A4: Baseline anthropometric indicators of children 12-23 months, by quintile

Measurements and deficiencies	Total Population	Quintile 1 (Poorest)	Quintile 2	Quintile 3	Quintile 4	Quintile 5 (Richest)
Anthropometric measurements						
Number of children aged 12–23 months[1]	803	219	185	144	136	119
Age (months)	17.4	17.4	17.3	17.9	17.5	17.3
Weight (kg)	9.39	9.26	9.34	9.53	9.48	9.41
Height (cm)	77.06	76.64	76.97	77.68	77.16	77.11
MUAC (cm)	14.32	14.27	14.36	14.35	14.34	14.32
WAZ	-1.02 (1.17)	-1.10 (1.18)	-1.04 (1.15)	-0.94 (1.11)	-0.97 (1.26)	-0.97 (1.13)
HAZ	-1.33 (1.46)	-1.42 (1.50)	-1.32 (1.44)	-1.26 (1.35)	-1.33 (1.46)	-1.26 (1.54)
WHZ[2]	-0.56 (1.05)	-0.60 (0.97)	-0.60 (0.95)	-0.52 (1.08)	-0.49 (1.19)	-0.53 (1.13)
MUACZ	-0.33 (0.95)	-0.36 (0.94)	-0.29 (0.93)	-0.31 (0.93)	-0.32 (1.03)	-0.32 (0.95)
Prevalence of deficiency states:						
Stunting, HAZ < -2, of whom	32.9%	33.3%	34.6%	34.0%	35.3%	25.2%
Moderate Stunting, -3 ≤ HAZ < -2	22.8%	18.3%	24.9%	28.5%	27.9%	15.1%
Severe Stunting, HAZ < -3	10.1%	15.1%	9.7%	5.6%	7.4%	10.1%
Underweight, WAZ < -2, of whom	20.3%	22.4%	22.7%	16.0%	20.6%	17.6%
Moderate Underweight, -3 ≤ WAZ < -2	16.6%	17.4%	20.0%	12.5%	18.4%	12.6%
Severe Underweight, WAZ < -3	3.7%	5.0%	2.7%	3.5%	2.2%	5.0%
Overweight, WAZ > 2, of whom	1.4%	1.8%	0.5%	0.7%	2.9%	0.8%
Moderate Overweight, 3 ≥ WAZ >2	1.1%	1.8%	0.5%	0.7%	2.2%	0.0%
Severe Overweight, WAZ > 3	0.2%	0.0%	0.0%	0.0%	0.7%	0.8%
Malnourishment, MUACZ < -2, of whom	3.7%	5.0%	2.7%	2.8%	3.7%	4.2%
Moderate Malnourishment, -3 ≤ MUACZ < -2	3.6%	4.6%	2.7%	2.8%	3.7%	4.2%
Severe Malnourishment, MUACZ < -3	0.1%	0.5%	0.0%	0.0%	0.0%	0.0%
Wasting, WHZ < -2, of whom	7.5%	7.8%	5.9%	5.6%	7.4%	11.8%
Moderate Wasting, -3 ≤ WHZ < -2	6.4%	6.9%	4.9%	4.2%	6.6%	10.1%
Severe Wasting, WHZ < -3	1.1%	0.9%	1.1%	1.4%	0.7%	1.7%
At least one deficiency	39.0%	41.3%	40.0%	38.2%	41.2%	31.9%
Boys						
Number of boys aged 12–23 months	388	102	96	65	70	55
Age (months)	17.6	17.4	17.2	18.2	18.2	17.0
Weight (kg)	9.62	9.52	9.43	9.79	9.97	9.48
Height (cm)	77.67	77.1	77.13	78.54	78.94	77.01
MUAC (cm)	14.39	14.36	14.38	14.36	14.48	14.34
WAZ	-1.15 (1.18)	-1.21 (1.24)	-1.24 (1.11)	-1.11 (1.14)	-0.96 (1.33)	-1.19 (1.05)
HAZ	-1.49 (1.50)	-1.63 (1.51)	-1.54 (1.28)	-1.40 (1.47)	-1.26 (1.71)	-1.55 (1.60)
WHZ	-0.64 (1.06)	-0.63 (1.00)	-0.72 (0.97)	-0.65 (1.20)	-0.54 (1.16)	-0.62 (1.03)
MUACZ	-0.45 (0.96)	-0.46 (0.94)	-0.44 (0.96)	-0.49 (0.91)	-0.39 (1.15)	-0.46 (0.84)
Prevalence of deficiency states:						
Stunting, HAZ < -2, of whom	38.9%	38.2%	41.7%	40.0%	38.6%	34.5%
Moderate Stunting, -3 ≤ HAZ < -2	26.0%	18.6%	29.2%	33.8%	30.0%	20.0%
Severe Stunting, HAZ < -3	12.9%	19.6%	12.5%	6.2%	8.6%	14.5%
Underweight, WAZ < -2, of whom	24.5%	28.4%	29.2%	16.9%	22.9%	20.0%

Moderate Underweight, -3 ≤ WAZ < -2	20.6%	22.5%	27.1%	12.3%	21.4%	14.5%
Severe Underweight, WAZ < -3	3.9%	5.9%	2.1%	4.6%	1.4%	5.5%
Overweight, WAZ > 2, of whom	1.0%	1.0%	0.0%	1.5%	2.9%	0.0%
Moderate Overweight, 3 ≥ WAZ >2	0.8%	1.0%	0.0%	1.5%	1.4%	0.0%
Severe Overweight, WAZ > 3	0.3%	0.0%	0.0%	0.0%	1.4%	0.0%
Malnourishment, MUACZ < -2, of whom	5.4%	6.9%	4.2%	4.6%	5.7%	5.5%
Moderate Malnourishment, -3 ≤ MUACZ < -2	5.2%	5.9%	4.2%	4.6%	5.7%	5.5%
Severe Malnourishment, MUACZ < -3	0.3%	1.0%	0.0%	0.0%	0.0%	0.0%
Wasting, WHZ < -2, of whom	7.7%	9.8%	6.3%	7.7%	5.7%	9.1%
Moderate Wasting, -3 ≤ WHZ < -2	6.7%	8.8%	5.2%	4.6%	5.7%	9.1%
Severe Wasting, WHZ < -3	1.0%	1.0%	1.0%	3.1%	0.0%	0.0%
At least one deficiency	44.6%	46.1%	46.9%	46.2%	44.3%	36.4%
Girls						
Number of girls aged 12–23 months	415	117	89	79	66	64
Age (months)	17.3	17.4	17.4	17.6	16.7	17.5
Weight (kg)	9.17	9.03	9.25	9.32	8.97	9.34
Height (cm)	76.49	76.24	76.81	76.97	75.26	77.2
MUAC (cm)	14.27	14.19	14.35	14.33	14.19	14.29
WAZ	-0.89 (1.15)	-1.01 (1.13)	-0.82 (1.17)	-0.81 (1.08)	-0.97 (1.20)	-0.78 (1.17)
HAZ	-1.17 (1.40)	-1.24 (1.48)	-1.07 (1.56)	-1.14 (1.23)	-1.40 (1.13)	-1.00 (1.46)
WHZ	-0.48 (1.03)	-0.57 (0.94)	-0.46 (0.91)	-0.42 (0.98)	-0.43 (1.23)	-0.46 (1.21)
MUACZ	-0.21 (0.93)	-0.28 (0.94)	-0.14 (0.88)	-0.17 (0.92)	-0.25 (0.88)	-0.20 (1.03)
Prevalence of deficiency states:						
Stunting, HAZ < -2, of whom	27.2%	29.1%	27.0%	29.1%	31.8%	17.2%
Moderate Stunting, -3 ≤ HAZ < -2	19.8%	17.9%	20.2%	24.1%	25.8%	10.9%
Severe Stunting, HAZ < -3	7.5%	11.1%	6.7%	5.1%	6.1%	6.3%
Underweight, WAZ < -2, of whom	16.4%	17.1%	15.7%	15.2%	18.2%	15.6%
Moderate Underweight, -3 ≤ WAZ < -2	12.8%	12.8%	12.4%	12.7%	15.2%	10.9%
Severe Underweight, WAZ < -3	3.6%	4.3%	3.4%	2.5%	3.0%	4.7%
Overweight, WAZ > 2, of whom	1.7%	2.6%	1.1%	0.0%	3.0%	1.6%
Moderate Overweight, 3 ≥ WAZ >2	1.4%	2.6%	1.1%	0.0%	3.0%	0.0%
Severe Overweight, WAZ > 3	0.2%	0.0%	0.0%	0.0%	0.0%	1.6%
Malnourishment, MUACZ < -2, of whom	2.2%	3.4%	1.1%	1.3%	1.5%	3.1%
Moderate Malnourishment, -3 ≤ MUACZ < -2	2.2%	3.4%	1.1%	1.3%	1.5%	3.1%
Severe Malnourishment, MUACZ < -3	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Wasting, WHZ < -2, of whom	7.2%	6.0%	5.6%	3.8%	9.1%	14.1%
Moderate Wasting, -3 ≤ WHZ < -2	6.0%	5.2%	4.5%	3.8%	7.6%	10.9%
Severe Wasting, WHZ < -3	1.2%	0.9%	1.1%	0.0%	1.5%	3.1%
At least one deficiency	33.8%	37.1%	32.6%	31.6%	37.9%	28.1%

1/ Four children aged 12–23 months old were excluded from the analysis for having at least one biologically-implausible z-value (defined as HAZ<-6 or >6, WAZ<-6 or >5, WHZ<-5 or >5, or MUACZ<-5 or >5).
2/ Weight-for-Height z-score does not include children shorter than 45 cm or taller than 120 cm.

Table A5: Composition of food and non-food consumption, by group

Variables	Total Population	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	P-value[1]	Q-value[2]
Food consumption:									
Annual food consumption per capita (CFAF)	165,214	170,977	164,859	164,887	165,972	161,436	163,151		
Food consumption items per capita (CFAF) (% of food consumption per capita):									
Locally produced rice	8.11%	7.60%	8.76%	7.35%	6.52%	8.94%	9.57%		
Imported normal quality rice	22.96%	22.13%	23.07%	24.07%	25.04%	22.37%	21.05%		
Imported higher quality rice	1.03%	0.79%	1.07%	0.78%	1.20%	1.28%	1.09%		
Other cereals	7.13%	7.15%	7.27%	7.02%	6.45%	7.03%	7.90%		
Grains	3.62%	3.46%	3.32%	3.43%	4.36%	3.72%	3.45%		
Red meat	7.04%	7.44%	7.72%	5.89%	7.75%	6.39%	7.03%		
Chicken	1.80%	1.92%	1.86%	1.73%	1.73%	2.27%	1.29%		
Fish and seafood	7.27%	7.35%	7.31%	7.02%	7.18%	6.93%	7.82%		
Vegetables	5.96%	5.80%	5.82%	6.39%	5.82%	5.97%	5.97%		
Fruits	2.31%	2.25%	2.21%	2.24%	2.86%	1.87%	2.40%		
Oils and fats	6.68%	6.45%	6.66%	6.70%	6.75%	7.56%	6.00%		
Eggs, milk, and animal products	1.86%	2.08%	1.72%	1.58%	1.99%	1.84%	1.96%		
Sugar, salt, and condiments	5.55%	5.52%	5.69%	5.91%	5.36%	5.45%	5.39%		
Coffee, tea, and other drinks	2.61%	2.85%	2.69%	2.46%	2.20%	2.98%	2.49%		
Other foods consumed at home	4.35%	4.22%	4.16%	4.68%	4.29%	4.43%	4.32%		
Foods consumed outside of home	11.70%	13.00%	10.68%	12.74%	10.51%	10.96%	12.27%		
Households who consume the following items (% of households):									
Locally produced rice	30.5%	30.0%	33.0%	27.6%	27.3%	31.5%	33.6%		
Imported normal quality rice	71.2%	72.4%	71.8%	73.6%	73.0%	70.6%	65.8%		
Imported higher quality rice	2.9%	2.7%	3.3%	2.1%	3.6%	2.7%	3.0%		
Other cereals	43.1%	42.7%	46.4%	42.1%	38.5%	43.0%	46.1%		
Grains	80.5%	80.0%	80.0%	81.8%	82.4%	78.2%	80.6%		
Red meat	42.1%	44.2%	45.8%	37.9%	43.9%	38.8%	41.8%		
Chicken	14.7%	16.1%	17.0%	13.6%	13.9%	15.5%	11.8%		
Fish and seafood	90.7%	91.2%	90.3%	92.1%	90.6%	87.6%	92.4%		
Vegetables	97.9%	98.2%	98.2%	97.9%	98.2%	97.3%	97.9%		
Fruits	73.0%	72.7%	73.6%	74.8%	75.2%	70.3%	71.5%		
Oils and fats	98.7%	99.1%	98.2%	98.8%	99.1%	98.2%	98.8%		
Eggs, milk, and animal products	49.0%	50.3%	50.3%	45.5%	47.0%	48.8%	52.4%		
Sugar, salt, and condiments	100.0%	100.0%	99.7%	100.0%	100.0%	100.0%	100.0%		
Coffee, tea, and other drinks	67.5%	68.8%	70.6%	63.9%	62.7%	68.2%	70.6%		
Other foods consumed at home	91.4%	91.8%	92.4%	92.1%	91.5%	89.7%	90.9%		
Foods consumed outside of home	69.8%	68.5%	68.2%	73.0%	67.9%	71.2%	69.7%		
Annual food consumption per capita (Log of)	11.90 (0.48)	11.92 (0.50)	11.91 (0.46)	11.91 (0.47)	11.90 (0.49)	11.89 (0.47)	11.90 (0.46)		
Food items consumption per capita (Log of):									
Locally produced rice	10.32 (0.98)	10.33 (0.95)	10.28 (1.07)	10.30 (1.01)	10.31 (0.84)	10.32 (1.03)	10.40 (0.98)	0.96	0.047
Imported normal quality rice	10.69 (0.70)	10.68 (0.65)	10.66 (0.77)	10.72 (0.69)	10.78 (0.64)	10.63 (0.76)	10.67 (0.70)	0.27	0.009
Imported higher quality rice	10.73 (0.81)	10.29 (1.15)	10.77 (0.50)	10.91 (0.51)	10.60 (0.98)	11.12 (0.54)	10.78 (0.82)	0.36	0.016

Other cereals	9.81 (0.95)	9.89 (0.95)	9.68 (1.00)	9.81 (1.00)	9.86 (0.92)	9.79 (0.92)	9.85 (0.93)	0.49	0.019
Grains	8.47 (0.94)	8.47 (0.96)	8.46 (0.86)	8.46 (0.88)	8.52 (0.99)	8.49 (0.97)	8.40 (0.97)	0.78	0.041
Red meat	9.95 (0.77)	9.99 (0.82)	10.00 (0.70)	9.90 (0.73)	9.94 (0.92)	9.91 (0.76)	9.98 (0.69)	0.83	0.043
Chicken	9.67 (0.72)	9.62 (0.80)	9.53 (0.78)	9.82 (0.51)	9.70 (0.73)	9.78 (0.73)	9.60 (0.67)	0.31	0.012
Fish and seafood	9.19 (0.79)	9.21 (0.80)	9.24 (0.75)	9.12 (0.81)	9.20 (0.78)	9.18 (0.74)	9.17 (0.84)	0.50	0.021
Vegetables	8.80 (0.94)	8.78 (0.98)	8.82 (0.90)	8.77 (1.03)	8.78 (0.95)	8.86 (0.83)	8.76 (0.95)	0.73	0.038
Fruits	8.04 (1.01)	8.02 (1.07)	8.01 (1.01)	8.05 (1.02)	8.12 (1.05)	7.99 (0.88)	8.02 (1.04)	0.74	0.040
Oils and fats	8.98 (0.84)	8.94 (0.89)	9.01 (0.81)	8.98 (0.84)	8.99 (0.83)	9.03 (0.84)	8.92 (0.81)	0.57	0.026
Eggs, milk, and animal products	8.33 (0.91)	8.41 (0.92)	8.29 (0.85)	8.26 (0.87)	8.40 (0.98)	8.28 (0.94)	8.33 (0.87)	0.53	0.022
Sugar, salt, and condiments	8.93 (0.61)	8.97 (0.60)	8.94 (0.63)	8.94 (0.62)	8.90 (0.61)	8.89 (0.60)	8.92 (0.60)	0.57	0.029
Coffee, tea, and other drinks	8.37 (0.88)	8.42 (0.90)	8.33 (0.94)	8.41 (0.86)	8.39 (0.80)	8.40 (0.89)	8.29 (0.90)	0.57	0.028
Other foods consumed at home	8.54 (0.93)	8.59 (0.90)	8.53 (0.91)	8.51 (1.02)	8.52 (0.94)	8.56 (0.89)	8.55 (0.94)	0.93	0.045
Foods consumed outside of home	9.51 (1.28)	9.57 (1.32)	9.44 (1.33)	9.60 (1.23)	9.43 (1.30)	9.43 (1.28)	9.56 (1.23)	0.48	0.017
Non-food consumption:									
Annual non-food consumption per capita (CFAF)	74,721	80,755	75,069	68,660	75,608	73,794	74,438		
Non-food items consumption per capita (% of non-food consumption per capita):									
Nonfood consumables	40.19%	39.52%	39.72%	42.17%	40.41%	40.56%	39.52%		
Clothing	16.84%	15.96%	17.43%	17.16%	16.67%	16.36%	15.96%		
Leisure and culture	13.39%	12.85%	13.11%	13.06%	13.49%	12.84%	12.85%		
Cleaning and maintenance	5.67%	5.46%	5.65%	5.75%	5.44%	5.63%	5.46%		
Housing expenditures	5.64%	7.55%	5.64%	5.47%	5.63%	4.13%	7.55%		
Other services	4.28%	4.69%	4.05%	3.71%	3.58%	5.61%	4.69%		
Transports	3.81%	3.19%	4.68%	2.93%	4.54%	3.56%	3.19%		
Agricultural inputs	3.40%	3.66%	3.25%	3.64%	3.33%	3.40%	3.66%		
Transfers to other families and friends	1.31%	1.29%	1.24%	1.44%	1.34%	1.17%	1.29%		
Furniture	2.08%	2.19%	2.06%	1.72%	2.61%	2.21%	2.19%		
Education	1.92%	2.37%	1.89%	1.64%	1.34%	2.78%	2.37%		
Health	1.37%	1.20%	1.24%	1.21%	1.43%	1.70%	1.20%		
Insurance	0.10%	0.08%	0.05%	0.11%	0.19%	0.04%	0.08%		
Households who spend on the following items (% of households):									
Nonfood consumables	99.6%	99.7%	99.4%	100.0%	99.1%	99.7%	99.7%		
Clothing	93.6%	93.6%	95.2%	95.8%	90.0%	91.5%	95.5%		
Leisure and culture	87.3%	89.1%	86.4%	88.2%	85.2%	86.4%	88.8%		
Cleaning and maintenance	99.3%	99.7%	99.7%	99.1%	98.8%	99.7%	99.1%		
Housing expenditures	65.3%	62.7%	66.4%	64.5%	63.9%	64.5%	69.4%		
Other services	32.6%	31.2%	32.1%	37.0%	29.1%	34.8%	31.5%		
Transports	29.3%	29.1%	29.7%	30.0%	30.3%	26.1%	30.6%		
Agricultural inputs	65.3%	62.7%	66.1%	66.4%	66.7%	68.2%	61.5%		
Transfers to other families and friends	50.4%	48.2%	51.2%	46.1%	51.8%	49.7%	55.2%		
Furniture	33.0%	37.0%	31.2%	31.5%	32.7%	34.8%	30.6%		
Education	18.9%	19.7%	15.8%	20.6%	15.8%	21.5%	20.0%		
Health	40.8%	39.4%	41.5%	38.8%	43.0%	40.3%	41.5%		
Insurance	1.3%	0.9%	1.2%	1.8%	2.1%	0.6%	1.2%		
Annual non-food consumption per capita (Log of)	10.98 (0.70)	11.04 (0.74)	11.01 (0.68)	10.93 (0.66)	10.97 (0.74)	10.95 (0.70)	11.00 (0.66)		
Non-food items consumption (Log of):									
Nonfood consumables	10.03 (0.75)	10.08 (0.77)	10.05 (0.73)	10.00 (0.79)	10.05 (0.73)	9.98 (0.76)	10.03 (0.72)	0.59	0.031

Clothing	8.90 (1.18)	8.96 (1.20)	8.92 (1.17)	8.81 (1.22)	8.95 (1.18)	8.89 (1.16)	8.90 (1.18)	0.67	0.034
Leisure and culture	8.93 (0.96)	8.94 (0.96)	8.95 (0.93)	8.83 (0.95)	9.03 (0.87)	8.86 (0.99)	9.00 (1.02)	0.078	0.003
Cleaning and maintenance	8.07 (0.76)	8.13 (0.73)	8.09 (0.74)	8.03 (0.74)	8.02 (0.81)	8.04 (0.76)	8.12 (0.79)	0.29	0.010
Housing expenditures	7.58 (1.34)	7.80 (1.43)	7.60 (1.37)	7.55 (1.27)	7.49 (1.30)	7.53 (1.27)	7.51 (1.36)	0.16	0.005
Other services	8.29 (1.47)	8.36 (1.63)	8.30 (1.48)	8.19 (1.25)	8.39 (1.41)	8.14 (1.61)	8.38 (1.43)	0.71	0.036
Transports	7.93 (1.54)	7.57 (1.57)	8.18 (1.60)	7.81 (1.34)	8.11 (1.57)	8.08 (1.52)	7.86 (1.58)	0.054	0.002
Agricultural inputs	7.56 (1.24)	7.59 (1.35)	7.57 (1.21)	7.58 (1.23)	7.54 (1.21)	7.54 (1.17)	7.51 (1.25)	0.99	0.050
Transfers to other families and friends	6.87 (1.24)	6.94 (1.27)	6.76 (1.25)	7.00 (1.25)	6.82 (1.33)	6.84 (1.16)	6.86 (1.20)	0.55	0.024
Furniture	7.54 (1.45)	7.47 (1.49)	7.63 (1.43)	7.45 (1.26)	7.77 (1.50)	7.58 (1.44)	7.34 (1.56)	0.33	0.014
Education	8.16 (1.12)	8.32 (1.25)	8.31 (1.20)	8.04 (1.07)	8.11 (0.99)	8.13 (1.22)	8.11 (0.97)	0.65	0.033
Health	7.07 (1.36)	7.16 (1.27)	7.11 (1.23)	6.86 (1.32)	7.00 (1.38)	7.28 (1.27)	7.00 (1.65)	0.17	0.007
Insurance	8.00 (1.21)	8.21 (1.46)	7.63 (1.18)	7.99 (0.96)	8.01 (1.50)	7.86 (1.72)	8.26 (1.43)	0.99	0.048

1/ P-values for rejecting the null hypothesis of groups being sampled from the same distribution. ANOVA test is used for continuous variables and Chi-square test of independence is used for binary and categorical variables.
2/ Q-values computed using the two-step Benjamini-Hochberg procedure with a false discovery rate of 0.05.